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Research Papers

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QUALITATIVE CHARACTERIZATION OF DIFFERENT VARIETIES OF WHEAT

Shilpi Vikas Teotia and Shashikala Prajapati
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ABSTRACT
Wheat is one of the most important crops worldwide, occupying 17 percent of the total cultivated land in the world and providing the staple food for 35 percent of the world's population.

Wheat is an allohexaploid (6x=42), self-pollinated, and a premier food crop of worldwide importance. Wheat is the leading source of vegetable protein in human food, having a higher protein content than other major cereals, maize (corn), or rice. The research was conducted to evaluate the best source of variety for qualitative characters.

The hard wheat (Durum) has the highest gluten content and is used for making bread, rolls, and all-purpose flour. Bread wheat protein content ranges from 10% in some soft wheat to 15% in hard wheat. This protein can determine the suitability of wheat for a particular dish. Strong and elastic gluten present in bread wheat enables the dough to trap carbon dioxide during leavening. Kulkarni et. al. (1987).

Keywords: Wheat, Qualitative Characters, Protein Estimation.

INTRODUCTION
Wheat (Triticum aestivum L.) is one of the most extensively grown crops in the World. In India, bread wheat, an allohexaploid (AABBDD) with a total of 42 chromosomes is the most important species, covering more than 90 percent of the total wheat cultivated area in the country and is the second most important source of staple food after rice. It was grown on an area of 30.72 million ha with a total production of 97.44 million tonnes and productivity of 3172 kg/ha during 2016-17. Haryana has grown wheat over an area of 2.54 million ha with a production of 11.14 million tonnes and the highest productivity of 4390 kg/ha in the country (Anonymous, 2017).

Genetic purity maintenance of varieties is of primary importance for preventing varietal deterioration during successive regeneration cycles and ensuring the expected varietal performance level. The main objectives of comprehensive research for quality characterization of wheat are underlined as follows. First, Identify the best variety for protein content and its component characters, and second, To determine the association between different qualitative traits.

MATERIAL AND METHODS
The Lab experiment was conducted in the Department of Botany, KLE Society's Science and Commerce College. 8 different varieties of wheat were grown under normal environmental conditions. The wheat varieties were sown in different replications in experimental pots. Different reagents were used for performing the experiment Phenol, Phosphate buffer, NaOH, TCA, Alkaline Copper Sulphate reagent, foline ciocalteau reagent, etc. Instruments that are used for the experiment are as follows, RT Incubator, Centrifuge, colorimeter, Whatman filter paper no. 1, filter paper, etc.

The following were the test performed for the experiment test for gluten content, Phenol color reaction test, Germination test, Protein estimation test for wheat, 1000 grain weight(gram), Plant height(cm square), and Number of effective tillers per plant.

1. Test for Gluten Content:- The dough is kneaded with wheat flour and kept for 2 hrs → Then the dough is washed under flowing tap water to remove the starch until the water becomes clear. After the starch is removed the dough is kept in a glutork chamber and the gluten is extracted. Wet gluten weight is measured and the wet gluten is dried in the oven set at 150 ^{0}C for 2 min. and the dry weight of gluten is measured. **Wrigley C.W. et. al. (2006)**

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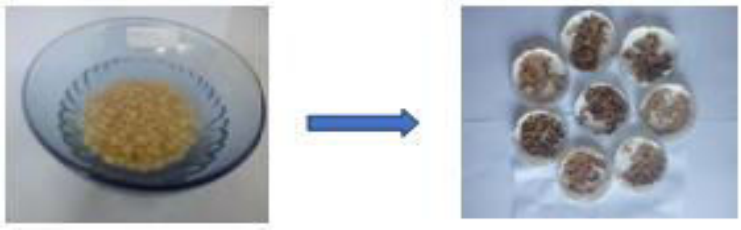
2. Phenol Color Reaction Test:- Seeds were soaked in water for 16 to 20 hrs for RT. Soaked seeds were placed in a Petri dish containing a filter paper soaked with 1% phenol solution and kept for 4 hrs. The phenol color reaction was noted and the intensity of colored was recorded from 1 to 10. No color development is taken as zero and the darkest color as 10.



3. Paper Towel Method: Count 100 seeds of different varieties. Spread seeds on dampened paper towel. Cover the seeds with a damp paper towel. Roll up the towel and place it in a plastic bag. After about 5-7 days count how many seeds are germinated. Ideally, repeat with a number of samples.

4. Protein Estimation Test for Wheat:- Protein was extracted from germination seeds using phosphate buffer and 20% TCA. Take 1 ml of protein and add 5 ml of freshly prepared alkaline copper sulfate reagent. Mix well and incubate at RT for 15 mins. Add 0.5 ml of folin ciocalteau reagent. Allow it to react at RT for 30 mins and take od at 750 nm. **Voon T. J. and Edward G.W (2002)**

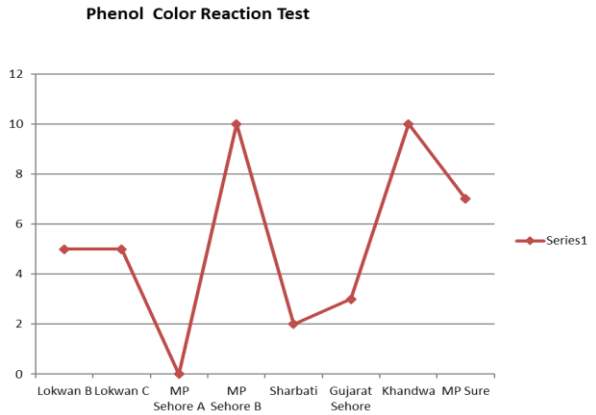
5. 1000 Grain Weight (Gram):- 1000 grains from the selected variety were counted and weighed **Vita et al. (2007)**

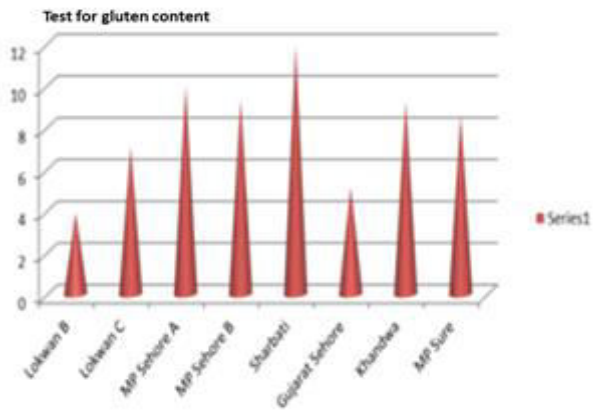
6. Plant Height (Cm Square):- The height of the main shoot from the soil surface to the tip of the spike, excluding awns, was measured at physiological maturity. **Vita et al. (2007)**

7. Number of Effective Tillers per Plant:- The number of ear-bearing tillers was counted at physiological maturity on a plant basis. **Vita et al. (2007)**

RESULT AND DISCUSSION

S.No.	Varieties	Germination %	Protein Conc.	Gluten content	Phenol color	1000 grain wt.	Plant Height	Damaged Kernel	Tiller per plant	Foreign Material
1.	Lokwan C	87%	0.34(10%)	7.07g	5	42.6g	**19**	**2**	6	**10**
2.	Lokwan B	90%	0.39 (11%)	3.91g	5	47.7g	**20.5**	**3**	4	**15**
3.	MP Sehore B	88%	0.39 (11.5%)	9.32g	10	44.4g	**21**	**10**	3	**40**
4.	MP Sehore A	92%	0.21(7%)	9.96g	0	40g	**18**	**0**	4	**0**
5.	Sharbati	91%	0.31(9%)	11.91g	2	40.4g	**15**	**5**	4	**5**
6.	Gujarat Sehore	77%	0.30(9%)	5.13g	3	43.2g	**16.5**	**5**	6	**5**
7.	Khandwa	98%	0.20(7%)	9.25g	10	50.7g	**20**	**8**	7	**45**
8.	MP Sure	70%	0.36(10%)	8.59g	7	46.3g	**24**	**4**	6	**25**





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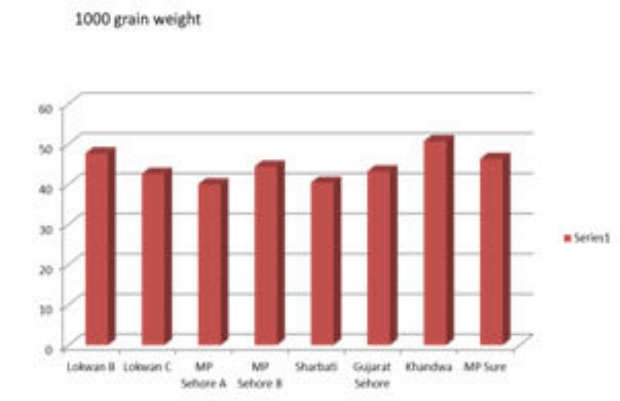
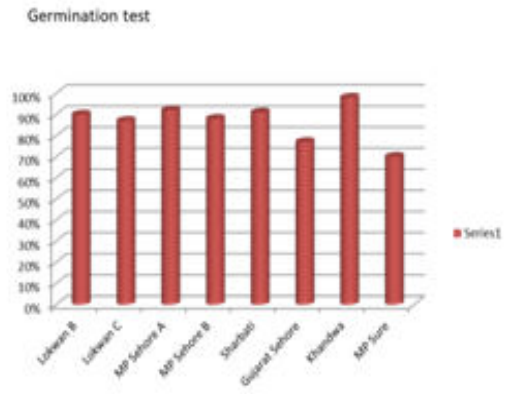
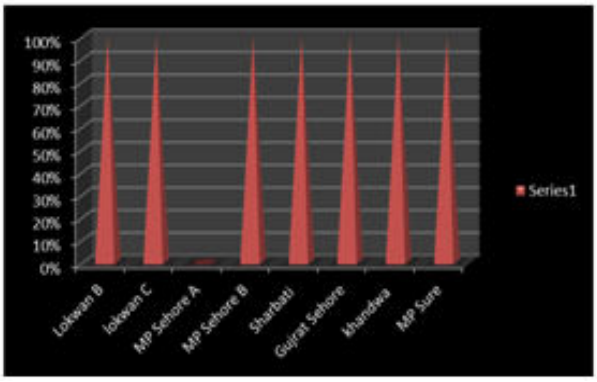
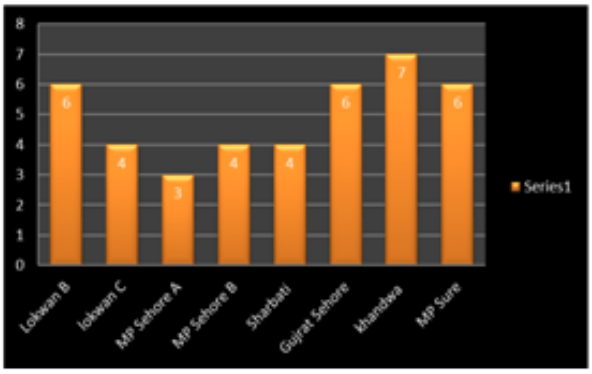




Percentage of Foreign materials

No. of tillers per plant





CONCLUSION

The varieties sold in the market are not pure and contaminated with foreign materials and different varieties. The highest amount of Protein content is present in MP Sehore B. Gluten content is highest in the Sarbati Variety of the wheat. Variety should be used according to the ratio of different components present in these wheat varieties.

APPLICATION AND SCOPE

When the number of genes to be assembled is known, the gene pyramiding we aim to select different varieties that are fully homozygous for the desirable alleles of the target genes using the minimum number of generations of selection and the lowest genotyping and phenotyping costs to produce a variety having all the genes having high qualitative characters. With MAS-based gene pyramiding, it is now possible for the breeder to conduct many rounds of selections in a year. Gene pyramiding with marker technology can integrate into existing plant breeding programs to allow researchers to access, transfer and combine genes at a rate and with a precision not previously possible.

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UV SPECTROSCOPIC METHOD FOR DETERMINATION OF VITAMIN C (ASCORBIC ACID) CONTENT IN DIFFERENT FRUITS

Mr. Chirag Vidhate*, Dr. Kumudini Aher, Dr. Sulochana Bhalekar and Ms. Ankita Dubey

ABSTRACT

In the present study, determination of ascorbic acid content is determined in different fruits by using UV spectroscopy. In this method bromine water is added which oxidizes the ascorbic acid into dehydroascorbic acid. 2,4 dinitrophenyl hydrazine gives coupling reaction at 37°C temperature for 3 hours. After 3 hours solution is treated with 85% H_2SO_4 which gives coloured complex and the absorbance was measured at 491nm. The content of vitamin C was found maximum in Guava and minimum in Grapes.

Keywords: UV spectrophotometer; Ascorbic acid; Fruits

INTRODUCTION

Vitamins are organic compound (non-energy producing), which are essential for normal human metabolism that must be supplied in small quantities in the diet. The definition excludes the inorganic essential trace minerals and essential amino acids and fatty acids which are required in much larger quantities. Other substances needed for proper growth of microorganism or cells in culture are called growth factors. The different chemical forms and precursors of vitamin can be called its vitamers. The vitamins as a drug is necessary in the prevention and treatment of deficiency disease. Some vitamins do have major uses in pharmacological uses in pharmacological doses. Vitamin deficiency occur due to inadequate intake, malabsorption, increased tissue needs, increased excretion, certain genetic abnormalities and drug vitamin interaction. Vitamin C is a major water-soluble antioxidant. Generally, vitamin C is 6 carbon organic acid with structural similarity to glucose. It acts as a potent reducing agent and its l form is generally more active. Citrus fruits are rich sources of vitamin C. According to recent research human milk contains more amount of vitamin C than the cow's milk. It is mostly absorbed from g.i.t and widely distributed extra and intra muscularly. Plasma concentration and total body store of vitamin c depends upon daily intake of ascorbic acid content food. The usual 60mg/ day intake results in about 0.8mg/dl in plasma and 1.5g in the body as a whole. Increasing proportion are excreted in urine with higher intake. Body is not able to store more than 2.5g. It is partly oxidised to active (dehydroascorbic acid) and inactive (oxalic acid) metabolites. The therapeutic uses of ascorbic acid include prevention of ascorbic acid deficiency in patient at a risk and in infants, treatment of scurvy, in anaemia, to acidify the urine in urinary tract infection. They lower blood pressure and cholesterol level in the body. Also reduces the cold and has beneficial effect in the bacterial infection. Adequate amount of vitamin c intake may also prevent developing cancer of breast, cervix, colon etc.

We get vitamin C from the food particularly fruit and vegetables. Our bodies need vitamin C to make a substance collagen which is important for the health and repair of our skin, bones, teeth and cartilage. Vitamin C was first isolated in 1928. In 1932 it was proved to be the agent, which prevents scurvy. Scurvy is a diseased condition which occurs due to deficiency of vitamin C in the body. The common sources of vitamin C are citrus fruits and some other foods like tomatoes, broccoli, cauliflower, spinach, ladyfinger etc. The development of rapid, simple, and inexpensive analytical methods is one of areas of growing interest, especially since quick decisions are needed in environmental, medical, and industrial fields. Many analytical methods were used for ascorbic acid determination, including Titrimetric, spectrophotometry and Chromatography, titrimetric, voltammetry, fluorometry, potentiometry as an analytical technique. Similarly, liquid chromatography capillary electrophoresis and gas chromatography were also used for the determination of ascorbic acid from different species of citrus fruits. UV Spectrophotometry is mostly used to determine ascorbic acid because it is simple method, and Vitamin C is able to absorb UV rays. The method is suitable for use with vitamin C tablets, fresh or packaged fruit juices and solid fruits and vegetables.

2,4 DNPH method of determining ascorbic acid content involves coupling reaction. This method is used in determining ascorbic acid content in different fruits and vegetables. 2,4 DNPH act as a dye in this method. In this method the total amount of vitamin C (Ascorbic acid + Dehydroascorbic acid) is determined in fruits by using UV spectrophotometer. Here bromine water is used which oxidizes the ascorbic acid into dehydroascorbic acid in the presence of acetic acid. Then known amount of 2,4 DNPH is added which gives coupling reaction. Solutions are kept for 3 hours. After 3 hours 85% H_2SO_4 is added which gives coloured solution. These solutions are then measured for determining ascorbic acid content by using UV spectrophotometer.

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MATERIALS AND METHODS

MATERIALS
5% Metaphosphoric acid-10% acetic acid, 10% Thiourea solution, 2,4-Dinitrophenylhydrazine solution, 85% Sulphuric acid

INSTRUMENTS
i. UV- Visible spectrophotometer (Double beam) having matched quartz cells of light path 1cm.

ii. Model: Shimadzu 1800

iii. Software: UV probe Version of software: 2.42

iv. Electronic analytical weighing balance (REPTECH)

v. Volumetric flask (Borosilicate),

vi. Pipettes,

vii. Conical flask.

SAMPLES
Grapes, mango, guava, watermelon, lemon (sweet lemon)

EXPERIMENTAL

Standard Ascorbic Acid Solution

Standard ascorbic acid solution was prepared by dissolving 50mg of AA in 100ml of distilled water. (500µg/ml)

Preparation of Calibration Curve
Calibration curve of different concentration i.e. 5, 10, 15, 20, 25µg/ml was prepared by proper dilution method.

Sample Extract Preparation
Sample extract is prepared by blending 10g of sample in the blender. Then sample was mixed with 50ml of 5% metaphosphoric acid acetic acid solution and transferred to the 250ml conical flask. Remaining amount of 50ml of phosphoric acid solution was added into the flask. Then the solution was filtered using Whatman filter paper and the filtrate was collected for determination of vitamin C.

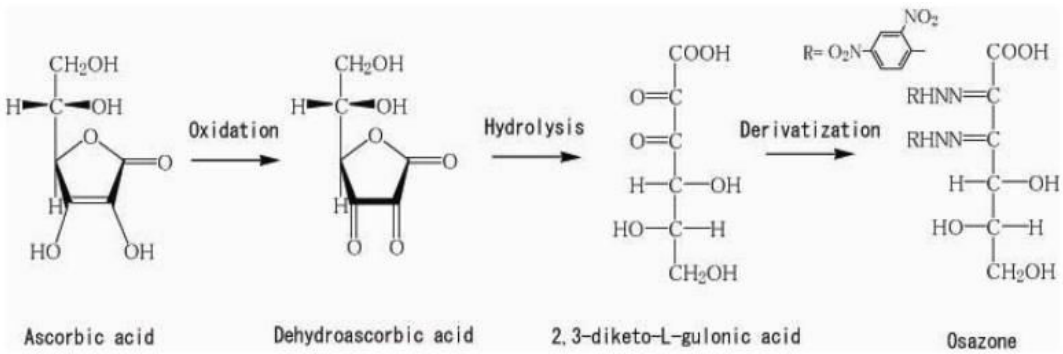
Procedure for Estimation of Vitamin C
To the filtered sample solution few drop of bromine solution was added and mixed. Then few drops of thiourea solution was added into the sample solution to remove access of the bromine solution.

Then 1ml of 2,4 DNPH solution was added to the sample solution and to all the standard calibration curve (5,10,15,20,25µg/ml). Coupling reaction occurs due to 2,4 DNPH solution. To complete the reaction all the standards and sample solution were kept at 37°C for 3 hours.

After 3 hours solutions were cooled on ice bath and 5ml of H_2SO_4 was added. As a result, coloured solutions were obtained whose absorbance was measured at specific wavelength.

REACTION
i. Ascorbic acid is oxidized to dehydroascorbic acid by the action of bromine solution.

ii. L-dehydroascorbic acid reacts with 2,4 dinitrophenylhydrazine and produces an osazone which on treatment with H_2SO_4 forms red coloured solution.



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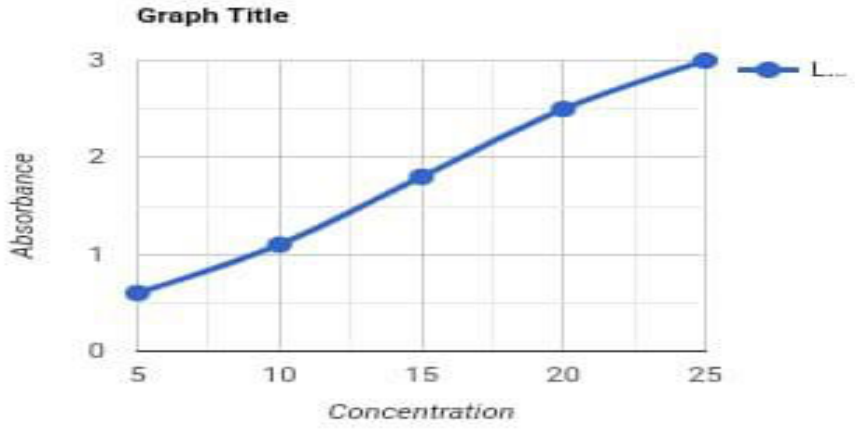


RESULT AND DISCUSSION

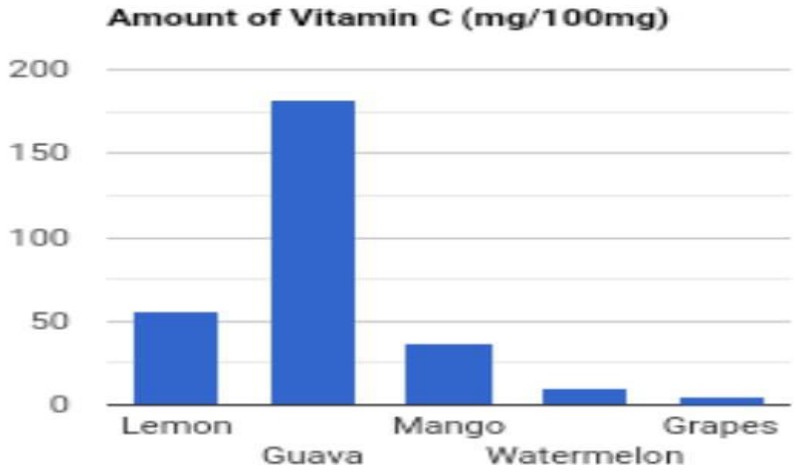
Calibration Curve

After determination of λ_{max} of coloured solution the absorbance of all the standards were taken to construct the calibration curve. The calibration curve was constructed by plotting absorbance versus concentration.

Determination of Vitamin C Using UV Spectrophotometer

In this work for determination of vitamin C in fruits, fruits were fresh and collected from local market. Guava shows maximum amount of vitamin C and grapes shows minimum amount of vitamin C.

Sr. No.	Sample	Biological Name	Amount of Vitamin C (mg/100gm)
1	Grapes	Vitis vinifera	5.58
2	Lemon	Citrus limetta	56.4
3	Mango	Magnifera indica	36.41
4	Guava	Psidium gujava	181.79
5	Watermelon	Citrullus lanatas	9.79



CONCLUSION

Spectrophotometric method for determination of vitamin C is simple and reliable method. The fruits which are taken from the local market are good source of vitamin C. This method (2,4 DNPH) is simple and reliable and provide excellent result for determination of vitamin C. Guava shows maximum amount of vitamin C and grapes shows minimum amount of vitamin C among these samples taken.

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EXTRACTION OF NICOTINE SULPHATE FROM DIFFERENT SAMPLES OF CIGARETTES, BIDI AND ITS COMPARATIVE ANALYSIS

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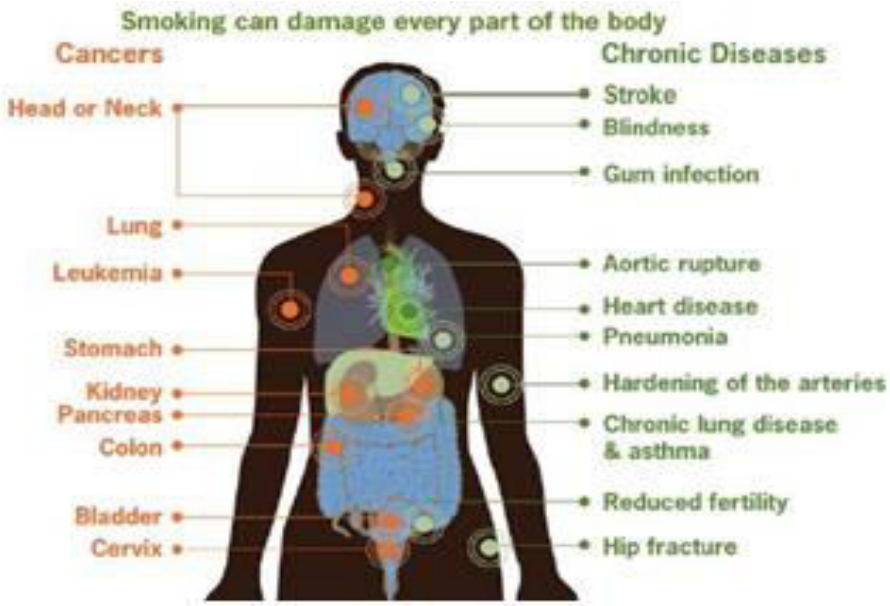
ABSTRACT
Nicotine is an alkaloid obtained from the Tobacco plant which belongs to family Solanaceae. The biosynthesis of nicotine takes place in the roots and accumulation occurs in the leaves. It constitutes approximately 0.6–3.0% of the dry weight of tobacco and is present in the range of 2–7 μg/kg of various edible plants. It functions as an antiherbivore chemical; therefore, nicotine was widely used as an insecticide in the past and nicotine analogues such as imidacloprid are currently widely used. In low doses (an average cigarette yields about 1 mg of absorbed nicotine), the substance acts as a stimulant in mammals, while high amounts (30–60 mg) can be fatal. Nicotine consumption leads to addiction and causes cancer especially mouth cancer. According to the American Heart Association, nicotine addiction is the hardest addictions to break, while the pharmacological and behavioral characteristics determine that tobacco addiction are similar to that of heroin and cocaine addiction. Since smoking cigarette is fatal to the human beings, hence we intended to find the amount of nicotine in different samples. Our result showed highest concentration of nicotine (0.170 gm) in Shivaji Bidi and lowest (0.029 gm) in Classic Ice Burst cigarette.

Keywords: Nicotine, tobacco, insecticide, addiction, mouth cancer, smoking

1. INTORDUCTION
Nicotine is an alkaloid obtained from the Tobacco plant which belongs to family Solanaceae. German Chemists, namely Posselt and Reimann for the first time isolated nicotine from tobacco plant in 1828. In tomato, eggplant and in green pepper it is found less quantity. It also found in coca leave plant. It constitutes approximately 0.6–3.0% of the dry weight of tobacco and is present in the range of 2–7 μg/kg of various edible plants. The biosynthesis of nicotine takes place in the roots and accumulation occurs in the leaves. It is powerful neurotoxin and also used as insecticide. The dependence-forming properties of tobacco smoking are attributed to stimulant properties of the nicotine.

Psychological stimulus is caused to the smokers by nicotine present in cigarettes when smoked by smokers and makes them addictive. It also increases blood pressure and heart rate since it has pharmacological properties (Wolf, 1994).



Risks from Smoking Nicotine forms a nitrogenous base and forms salts when treated with acids which is usually in solid form as well as water soluble. It is easily absorbed by skin.

MATERIAL AND METHOD
Cigarettes of various brands like Classic Ice Burst, Malboro Clove Mix, Malboro Filter Black, Gold Flake White, Gold Flake and Shivaji Bidi brand has been purchased from the market.

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Brand of Cigarette and Tobacco was removed and 0.5 was weighed and used for extraction of nicotine. The chemicals used for extraction are Calcium Hydroxide, Concentrated Sulfuric Acid and Kerosene.

Each sample was dissolved in 15 ml of 10% Calcium Hydroxide and filtered. Then filtrate was added to a separating funnel and two test tube of kerosene was added in order to separate nicotine. The apparatus was kept undisturbed for 24 hours to separate two layers. The lower layer was separated and subjected to crystallization with the help of evaporation. The crystals were scraped out from china dish and weighed.

Separation of Nicotine

Crystals of Nicotine

2. RESULT AND DISCUSSION

Cigarettes of various brands like Classic Ice Burst, Malboro Clove Mix, Malboro Filter Black, Gold Flake White, Gold Flake and Shivaji Bidi brand have shown variations in the content of nicotine.

Table 1: Amount of Nicotine in each brand of Cigarette and Bidi

Sr. No.	Brand of Cigarette or Bidi	Amount of Nicotine Sulphate (gm/0.5gm)
1.	Classic Ice Burst	0.029
2.	Malboro Filter Black	0.050
3.	Gold Flake White	0.057
4.	Malboro Clove Mix	0.067
5.	Gold Flake	0.071
6.	Shivaji Bidi	0.170

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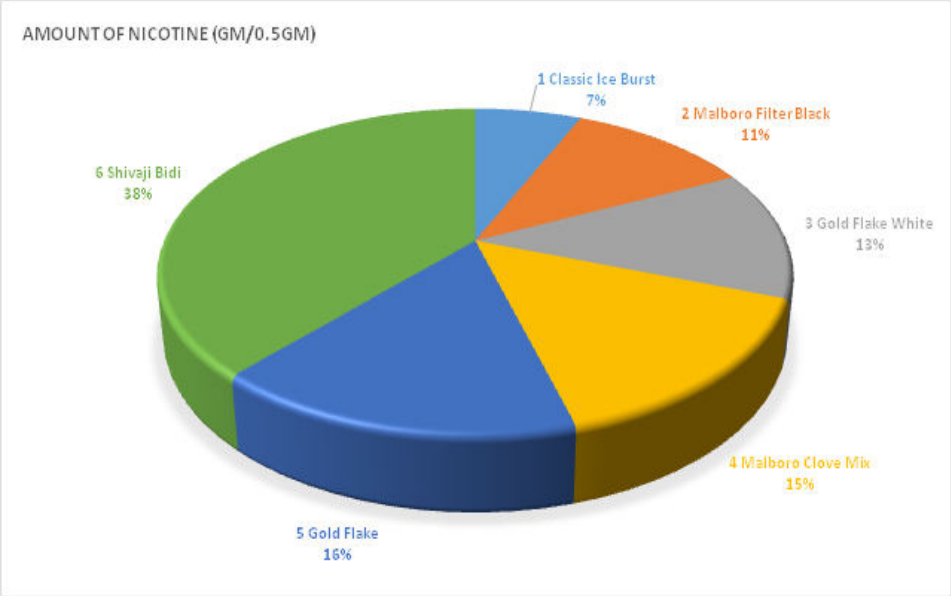

Figure 1: Pie diagram showing %age of Nicotine Sulphate in Different brands of Cigarette and Bidi

From figure 1 it is evident that highest amount of nicotine is present in Shivaji Bidi and lowest is present in Classic Ice Burst. Since the Shivaji Bidi has highest content of nicotine one should avoid smoking Shivaji Bidi as it may cause mouth and lung cancer to the individual.

3. ACKNOWLEDGEMENT
We are thankful to Chemistry Department for providing us help in performing the experiment.

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EDGE COMPUTING

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ABSTRACT
As Internet of Everything (IoE) is growing rapidly in academic and industrial circles both, the number of smart devices linked to the Internet is growing, causing accumulation of large-scale data, which has resulted in many problems such as poor security, bandwidth loading, poor privacy and slow response speed in traditional cloud computing models. It helps as a key enabler for many future technologies like 5G, Internet of Things (IoT), augmented reality and vehicle-to-vehicle communications by joining cloud computing amenities to the end users. It delivers little latency, movement, and locality awareness support to delay-sensitive applications. Traditional cloud computing is not capable enough to provide the varied needs of current smart society for data processing, so edge computing technologies have emerged. It is aa another computing model for execution of various tasks like calculations at the edge of the network. Unlike cloud computing, it focuses nearer to both user and source of the data. At the edge of the network, it is lightweight for local, small-scale data storage and processing. Here more focus is given on the related researches and consequences of edge computing. First, it analyses the perception of edge computing and compares it with cloud computing. Then analyses the design of edge computing, keyword technology, security and privacy protection, and lastly review the applications of edge computing.

INTRODUCTION
With the growth of intellectual civilization and the constant development of people's desires, intellect has involved various industries and people's day-to-day lives in culture. Based on the incessant and enormous development of data volume and various data processing requirements, cloud-based big data processing has shown many shortcomings:

Real-time: If a huge number of edge devices are connected then a tremendous quantity of terminal information is still transferred to the cloud for processing, the in-between data transmission volume will be significantly enlarged, the data transmission presentation will be decreased, resulting in pressure on network bandwidth for transmission which would further delay in transmission. In some application setups that require real-time feedback, such as traffic, monitoring, etc., cloud computing will not be able to meet business real-time requirements.

Security and privacy: For example, while using various applications in digital devices like smartphones, applications will be using our data, including private data such as passwords and other sensitive credentials. When it’s being uploaded on cloud, there is a high risk of privacy leakage or attack on this data.

EDGE COMPUTING
Edge computing creates a new beginning in the computing landscape. It brings the facility and efficacies of cloud computing closer to the end user like us and is described by fast processing and quick application response time. The presently developed internet based applications such as surveillance, virtual reality, and real-time traffic monitoring need fast processing and quick response time. End users usually run these applications on handheld mobile devices while the primary service and processing are performed on servers which are located remotely on cloud.

The downlink data of edge computing characterizes cloud service, the uplink data denotes the Internet of Everything, and the edge of edge computing mentions to the arbitrary computing and network resources between the data source and the route of cloud computing center. Edge computing is to migrate the cloud's network, computing, storage capabilities and resources to the edge of the network, and provide smart facilities at the edge to meet the serious needs of the IT industry in agile linking, real-time business, data optimization, application intelligence, security and privacy, and meets the requirements of low latency and high bandwidth on the network.

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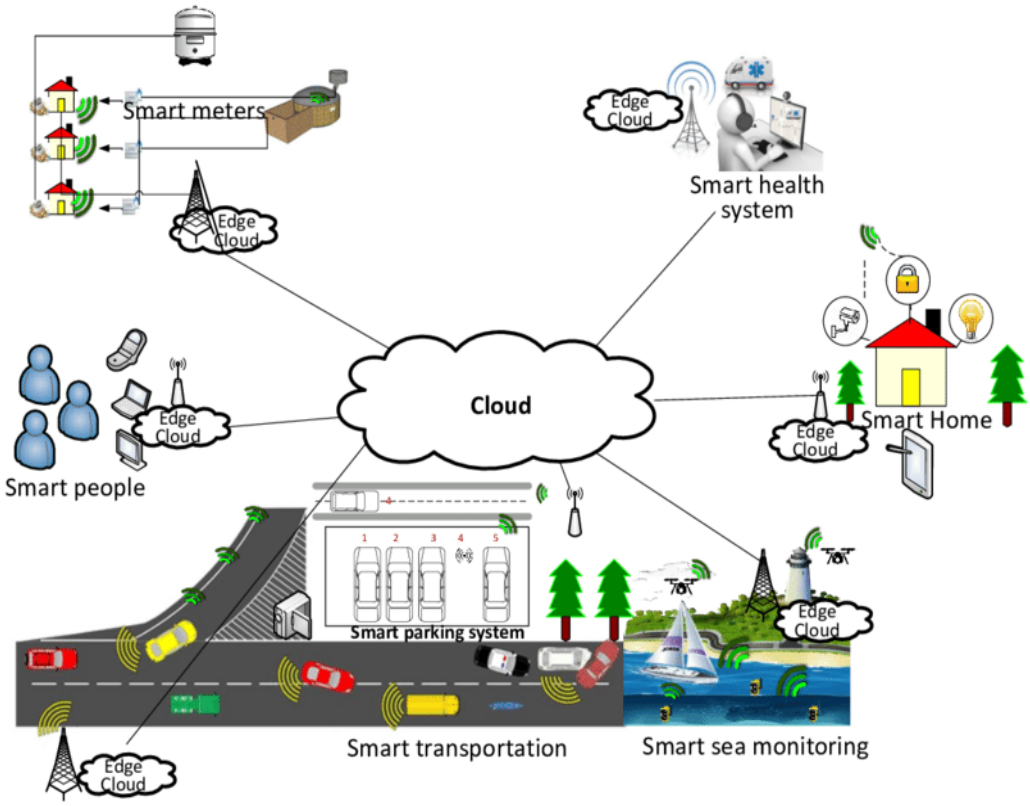

CLOUD COMPUTING AND EDGE COMPUTING

Earlier traditional cloud computing used to transmit all data to the cloud computing centre through the network, and used to resolve the computing and storage difficulties in a centralized way. Cloud computing has progressively advanced and it has been a very dominant network service platform including parallel computing, network storage, distributed computing, virtualization, load balancing and other technologies. But as seen nowadays with the commercialization and development of the Internet of Things in people's everyday life, the number of devices linked to the Internet of Things is regularly growing, and a huge volume of data is produced. The network bandwidth of cloud computing is falling short of meeting the requirements of time-sensitive systems and real-time performance. Hence, cloud computing model has great defects in load, real-time, transmission bandwidth, energy consumption and data security and privacy protection.

CONNECTION AND DIFFERENCE BETWEEN CLOUD COMPUTING AND EDGE COMPUTING

The rise of edge computing will not substitute cloud computing. In the context of application, intelligence, network and business, the two should go together hand in hand, counterpart each other and grow in a synchronized way, which will assist the digital revolution of the industry to a larger extent. Therefore, cloud computing is still considered an important player in the development of Internet of Things devices that are gradually smart.

If all the huge quantity of data created by the connected devices using Internet of Things are transferred to the cloud, cloud computing will be bearing a large load. At this time of scenario, edge computing is needed to share the burden of the cloud and take responsibility of tasks within its scope of the edge. Whenever there is a difficulty in edge computing, the data in the cloud is always safe and it's not lost. In some of an Internet services, certain data needs to be return back to the cloud for processing after being treated by edge computing, such as in-depth examination of data mining and sharing, which needs the cooperation of cloud computing and edge computing. Both developments bring constancy to connected devices in the Internet of Things network. The working method of the two can be little bit different in a way that cloud computing is based on big data analysis and output which is then passed to the edge side, and then processed and executed by edge computing. Nowadays, the combined development of the two has been applied in many aspects of real life. For example, in the industrial production of intelligent manufacturing, the process of the cloud is to handle the whole. In the edge nodes, it is essential to have the function of real-time detection and solve the problems in time. Edge computing takes benefit of the real-time features, and in association with cloud computing and synergy,

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develops production efficiency and also can identify irregularities of equipment in a timely manner. In order to meet the needs of Internet of Things devices, cloud computing and edge computing play their respective roles and have many advantages, and only the combined progress of the both will nonstop promote the growth of the Internet.

Edge computing is basically an extension of cloud computing, which has its own features with cloud computing. The main feature of cloud computing is that it can hold the whole system, can process a great quantity of data, perform in-depth analysis, and also plays an significant role in non-real-time data processing, such as business decision-making and other fields. Edge computing emphases on the local, and can play an improved role in small-scale, real-time intelligent analysis. In terms of network resources, edge computing is responsible for data closer to the information source. Therefore, data can be deposited and dealt with locally without uploading all the data unnecessarily to the cloud. The decrease in network load importantly improves the utilization efficacy of network bandwidth.

Main differences between cloud computing and edge computing has been tabularized below:

	Applicable Situation	Network Bandwidth Pressure	Real Time	Calculation Mode
Cloud Computing	Global	More	High	Large Scale Centralized Processing
Edge Computing	Local	Less	Low	Small Scale Intelligent Analysis

ADVANTAGES OF EDGE COMPUTING

Edge computing model stocks and processes all the data on edge devices without uploading on any of the cloud computing platform.

As a Result of This Characteristic, Edge Computing has Clear Advantages in the Following Aspects:

Fast Data Processing and Analysis, Real-Time:

The quick development of data capacity and the burden of network bandwidth are disadvantages of cloud computing. As compared with traditional cloud computing, edge computing has advantages in response speed and real-time. As compared to Cloud Computing, Edge computing is closer to the data source, data storage. As a result of this, calculating tasks can be processed in the edge computing node, which decreases the in-between data transmission process. It stresses proximity to users and provides users with improved smart facilities, thus improving data transmission performance, ensuring real-time processing and dipping delay time. Edge computing offers users with a diversity of fast response services, especially in the field of automatic driving intelligent manufacturing, video monitoring and other location awareness, rapid feedback is especially important.

Security:

Old-style cloud computing needs all data to be sent to the cloud for combined processing, which is a centralized processing method. In this process, there will be dangers such as data loss and data leakage, which can't assure security and privacy. For example, account passwords such as banks or mail, past search records and even confidential data of trading can be seen by hackers. Since edge computing is only responsible for the tasks within its own scope, the processing of data is based on the local and it need not be uploaded to the cloud, to avoid the risks brought by the network transmission process, so the data can be safeguarded for sure. When data is attacked, it only affects local data, not all data.

Low Cost, Low Energy Consumption, Low Bandwidth Cost:

As compared to Cloud Computing, the data which is to be processed need not need to be uploaded to the cloud computing center, and it does not consume much of network bandwidth, so the load of network bandwidth is less, and the energy consumption of intelligent devices at the edge of the network is greatly reduced. Edge computing is usually ``small-scale," and in production, companies can decrease the cost of processing data in local equipment. Therefore, with the help of edge computing, the quantity of data transferred on the network can be decreased. Also it decreases the transmission cost and network bandwidth pressure and the energy consumption of local equipment is less improving the computing efficacy.

ARCHITECTURE OF EDGE COMPUTING

With the advancement of 5G technology and Internet of Everything era, edge computing is one of the main technologies in the next generation of communication network following the Internet of Things and artificial intelligence. The reference planning for edge computing is the effort of many organizations.

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GENERAL ARCHITECTURE OF EDGE COMPUTING

Edge computing architecture is a joined network structure with cloud services to the edge of the network by introducing edge devices between terminal devices and cloud computing. The assembly of cloud-edge association is usually divided into three layers namely as terminal layer, edge layer and cloud computing layer. The following is a brief outline to the configuration and tasks of each layer in the edge computing architecture.

1) Terminal Layer

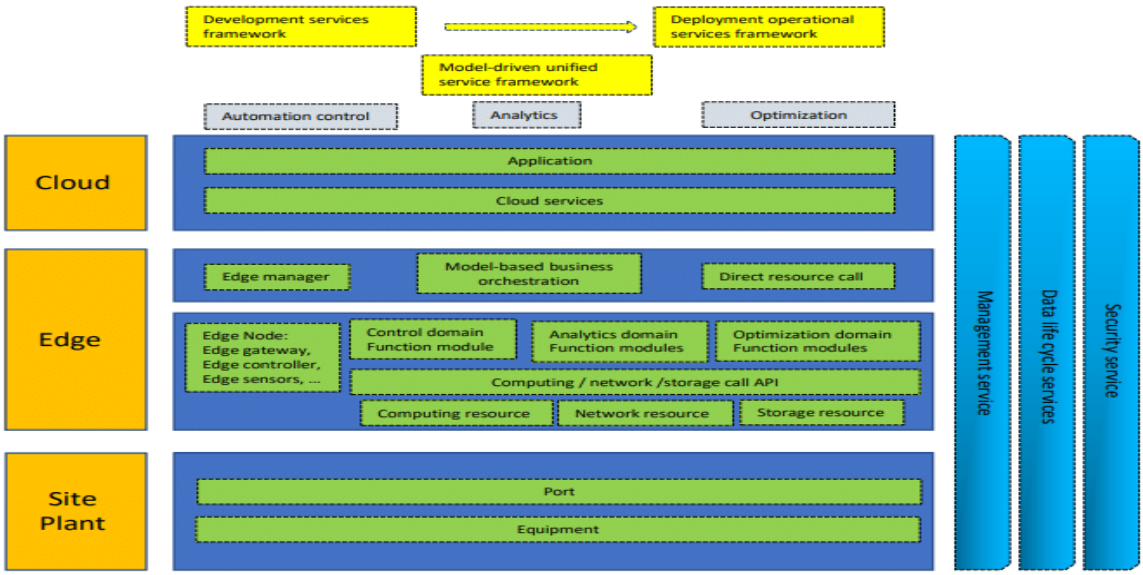
The terminal layer comprises of all sorts of devices linked to the edge network, including mobile terminals and many Internet of Things devices (such as sensors, smartphones, smart cars, cameras, etc.). In the terminal layer, the device along being a data consumer it is also considered as a data provider. In order to decrease the terminal service suspension, only the opinion of the various terminal devices is measured, not the computing power. Thus, hundreds of millions of devices in the terminal layer gather all kinds of raw data and upload it to the upper layer for storage and calculation.

2) Boundary Layer

The edge layer is the main layer of the three-tier architecture. It is situated at the edge of the network and comprises of edge nodes widely distributed between terminal devices and clouds. It typically contains base stations, access points, routers, switches, gateways, etc. The edge layer supports the access of terminal devices downhill, and stores and calculates the data uploaded by terminal devices. Link with the cloud and then the processed data need to be uploaded on the cloud. Since the edge layer is near to the user, the data transmission to the edge layer is more suitable for real-time data analysis and intelligent processing, which is more efficient and secure than cloud computing.

3) Cloud Layer

Amongst the associated services of cloud-edge computing, cloud computing is yet the most influential data processing center. The cloud computing layer contains of a number of high-performance servers and storage devices, with powerful computing and storage capabilities, and can be effective in areas needing huge quantities of data analysis such as regular maintenance and business decision support. The cloud computing center always stores the reported data of the edge computing layer, and it can also finish the analysis tasks that the edge computing layer won't be able to handle and the processing tasks that incorporate the global information. In addition, the cloud module can also dynamically fine-tune the deployment strategy and algorithm of the edge computing layer according to the control policy.



Edge Computing Reference Architecture

APPLICATIONS OF EDGE COMPUTING

1. Autonomous Vehicles

Edge technologies can benefit autonomous vehicles to converse regularly by transfering data on accidents, weather conditions, traffic, etc.

2. Oil and Gas Industry

Real-time distant checking plays a essential role in the oil and gas industries. Advanced machinery driven by IoT sensors is installed at remote sites to protect perilous machinery and systems against disaster.

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3. Cloud Gaming
Cloud gaming is the fresh type of gaming where games are live streamed directly to devices. Cloud gaming companies make use of edge computing technologies to create edge servers on the brink of gamers so that latency is reduced to a greater extent and deliver responsive and immersive gaming experience.

4. Healthcare
In healthcare, edge computing targets to hustle up connectivity between different machines and also between machine and human interaction. By scattering jobs at branch data centre sites, this processing process can help in bringing medical software and facilities to distant rural parts.

5. Traffic Management
With the help of Edge Computing, real-time data is improved to a great extent by boosting traffic management systems. Smart transportation networks, especially for traffic management procedures make widespread use of edge computing technologies.

CHALLENGES FOR NETWORK

1. Network Bandwidth
Network bandwidth moves as enterprises move calculate and data to the edge. Conventionally, enterprises allot upper bandwidth to data centers and lower bandwidth to the endpoints. Edge computing is driving the necessity for more bandwidth through the network.

2. Latency
By finding compute at the edge -- where calculate is closer to the data that is collected, application latency is brought down along with administrative latency. Fewer back-and-forth movements from the edge to the center mean quicker answers and quicker action.

3. Security and Accessibility
With calculate and applications integrated in a data center, enterprises can regulate both technical safety and physical security, building a virtual wall around the resources.

Edge computing alterations the security footmark, needing remote servers to require the similar network and physical security prototypes to replicate site and traffic designs. IT teams will need to visibly map out user access, as edge computing might need access rights for users over a considerably greater quantity of devices.

4. Backup
The edge computing model is usually determined by the position of data formation. Enterprises want a complete data protection approach that can understand data, irrespective of location. Network bandwidth necessities will be just as precarious as storage media considerations while determining how to safeguard these resources because backup over the network might be illogical.

5. Scale
Addition of extra linked devices at the edge upsurges the overall scale for everything IT teams work with. Edge computing isn't simply about more servers at the edge, but an increase in scale across all IT disciplines: compute, network, storage, management, security, licensing, etc. Enterprises need to understand this as they exchange applications out to the network edge. Edge computing isn't only about more hardware in a distant location; its effect scales across everything IT touches.

CONCLUSIONS
Here Edge Computing model is analytically presented from the view point of basic concepts, architecture, key technologies, security and privacy protection. Edge computing offers data storage and computing at the edge of the network, and delivers Internet intelligent services nearby, providing backing for the digital transformation of several industries, and gathering the necessities of diverse industries for data variation. With the nonstop progress of the Internet and human society, edge computing will play a more vital part and successfully encourage the progress of several industries in future. It also helps in Content Delivery Network (CDN), industrial Internet, energy, smart home, smart transportation, games and other fields.

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THE IMPACT OF EYE WRITER ON ALS PATIENTS

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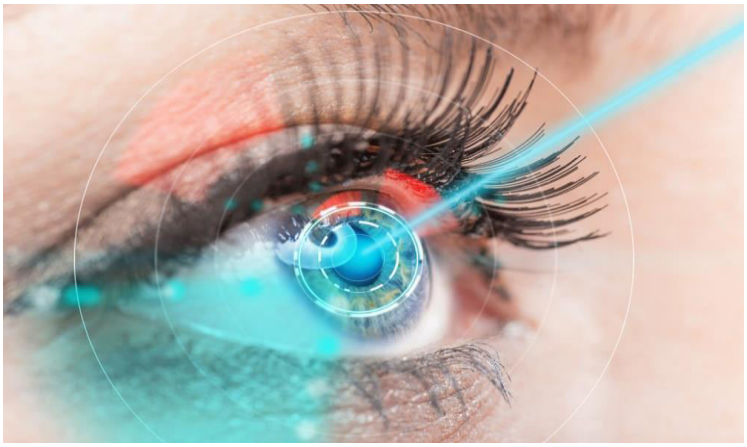
ABSTRACT

Amyotrophic Lateral Sclerosis (ALS) disease, also known as motor neuron disease is a progressive degenerative disease. It destroys nerve cells that control voluntary muscle movement and hence it leads to weakness of muscle. Hence, voluntary control and movement of arms, legs, chest throat and mouth is affected poorly. As the person is not able to perform voluntary actions well hence the proposed paper is an attempt to help out such patient i.e. ALS patient to write or design words that they want to express through their eyes on monitor screen without involving their arms or legs.

The eye-writer system is cheap and easy to use. It scans the eye movement and converts into the language for better communication. If we use this technique in medical industry for paralyze patient it will help them to maintain they independence and quality of life. It's a budget friendly life changing device which will empower ALS people to take stand, foster open-minded thinking and generate new opportunities.

Keyword: ALS Patient, health information technology, eye-tracking technology, usability evaluation.

I. INTRODUCTION



The suggested article addresses the issues that ALS patients confront by allowing them to draw or write letters using their eyeballs. It's a game-changing design that promises to assist people with disabilities regain their communication abilities. It assists artists and writers who have lost their ability to express their creativity in meeting their needs and desires. The goal of the proposed work is to build and improve Eye-writer hardware that is controlled by our software "Eye Gaze" using eye movement. It's because the eye is the only area of the body that isn't paralyzed in ALS sufferers. Eye-tracking technology has been used to study human cognitive processes and has the potential to make health information technology more usable. For ALS sufferers, the hardware is utilized to create letters or words on a monitor screen.

For ALS sufferers, an eye-writer is a piece of technology that allows them to write letters or words on a monitor screen. It allows persons with any type of neuromuscular syndrome to write and draw by tracking their eye movement and translating it to lines on a screen using low-cost eye-tracking glasses and open-source software. From an incoming camera or video image, the eye-tracking software recognizes and monitors the position of a pupil. The Eye Writer tracking software is compatible with the eye-writing software. It scans the attention motion and converts into the language for higher verbal exchange.

The "Eye-Gaze" tool use eye motion to "activate" a letter, word, or word on reveal display screen that could then be spoken with the aid of using the pc for verbal exchange purpose. To use those gadgets the individual dwelling with ALS desires with the intention to use the muscle which could manage upper, decrease and lateral eye motion. The richness of eye-tracker information shows diverse useful programs in fitness care occupational studies and fine improvement.

The goal of this take a look at is to assess researches which have used eye-tracker generation, and to ascertain the ability use of eye-monitoring generation in destiny research. It's a boon to the disabled those who are affected by ALS and different degenerative neuromuscular disease.

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II. LITERATURE OF REVIEW

1] The writer Andrea Calvo , Adriano Chió, Emiliano Castellina, Fulvio Corno has carried out paper "Eye Tracking Impact on Quality-of-Life of ALS Patients" the paper reviews and describes the effects of an ongoing experimentation approximately Eye Tracking effect at the best of lifestyles of amyotrophic lateral sclerosis patients. It additionally objectives the experimentation to assess if and whilst eye monitoring technology have a fantastic effect on patient's lives.

2] The writer Eyal M Reingold has proposed paper Eye monitoring Research and Technology: Towards Objective Measurement of Data Quality. The tool in proposed paper is designed for you to offer the attention tracker with movement collection that carefully resembles organic eye movements.

3] In the paper "Review of fitness data generation usability have a look at methodologies" the authors Yen PY, Bakken S. has recommend to check and categorize fitness IT usability have a look at techniques and to offer sensible steerage on fitness IT usability evaluation.

4] The Authors Buntin MB, Burke MF, Hoaglin MC, Blumenthal D. has proposed paper the blessings of fitness data generation: a evaluate of the current literature indicates predominantly fantastic effects have review the current literature on fitness data generation to decide its impact on outcomes, consisting of best, efficiency, and company satisfaction.

III. EXISTING SYSTEM

There are numerous technical techniques handy for motor neurons sickness for-example ALS paralyzed human beings to have interaction on ordinary basis. A Brain Computer Interface (BCI), at instances known as a Neural Control Interface (NCI) is an instantaneous conversation pathway among greater or stressed out mind and outside tool.

One of the largest demanding situations going through mind-laptop interface researchers these days is the simple mechanics of the interface itself. The simplest and least invasive technique is a fixed of electrodes -- a tool referred to as electroencephalograph (EEG) connected to the scalp. The electrodes can study mind alerts. However, the cranium blocks a number of the electric signal, and it distorts what does get through.

To get a higher-decision signal, scientists can implant electrodes at once into the grey count of the mind itself, or at the floor of the mind, under the cranium. This lets in for tons greater direct reception of electrical alerts and lets in electrode placement with inside the unique place of the mind wherein the precise alerts are generated.

IV. METHODOLOGY

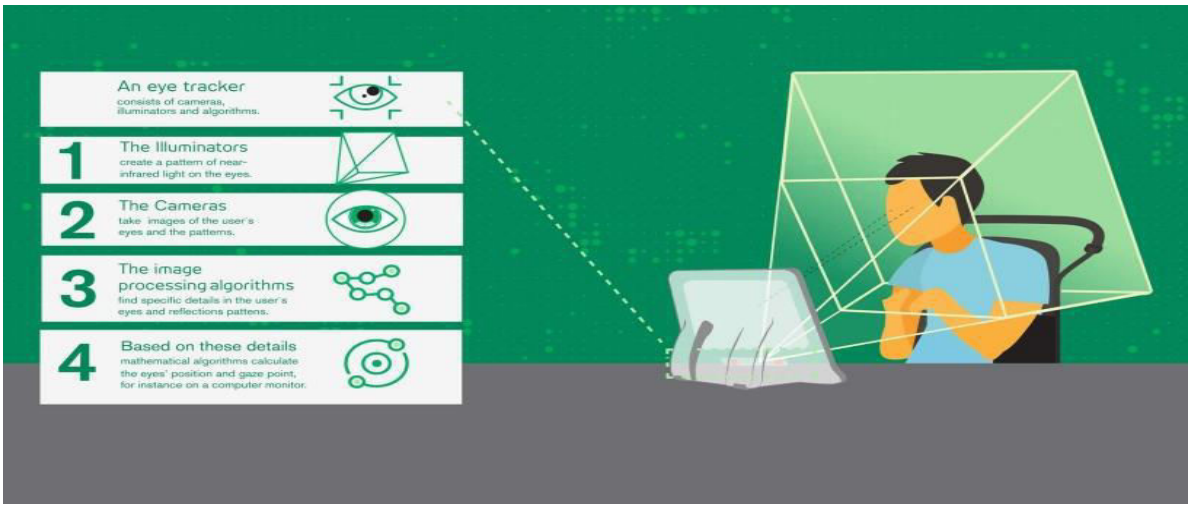

Fig . The Methodology

The purpose of the hardware element of the Eye Writer assignment is to make the most effective and less expensive eye-monitoring head-set viable to apply with the "Eye- Gaze" software program suite. Obviously, there are various approaches to make eye-monitoring hardware. These assignments is a try and cope with an opening with inside the improvement of low-give up eye monitoring systems, i.e. to make a super-cheap, eye-tracker that might be made with the aid of using nearly each person, nearly anywhere.

Eye Tracker is a software program which makes use of eye monitoring method where in an individual's eye actions are measured in order that the researcher is aware of each in which someone is calling at any given time and the collection wherein their eyes are transferring from one vicinity to another.

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The eye-writing software program is designed to paintings with the Eye Writer monitoring software program in addition to industrial eye-trackers together with the My Tobii. It is presently a separate utility from the Eye Tracker. The eye creator software program includes keyboard interface which lets in customers to put in writing with the aid of using simply staring at via their eyes. Eye monitoring is achieved with the aid of using calibrating the software program with the attention position.

It has a characteristic which calibrate in keeping with student length of men, women, or children and it makes the calibration manner extra accurate. The software program that's used right here for eye monitoring is the Gaze Tracker, as it gives quite simple interface, in order that each person can use it without problems with none hassle. It is likewise clean to install. Gaze Tracker is loose eye gaze software for Windows that works with a webcam or any PS Eye Camera.

An Eye Tracker Consists of Camera, Illuminators and Algorithms

1] The Illuminators: It creates a pattern of near infrared light on the eyes.

2] The Camera: It takes images of the users eyes and the patterns.

3] The Image processing algorithms: It finds specific details in the users eyes and reflection patterns. Based on these details the mathematical algorithms calculate the eye position and gaze point for instance on a computer monitor.

V. FUTURE SCOPE

The sufferers with motor neuron disorder additionally called ALS, desires both mental and social rehabilitation. For this reason, communication for them has a vital role.

In destiny the proposed eye monitoring gadget may be a well known function of a brand new technology of laptops, computing device monitors, and Smartphone, putting the degree for a large reassessment of the manner how the gadgets talk with us or we talk with them. It will have more desirable processing gadget with cloud gadget. In Future eye monitoring additives may be utilized in extra enhance manner that can consist of one or extra excessive decision cameras and algorithms for betterment.

For gaming laptops, eye monitoring may be used to reinforce the gaming revel in whilst interacting with others or dimming out different menus the ones are out of attention to declutter the screen. In addition to these, there may be a few different programs of eye monitoring with the aid of using 3-d generation with inside the close to destiny.

VI. CONCLUSION

The Eye creator is largely a device that offers humans with confined mobility the threat to creatively draw while not having to apply their limbs. The customers need to consciousness on a digital camera changed with DIY Hardware (which includes a camera and IR sensors) that tracks the motion of the consumer’s eye. The tool is hooked up to computer loaded with open supply software, the interface of which resembles simplified shape of adobe illustrator or MS paint.

As the consumer appears on the display screen the movement sensor tracks their eyeball movements, the pc then translates this information, and a mouse cursor movement throughout the display screen to offer remarks to the consumer. When the consumer focuses their eye on an alternative button for a positive quantity of time, it's far selected. This function is included, because the consumer can't physically „click‟ a button to specify their choice. These buttons are used to toggle among positive equipment to be had to permit the consumer to create strokes, fill them with color, upload textures, and create drop shadows, to call only some of the features.

The buttons flash as soon as to provide the consumer remarks and conveys to the consumer that their choice has been made. When they have got centered in this role for a positive quantity of time, the cursor turns black and the place to begin has been created. Once the place to begin has been created, the consumer movements the cursor to any other preferred factor, and a line extends from the place to begin following the cursor. When the consumer unearths their preferred 2nd factor, they consciousness at the location at the display screen in which they would really like to create it, and a 2nd factor is plotted. The consumer maintains to make factors till they're equipped to shut the shape, which they gain via way of means of focusing at the authentic place to begin.

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EMERGING TECHNOLOGY IN DIGITAL ERA POST PANDEMIC

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ABSTRACT
The COVID-19 pandemic has led to a downfall in the world economy by giving a hard hit to the all sectors of the country, due to sudden closure of all companies and the work from home which has increased use of technology. This paper reflects the emerging era of digital technology post pandemic. Digital adoption has taken a quantum leap at both the organizational and industry levels. During the epidemic, consumers have moved dramatically toward online channels, and companies and diligence have responded in turn. The check results confirm the rapid-fire shift toward interacting with guests through digital channels. Similar, technologization, frequently seen as neutral, is nearly related to educationalization, i.e. assessing growing societal problems for education to resolve. Thus, this is a critical moment to reflect how the current choices educational institutions are making might affect with Covid-19 education and online literacy Will they support commercial necessary view of education or promote holistic mortal growth?

Keywords: Education, technology, virtual, studies, emerging, digital, etc

INTRODUCTION
The lockdown has redounded in utmost humans taking to the internet and internet- grounded services to communicate, interact, and retain with their activity liabilities from home. Internet offerings have visible rises in operation from 40% to 100%, as compared to pre-lockdown situations. Video-conferencing offerings like Zoom, Google meet etc, have visible a 10 instances boom in operation. Along with those coetaneous modes of tutoring, asynchronous systems like edX and Coursera have additionally visible an boom in enrolments. As using video-and audio-conferencing gear will increase significantly, institutions have ramp up their era shape to treat for the swell. This cause accelerated funding in bandwidth expansion, community outfit, and software program that leverages pall offerings. With employees getting tailored to the concept of work-from- home (WFH), assembly and transacting online, businesses will shift to WFH as a norm in preference to as an exception.

POST-PANDEMIC DIGITIZATION
The coronavirus has made an extensive effect at the schooling & enterprise which has been very dramatic and transformative too via way of means of changing the not unusual place fashion of schooling with "emergency e-learning, do business from home measures". COVID-19 upended many previous assumptions approximately virtual transformation. The surprising shift to evolve and put in force on line strategies has brought about over-work, pressure amongst each stakeholder. The educators were given to re-believe modes of curriculum making plans, improvement of e-content, assessment, and reporting that can are evolved with out right making plans and forethought. corporations and faculties alike started out to search for methods to keep their operations remotely, way to the internet. They became to diverse collaboration structures and video conferencing capacities to stay engaged with their colleagues, clients, and college students at the same time as running from domestic offices.

Even previous to the pandemic, technology had come to be an more and more more essential a part of the workforce. Businesses had been searching at era as a beneficial method of attractive with clients, permitting a few place of business flexibility, and for a manner to introduce automation and quicker processes. However, the unfold of the radical coronavirus and the shutdown of in-person conferences for non-crucial corporations elevated those adoptions immensely. It compelled corporations to look at innovative virtual answers in order that the groups may want to keep to characteristic remotely and keep to serve their purchaser base. This shift closer to virtual operations took each a customer-dealing with and a behind-the-scenes position inside many corporations. The loss of capacity to acquire in corporations required many expert groups and faculties to locate new methods for human beings to communicate, collaborate, and entire paintings or faculty initiatives at the same time as running remotely from one another. At the equal time, clients have expressed their hobby in receiving offerings with little to no touch with human beings, calling for far off or as a minimum touch-constrained operations from a customer-dealing with course as well.

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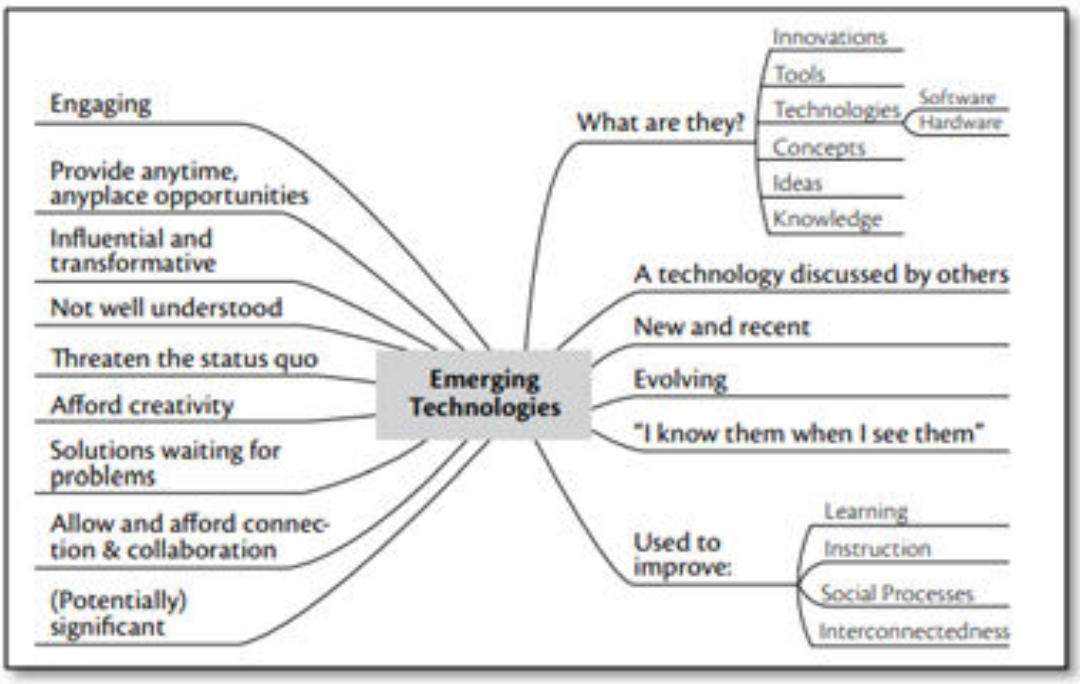
EMERGING TECHNOLOGY

There is significant and developing interest in the rise of novel advancements, particularly from the approach making viewpoint. However, as an area of review, arising advancements need key fundamental components, to be specific an agreement on what orders an innovation as 'emanant' and solid examination plans that operationalize focal hypothetical ideas. The current paper means to fill this hole by fostering a meaning of 'arising advances' and connecting this reasonable exertion with the improvement of a system for the operationalization of innovative development. The definition is created by joining an essential comprehension of the term and specifically the idea of 'rise' with an audit of key development concentrates on managing definitional issues of innovative development.



The subsequent definition recognizes five credits that component in the rise of novel advances. These are:

(I) revolutionary oddity

(ii) Generally quick development

(iii) Cognizance

(iv) Conspicuous effect

(v) Vulnerability and uncertainty.

EMERGING TECHNOLOGIES IN EDUCATION AND INDUSTRY

The COVID-19 pandemic forced education establishments and universities to adapt to the quickly dynamic state of affairs in an exceedingly manner that was out of the question a handful of months ago. analysis institutions face vast challenges in managing new technological changes for teaching. within the twenty first century, we have a tendency to are witnessing the transformation of society into a brand new form, known as the knowledge and knowledge society. The technology step by step becomes the most vehicle in the development of a new society. at the side of the promotion of business development towards automation, technology conjointly incorporates a main purpose of making an atmosphere of creative thinking and innovation to unleash the full potential of individuals. Collective creative thinking becomes the most thrust for the event of society, rather than that specialize in some elite people. Technology becomes associate integral a part of the information society, and influences people' behavior. to determine a eminent knowledge society, the education system must promote the utilization of technology within the transfer of knowledge, at the side of new teaching methods. Technology becomes a decent tool for rising the education system. Among several technologies, internet 2.0 has the foremost potential to form a giant knowledge warehouse and technology-rich learning environments to assist people simply access knowledge and skills. They conjointly give the flexibility to attach individuals and type learning communities to extend the worth of information. The rising in demand for internet-based learning is inevitable in an exceedingly knowledge society.

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Today, it isn't tough for us to realise that novices aren't simply mastering in college, their mastering is sincerely supported through technology outdoor the college environment. But faculties are truly assisting this mastering through college students or whether or not faculties themselves are hindering college students' mastering with technology. While the distinction among formal and casual mastering is decided through whether or not or now no longer an teacher is, it is able to be argued that there may be no separation among formal and casual mastering (Johnson, Chapman & Dyer, 2006). This is specifically applicable to rising technology, wherein advent gear create possibilities to bridge the space among instructors and novices in any area or time. While social media and Web 2.zero technology keep to alternate college students' mastering developments and interests, educators want to understand the applicability of those new gear in all varieties of mastering environments. Rapid technological innovation has created an pressing want for academic studies that could assist us higher apprehend how pupil mastering is being mediated through rising technology. Teaching exercise exists a widening hole among the technology utilized by college students, the technology utilized by educators and people furnished through better training institution. Although many rising technologies are normally utilized by college students, however their pedagogical cost isn't but realized. Many instructors are now and again reminded through their college students approximately the use of rising technology (which include Facebook) that scholars use of their social lives, to offer casual and formal mastering experiences.

REVOLUTION IN COMPUTING ERA

Vladimir Lenin is often quoted as saying, “There are decades where nothing happens, and there are weeks where decades happen.” Vladimir Lenin is frequently quoted as saying, “There are many years in which not anything happens, and there are weeks in which many years happen.” But this word might be faulty on the subject of what befell in era, economic system and politics withinside the ultimate decade alone. Yet, the gist of the quote is pretty effective whilst we study the ultimate 2 years i.e. the coronavirus pandemic. A lot has befell

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in era and era adoption in a very compressed time and at a quick pace. It has been a long, unhappy and painful time for the reason that pandemic began out, however with superior technology, we had been and are capable of bear a number of the ills delivered approximately with the aid of using this pandemic, and era appears to be the manner out of it. The pandemic improved the adoption and implementation of many technology that could have taken years, if now no longer many years, to emerge as mainstream. We have visible how we switched from our high-touch, surprisingly analog each day interactions at paintings, college and leisure venues to the complete opposite in a span of few weeks. Clearly, the pandemic improved the dominance of era in our lives and made us greater virtual creatures, with all of the benefits and downsides therein. It is viable to assume the effect of era in our "new normal" lives and the overall developments which might be already rising with the aid of using searching again at preceding pandemics and reading what's already taking place now.

Work from domestic for expertise people appears to had been instead successful, with a few productiveness gains. But the massive query is how it'll appear to be after the pandemic. According to a Gartner survey, 82% of employers will permit personnel to paintings remotely a number of the time, and 47% say that they'll do it all of the time. The destiny of paintings, or at the least in which it will likely be done, might be surprisingly virtual. We are already seeing video chat software program including Zoom, Teams and Slack gambling a vital function in connecting personnel to their jobs and connecting households and friends. Many of those technology had been round for a few time, however they began out to play a much greater outstanding function and nevertheless maintains even after Covid-19.

Two foremost era developments will boost up withinside the post-Covid-19 world: touchless technology and surprisingly automatic robots that increase human tasks. It is probably that we are able to see extra robot automation and AI in deliver chains, customer support and beyond. With robots, the IoT and the growing availability of 5G technology, we are able to see an array of touchless technology take off, including robots that make your meals or drinks. New gadgets and technology might be designed with touchless-first or minimal-human-intervention principles. We already see examples of the acceleration in touchless era and AI-pushed automation adoption in airports with self-carrier check-in, in which passengers create a virtual token on their phone that could confirm their identity.

PROS & CONS OF THE REVOLUTION

#	Pros of Digital Technology	Cons of Digital Technology
1.	Connectivity	Data security
2.	Communication speed and versatile working	Social isolation
3.	Digital devices are portable	Too much of work or work overload
4.	The quality of stored information is preserved.	Diminishing the job opportunity
5	Learning re-defined	Digital technology creates addiction towards it.
6.	Entertainment	Manipulation of digital media
7.	Transportation	Plagiarism and Copyright

USE OF TECHNOLOGIES (TECHNOLOGY TREND)

If there's a silver lining to the pandemic, it's the multiplied adoption of innovation-the use of era in manufacturing. COVID-related disruptions in supply chains, production, and places of work are attempting out

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businesses' agility and pushing manufacturers to intensify their digital transformation efforts a good way to live competitive. With greater-than-ever get proper of access to to all of sudden converging era — artificial intelligence (AI), machine learning (ML), predictive analytsis, high-typical overall performance and cloud computing, physics-based absolutely simulation, digital twins, etc. — manufacturers have a stellar chance to beautify their industrial company and engineering practices. AI and ML software program use will more than double within side the following five years, as managers rely an awful lot much less on former favorites (Excel, industrial company intelligence (BI) and data analytics) for product decision-making. And at the same time as the modern use of AI and ML is limited, 70% of managers document that they are "very" or "somewhat" good use of the technologies. In five years, its believed that hybrid cloud solutions will live the go-to data analytics and simulation gadget at their companies. At the same time, the data show a significant five-three hundred and sixty five days shift at the same time as comparing modern and future utilization of "mostly" or "all" cloud computing. According to the research, 13% of manipulate and 9% of technical personnel characterize their present structures as cloud-dominant, but the ones chances leap to 28% and 31%, respectively, in five years.

LIMITATIONS

The following were the limitations during the research:

- The studies ordinarily specialize in secondary statistics because of time limitations.
- Lack of IT assets and management.
- Making humans privy to digitalization.
- Digital Security
- The agility challenges
- More than 50% of virtual transformation efforts fizzled absolutely in 2018.
- 70% of virtual modifications fail, most customarily because of resistance from personnel.
- Only 16% of personnel stated their company's virtual modifications have advanced overall performance and are sustainable withinside the lengthy term.

CONCLUSION

Digital transformation demanding situations are complicated to handle. The businesses want to create huge

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surroundings to force alternate seamlessly. Before embarking upon a virtual transformation journey, construct a approach to dispose of the roadblocks to DX, thereby making sure a success digitization. Investing in rising virtual technology won't equate to finish a success virtual transformation. People, processes, and generation flow hand-in-hand to shape the foundational factors at the same time as strategizing DX efforts. Making knowledgeable generation investments, because it will assist supply actual cost each to the employer and your customers. Post-pandemic instructional institutions may need to spot the troubles that they may face and put together to require strong alternatives in the coming again months. The college groups can need to be forced to mirror on their instructional imaginative and prescient and venture to ensure scholar mastering effects and requirements of instructional excellent do not appear to be compromised. the faculties can need to be forced to have interaction and seek advice from all their stakeholders in the nuanced reconciliation of financial expenses and public fitness which might be tangled with missions of education, data creation, and restore to society. the top instructional institutions ought to be organized for a complex street in advance post-pandemic anywhere their alternatives can shape and steer the longer term in their students.

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UPCYCLING PLASTIC WASTE FOR ROADWAYS

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ABSTRACT
A Major component of solid waste is plastic which is abundantly available and left on the landscape without proper treatment.Plastic production in the world is increasing day by day with the increase of population and Changing life style where disposal of such a waste of plastic is very complicated process because of its non-biodegradable property so 'it's better to recycle than disposal'.An exponential growth in the municipal plastic waste have been found especially in urban areas deteriorating rapidly the beauty of environment.This paper presents the use of waste plastics as an additive for roadsurfacing or waste plastic bituminous mixture. This approach may help to cope up with the rapidly growing environmental pollution due to plastic materials.The main aim of the paper is to evaluate and implement existing technologies to design standards and specifications for using waste of plastic in road construction.

The durability of the roads laid out with shredded plastic waste is much more compared with roads with asphalt with the ordinary mix. The use of the innovative technology with plastic would not only strengthened the road construction but also increase the road life as well as will help to improve the environment and also creating a source of income.

Keywords: Plastic-waste, recycle, roadways, bituminous mixture, non-biodegradable.

INTRODUCTION
Plastic is a non-biodegradable material, and can remain on earth for about 4500 years without degradation.Being used so commonly all over the world, the waste generated from the use of the plastic is enormous. This waste, if not managed properly, It will create numerous ill-effects on the environment and living beings.Recent studies in this direction have shown some hope in the field of waste plastic road construction.

Polymer modified bitumen is currently emerging as one of the most important construction material for flexible bituminous pavements. Usage of plastic waste in the construction of flexible pavement is gradually gaining importance because of the various reasons.

Fig:-1.1

The polymer assisted bitumen shows properties for the construction of roads & plastics waste, otherwise is considered as a pollution menace but can find its use in this process and it can help in solving the problem of polluting the environment because most of the plastic wastes are polymers.This bituminous mix will not only provide a way to recycle the plastic in the country but will also reduce the cost of road construction.

Silent Features of the Polymer Waste Bitumen Mix Road:-
- Road strength is twice stronger than normal roads;
- Provides better resistance towards rainwater and water stagnation.
- Less bleeding during summer;

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• Burning of plastics waste could be avoided

• UV radiation can't harm the road

• Reduction in cost of road construction

• Plastic waste is consumed and making roads eco-friendly.

Why to go for Road Made by Plastic

The durability of the roads laid out with shredded plastic waste is much more better than roads with the ordinary mix.The binding property of plastic makes the road last longer besides giving added strength to withstand more loads. While a normal 'highway quality' roadlasts four to five years it is claimed that plastic-bitumen roads can last up to 10 years.

Rainwater will not seep through because of the plastic that is added in the tar. So, this technology will result in lesser road repairs. And as each km of road with an average width requires over two tones of polyblend, using plastic will help reduce non-biodegradable waste thus being eco-friendly also. Plastic roads would be a boon for India's hot and extremely humid climate, where temperatures frequently cross 50°C and torrential rains create havoc, leaving most of the roads with big potholes. Already, a kilometer long test-track has been tested in Karnataka using this technology.

Table 1: Roads constructed in India using waste plastic and their condition

Road		Year laid	Unevenness (mm/km)	Skid number	Texture depth (mm)	Field density (kg/m³)	Rebound deflection (mm)
Design standard (acceptable values)		–	<4000	<65	0.6–0.8		0.5–1
Typical construction method: plain bitumen road		2002	5200*	76*	0.83*	2.86	1.55*
Roads constructed using waste plastics	Jumbulingam Street	2002	2700	41	0.63	2.55	0.85
	Veerabadhra Street	2003	3785	45	0.70	2.62	0.60
	Vandiyur Road	2004	3005	41	0.66	2.75	0.84
	Vilachery Road, Mai	2005	3891	45	0.50	2.89	0.86
	Canteen Road, TCE	2006	3100	45	0.65	2.86	0.86

Fig:-1.2(Road constructed in India using waste plastic and their condition)

In the above mentioned fig,data of road made by plastic waste that is collected by a research is shown.Where poor binding between aggregate and bitumen is one of the major reason for such defect in the standard road construction,but binding between plastic coated aggregate and bitumen is stronger as compared to standard construction techniques.

Table 3: Observation Table for Aggregates Test Results

Percentage of Plastic	Moisture Absorption (%)	Aggregate Impact Value (%)	Aggregate Crushing Value (%)	Los Angeles Abrasion Value (%)	Specific Gravity	Stripping Value (%)
Control Specimen	1.7	5.43	19.2	13.42	2.45	8
PP8	Nil	4.91	13.33	10.74	2.7	Nil
PP10	Nil	4.26	9.82	9.41	2.85	Nil

Fig:-1.3 (result of test on bitumen)

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The government is keen on encouraging the setting up of small plants for mixing waste plastic and bitumen for road construction. It is hoped that in near future we will have strong, durable and eco-friendly roads which will relieve the earth from all type of plastic-waste.

Recycling of the Plastic involves Various Steps Are As Follows:

1. Segregation

Waste collected from all over the localisation is separated and sorted from the other types of wastes like non-biodegradable, organic non organic met al etc.

Fig: 1.4-(segregation of plastic)

2. Cleaning Process

For relatively clean waste, only soiled by dirt or dust, washing in cold water is sufficient. Plastics are vigorously rubbed with bristles. For highly soiled and greased waste, the wash should be done in hot water with the addition of soaps or detergents

Fig: 1.5-(cleaning up of plastic)

3. Shredding Process

A plastic shredder is a machine used to cut plastic into smaller pieces for granulation. Unlike plastic granulators, shredders are designed specifically for larger plastic waste, like car bumpers, pipes, drums, and other items too big for granulators. In the process, large plastic items are fed into the shredder.

Fig: 1.6-(plastic shredding)

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4. Collection process:-The plastic waste of size 3.6mm is collected for the further process.

Fig: 1.7-(final product after shredding.)

It is Hypothesis that waste plastic improved pavement performance by using plastic coated aggregate in the mix. Bitumen and waste plastic coating aggregate due to increased bonding and area contact b/w polymer & bitumen. The polymer coating reduce the air void, rutting, raveling, and pothole formation. The road can be withstand heavy traffic and show better durability. It is further hypothesized that the waste plastic bitumen mix from better material for pavement construction as the mix show higher stability value and suitable marshal coefficient.

There are two Types of Method Process: Dry Process &Wet Process.

1. **Dry process Method**: - The aggregate is heated at 170°C in the hot mix plant. The shredded plastic waste is added in specified proportion and added to the hot bitumen grade. The mixture is transferred to the road and laid. This method is very simple and economical. It following steps in hot mix plant.

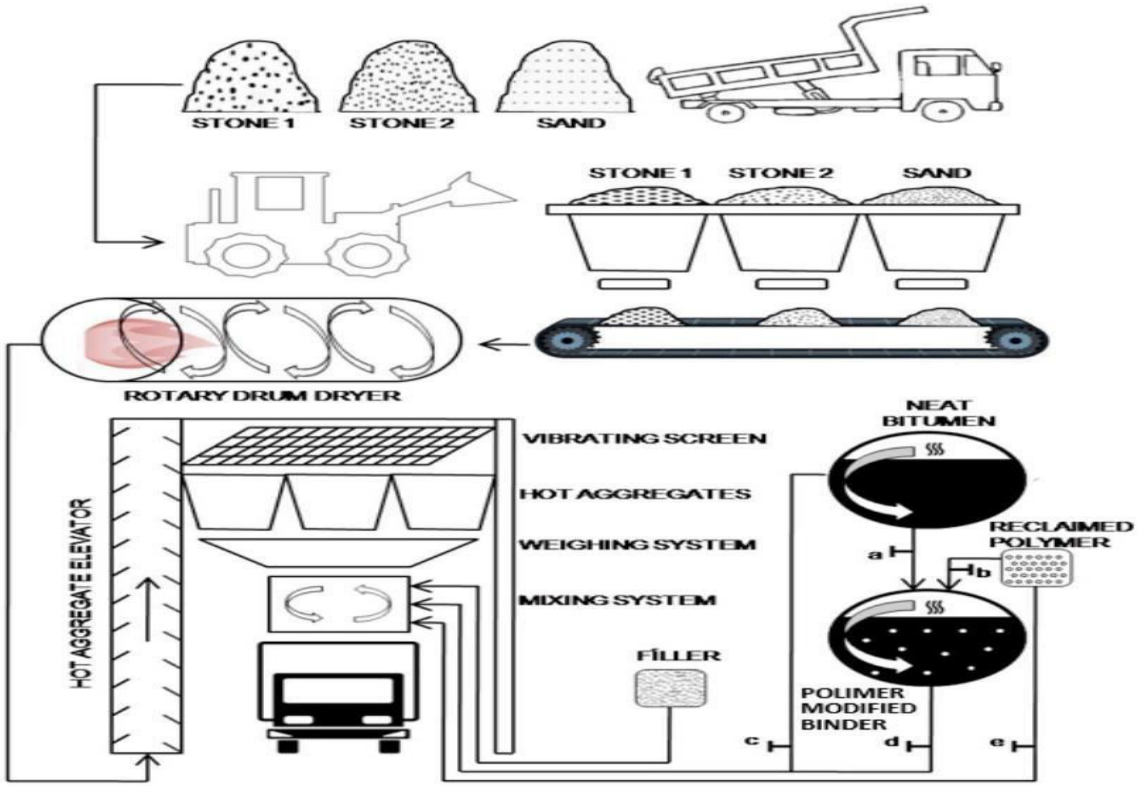

Fig: 1.8-(Mechanism of dry process)

2. Wet Process Method:-
Plastic waste is ground and made into powder. Powdered plastic waste is added to the bitumen at 160oC. High shear blender is required to prepare plastic modified bitumen and specific chemical treatment may be required to restrict the phase separation. The process does not yield a homogenous mix with prominent separated solid deposits of mix therefore wet process was not adopted.

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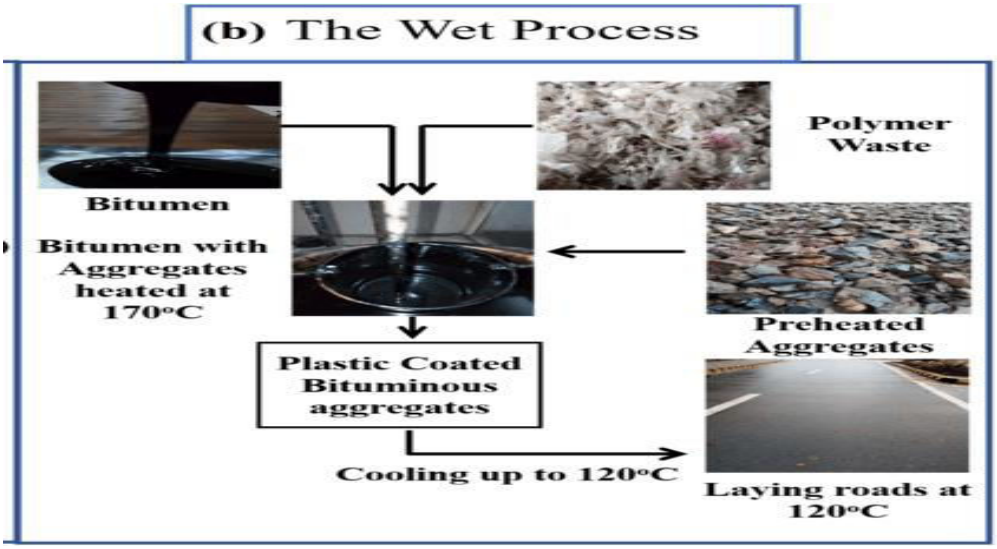

Fig: 1.9-(Wet process)

Properties of Waste Plastic-Asphalt Mix:-

Furnitubes' recycled plastic products are formed from carefully selected recovered plastics and have a highly textured finish akin to timber. It is equally easy to saw, drill, nail or screw, but is an ideal alternative, since it has no knots, does not splinter and does not deplete scarce timber supplies. Below is the graph shown of Marshal stability of road against waste plastic content.

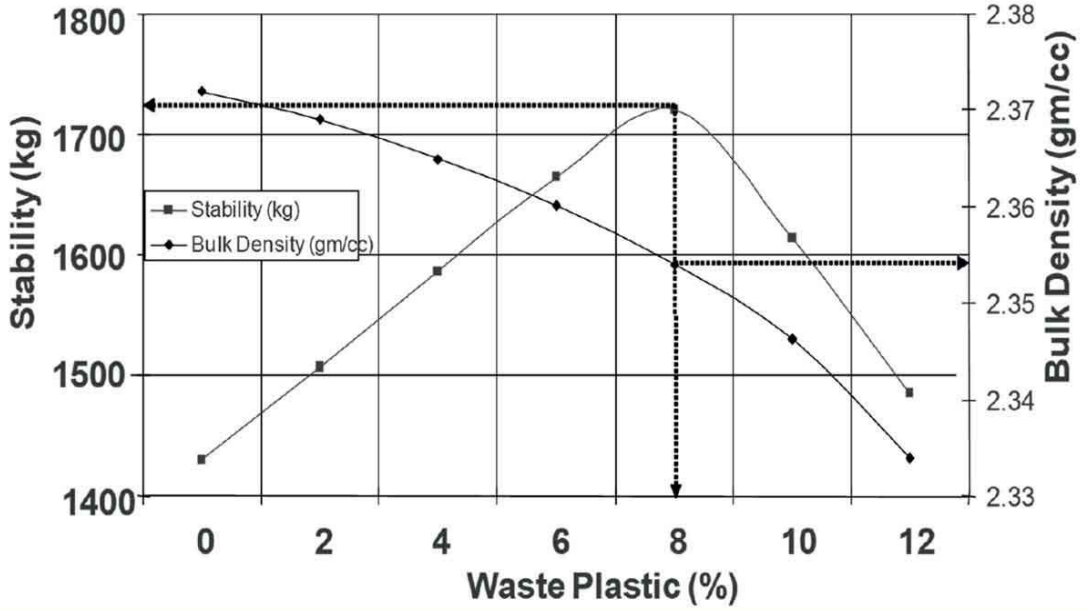

Figure 3: Marshal stability vs waste plastic content

RESEARCH METHODOLOGY

Primary Data- It is collected through questionnaires.

Secondary Data- It is collected through different websites, e-notes, research papers, journals etc.

CONCLUSION

This paper presents the Idea for the use of plastic waste in the construction of road and Thus reducing the harmful effects created on environment. It's an approach and an innovative method to solve the problem faced by the Earth ,is the bitumen mixture of polymer waste which will be helpful in reducing harmful gases like cfc and other green house gases. The plastic made with the bitumen and aggregate is very helpful for the better performance of road. Increased traffic condition are reducing the life span of roads. Plastic roads are means of prevention and an ultimate cure. This technique will not just be helpful in construction of road but will also provide the employment opportunities and making people self Dependent. It will save millions of dollars in future and reduce the amount of resources used for construction.

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POCKET HOME AUTOMATION

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ABSTRACT
This Venture is to plan and build a home automation & the purpose of this research paper is based on project which is implemented for low-cost, reliable and scalable Hi-tech smart home ecosystem that can be used to remotely as well as u can give a command to switch on & off any house-old appliance, using a microcontroller to achieve hardware simplicity, low-cost Bluetooth module, fire alarm system sensor and a relay to control lights, fan and a smart socket. Now a days in busy schedule life style, everyone wants to save their time as much as they can. There are different type of technologies that are being introduced in our market to make life better and smart. So, to utilize most of the people time, money and energy efficiently we are introducing "Hi-Smart home Automation" and it's for each and every one who has a dream of smart home. So, the concepts of Pocket Home automation definitely help such all people to bring their dream in real life using Internet of things.

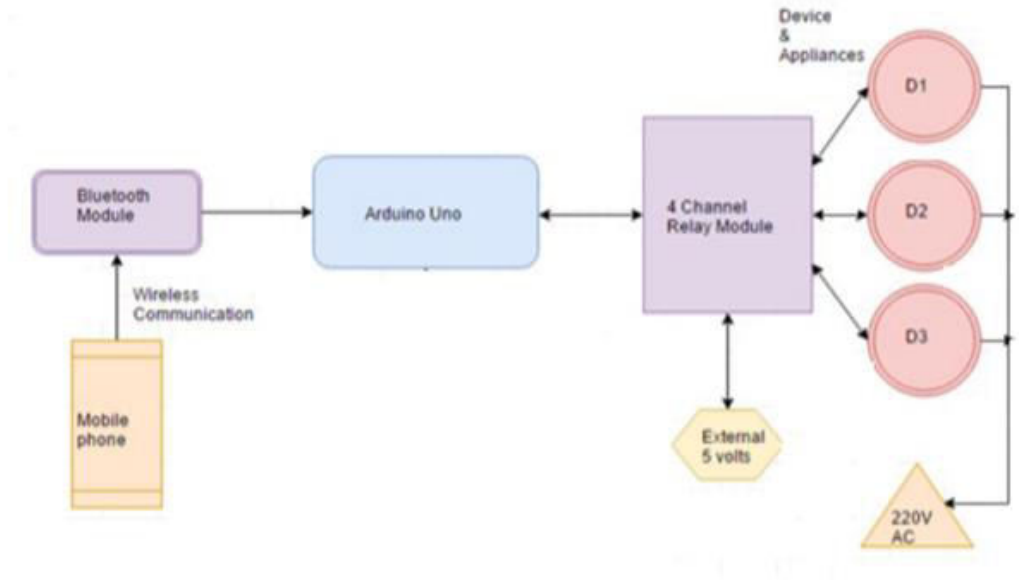
Keywords: automation, internet of things, Bluetooth, microcontroller

OBJECTIVE
- To design and construct a Hi-tech smart home automation system that can be used in colleges, homes and make it HI-TECH
- We can control our appliances through voice reorganization and we can switch all the household appliances through android application. Example - Light, fan, smart socket
- This project is intended to be simple and cost effective as everyone can use this product in their homes and make it smart enough
- The main drawback of this project is it has an advanced fire safety feature if there is a smoke or fire burst out at your place then the sensor will detect and turn off all the components that are linked with it

INTRODUCTION

The Components and Working of Our Project is Based on Following Design:-

Block Diagram of Home Automation



ARDUINO MICROCONTROLLER

Arduino Uno is a microcontroller board which is based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.

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HARDWARE REQUIREMENTS

Arduino UNO Rev 3

Bluetooth HC-05

Relay 5V-4 channel

Motor Fan

Two led Bulb

One Power Socket

USB 'A' To 'B' Connector

Jumper Wires

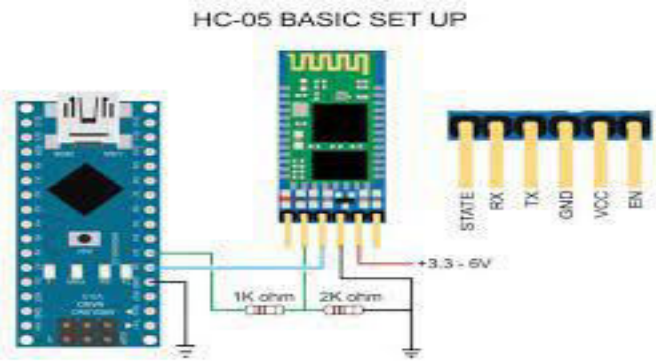
Arduino Uno Rev3

Arduino uno is a microcontroller board based on the ATmega328p.

Microcontroller	ATmega328P
Operating Voltage	5V
Input Voltage	7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
PWM Digital I/O Pins	6
DC Current Per I/O Pins	6
DC Current for 3.3V Pin	20mA
Flash Memory	20mA
SRAM	32 KB (ATmega328P) of which 0.5 is used in bibliolater.
EEPROM	1KB (ATmega328P)
Clock Speed	16MHz
LED_BUILTIN	13
Length	68.6 mm
Width	53.4 mm
Weight	25g

2. Bluetooth HC-05

The HC-05 Bluetooth module helps us to connect our android device and we can control



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¬ Input Voltage: 5V

¬ Current Draw: 20mA (Max)

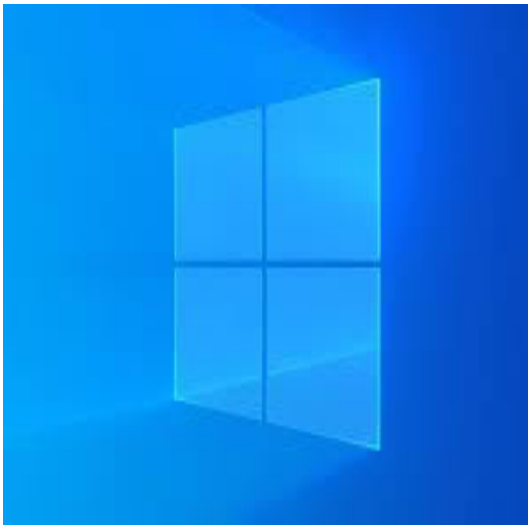
¬ Digital Output: 5V

3. Relay 4 Channels (5V)

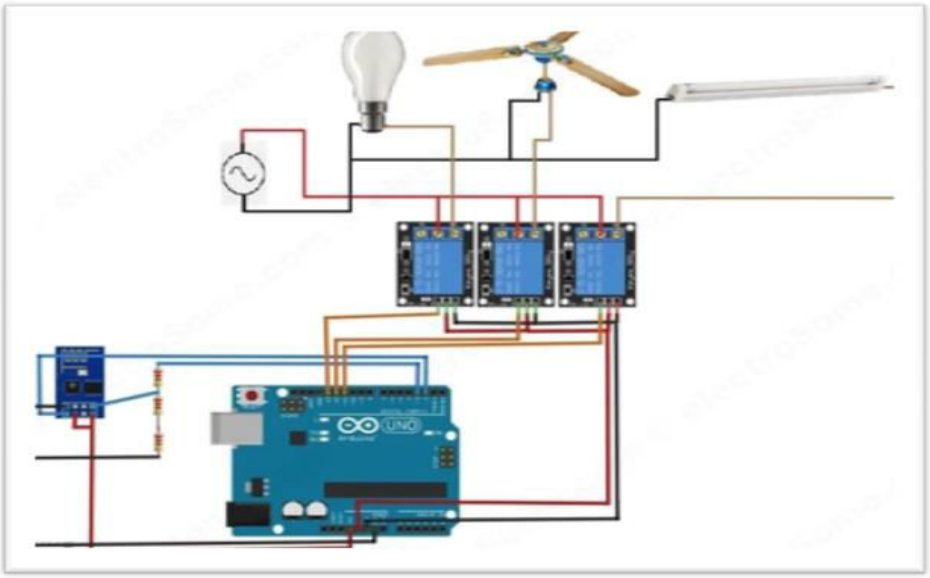
Relay are switch that open and close circuits electromechanically or another electronically. Relay control one electrical circuit by opening and closing contacts in the circuit.

SOFTWARE REQUIREMENTS:

Arduino 1.8.13 IDE Windows 8, 10, 11



Circuit Diagram



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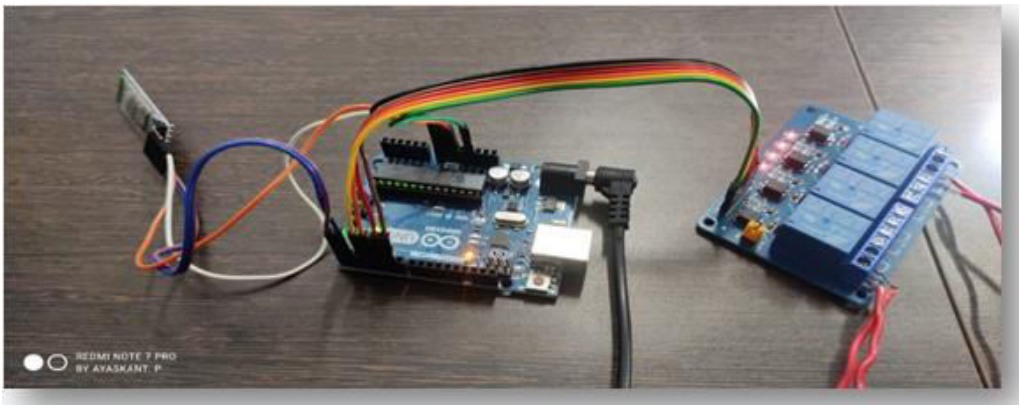
CIRCUIT WORKING OF HOME-AUTOMATION

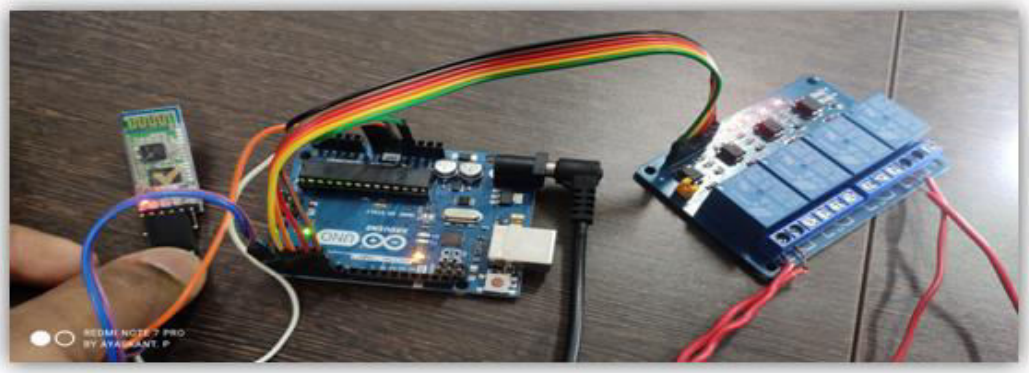
Expected Outcomes

The expected outcome of the following module is to provide the Hi-Tech smart home automation facility and avoid touching the switches. It also helps us to control our home appliance by our android application or we can control it by voice command. & If any fire or smoke broke out in the house or any place then the fire sensor will detect and turn off all the appliance insanely so that no one will be injured thereby we can take care of ourselves and other people also.

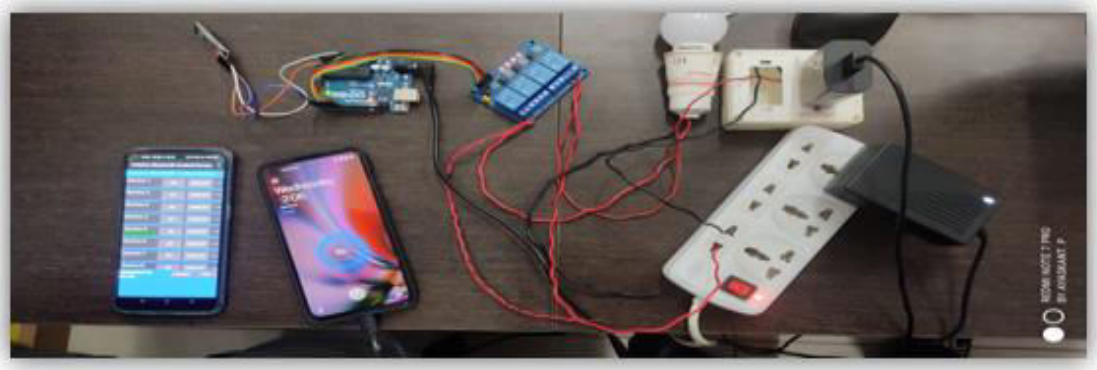
Demonstration of Implemented Project Model:-

In this image u are seeing the hardware components that are being connected to the Arduino Uno Rev3 the connections are (relay VCC-5v Arduino), (GND-GND) and the connections are done.





In the above picture, u are seeing Bluetooth which is being connected to the Arduino Uno Rev3, and then it is connected to 4 channel relay.



In the above picture u can see that the Bluetooth is connected to the android device and an integrated app is running through it u can have a look when we give 2 different commands to switch on the smart socket it gets started and charges the device and on 4th relay, u can notice the light is being switched off when the lights are being off through the app with a single touch.

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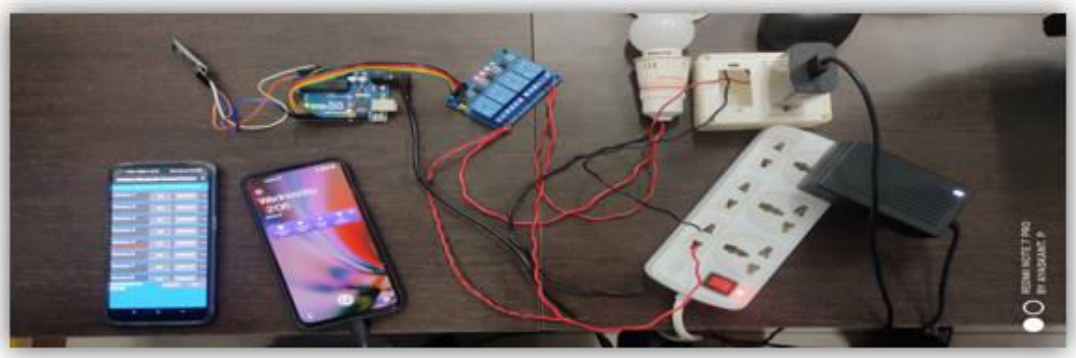
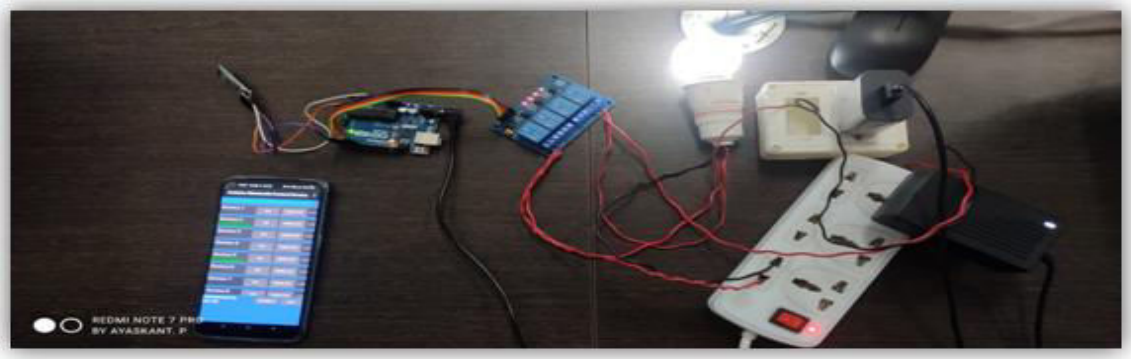


In this picture u are seeing when we click on the off button on the device It switches off the device simultaneously.



In this picture, u are seeing that the light is on as we are switched the interface app on so it will start the light and all the stand-alone devices.

RESEARCH DESIGN AND METHODS

Hi-Tech Smart Automation is basically based on Internet of Things. It is used to make your home appliances smart enough .U can control your appliances through android application and u can give voice command also. We have added (fire detection sensor) sensor. Since most of them now a days requires the world to be smart enough. Arduino system is the most common gadget (micro controller) systems that are available. In the current pandemic everyone hesitates to touch the switches as many people touches the switches and u may contract the virus. So, to overcome this situation this gadget is developed to create a high-level smart automation u can control through your phone or else u can just give a voice command.

FUTURE SCOPE

Hi-Tech Smart Home automation is the wireless and control of different aspects of a living space like lighting, temperature, security, entertainment, etc. It performs with the help of connected smart devices and appliances that use communication technology like Bluetooth and Ethernet, to share data and facilitate the efficient management of power consumption. It has advantages like:

Cost-Effective: Home automation appliances have a longer life cycle than the regular device. Hence this saves money. And they don't require much maintenance.

Safety Reasons: We can use feature further as if u switch on the light or fan and u forgot to switch it off and moved on then u can switch on and off your devices while abroad or at office or away for a vacation u can control your home appliances as we are going to connect **WIFI** module with it. And to tackle the threat we are going to use Safety services that will provide **seamless** service to the user.

Eco-Friendly: The smart home appliances consume a minimum amount of power. This is because they use stored user data to modify the output. This means a fair amount of energy is saved.

Gsm Module: mobile phone is a revolutionary invention of the century. It was primarily designed for making and receiving calls and text messages. So, in this project, we will be building a home automation system, where one can control the home appliances, using a GSM-based phone, just by sending an SMS through his Phone.

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Through this, there is a vast update that u are outside town and you kept your appliances on then simply by giving command u can switch your appliances easily that's how it is smart enough.

In the future, home automation is definitely going bigger and better. The Internet of Things is already bringing a wide range of exciting, innovative solutions as we will be adding more sensors and more functions as you will get more updates regarding your home automaton.

Benefits to the Society

- This smart home automation model will be very helpful to the society. We can use if for making our home smart
- This system can be applicable for huge areas as well as small areas like collages, halls and homes to make them smart enough to control your all product through device and by voice recognition.
- There are sensors in the system if the fire broke out then within a matter of time the system will shut down as we have implemented fire system which will detect fire and smoke if its burst's out in the place so we have added a safety feature in our product.
- Then u can single handedly manage all your devices from one place. The convenience factor is enormous. We are being able to keep all the technology in your home connected through one interface is a massive step towards home automation.
- Energy efficiency is the major thing which plays a vital role over here the home automation system consume less amount of energy and its possible to make your space more energy-efficient .and the major factor is costing so let me explain u how it will be helping the society.
- So, I want a home automation to be installed at my home but now a days home automation is too costly to build so we are planning to target that market and make it available for each everyone who is dreaming to make their place smart enough so home automation for everyone.

CONCLUSION

This Pocket Home Automation Model Will Help For -

- Managing all of your smart home appliances from one place.
- Smart home solution is very flexible to connect all the new device and appliance.
- Maximizing the home security further. Where u can add surveillance feature to your network.
- Increase in energy saving as it has a best module that consume less power.
- Environmental Impact as the smart home is growing faster it helps us in energy management and cost saving.
- There will be a **drastic** change in consumer expectations and Interest.
- The continued need for a **Robust** Home – Automation network.

Threat

Threats to the System	And Countermeasure
Device hacking	Device identification and access control
Permanent Denial Of service	Security Monitoring and control
Privacy, Data & Identity Theft	Encryption and Access control

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SENTIMENT ANALYSIS IN E-COMMERCE USING TEXT CLASSIFIERS

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ABSTRACT
The sentiment analysis is considered necessary in the e-commerce field, and advantageous to businesses, governments and individuals. Nowadays public would purchase stuff from online shopping portals is growing, as a consequence, consumer reviews or appraisals are aggregating over each going day, thus ever cumulative tremendous volume of outcomes is put in storage on the network. This data intended to be supportive, the majority of this consumer-produced content necessitating the procedure of computerized skills for extraction and evaluation as a manual investigation is problematic for such gigantic information. Sentiment analysis performs the programmed extraction of approaches, thoughts, and feelings from text, speech and database sources through Natural Language Processing (NLP). The goal of Sentiment Analysis is to make systems capable of identifying and expressing feelings. The main aim of this review paper is to predict the sentiments from user-based reviews to understand the actual-value of the product, its quality, and the interest of the users. To do this analyzes two classifiers like K Nearest Neighbor (KNN), and Decision Tree Regression (DT Regression). This is useful to satisfy the consumer's expectations as well as for the improvement of an e-commerce business.

Keywords: Classifiers, Decision Tree Regression, K-Nearest Neighbor, Natural Language Processing.

I. INTRODUCTION
Today's Web is the best credible foundation for massive information, new thinking, and appraisals of users. Daily billion reviews are produced on the Web related to the product, individual, or location. Since their vast amount and dimensions, it is too challenging while handling and recognizing appraisals. Sentiment analysis is the study region that recognizes and mines the estimations from the given appraisals. In short, it is the procedure of extracting and understanding the sentiments defined in the text document [3].

In today's world, social-media observations have been emerging day-to-day hence investigating social records acts as a vital part of understanding consumer activities. Therefore systems are created that is analyzing social records like product reviews using sentiment analysis that tries to find out the approach of consumer reviews towards the product or services [4]. This proves to be beneficial for the other users while making purchasing decisions, understanding the product better, and also for the business to make improvements in the quality and service of the product.

The system takes the customer reviews from online shopping websites such as Amazon, Fipkart, and Myntra where users give reviews about the products or services based on their choice, quality, cost, functionalities of the product, etc. Then the data taken from such reviews are trained after that features are extracted from such data by using the ETL process and loaded into classifiers and then the classification of data is done by using classifiers like K-Nearest Neighbor (KNN), and Decision Tree Regression (DT Regression) thereby gaining the sentimental information through text classifiers which helps data analysts within large enterprises to know the public opinion, to do market research, monitor brand and product reputation and understand customer experiences [5].

In short, sentiment analysis allows making sense of unstructured text information by automating business processes, getting actionable insights, and saving hours of manual data processing.

II. LITERATURE SURVEY
The analysis methodology for private tendency is usually normalizing particular statistics like age, gender and occupation. Such type of process can cause safety problems by private information and consumer's approvals are lesser than projected since the consumer's statistics also weren't effortlessly coordinated with subjective sense of taste and uniqueness. They were developing a film rating prediction system [1] established on private tendency with previously surveyed film archives for consumer approval.

Today, Sentiment analysis [2] performs a vital play where several text classifications and machine learning techniques are used in defining the sentiment of massive quantities of text or speech. Many presentation responsibilities involve such as defining how somebody is thrilled for an forthcoming film, compares dissimilar opinions for an administrative party with public's positive approach towards poll for that party, or by changing written hotel appraisals into 5-star based on scaling across groupings like 'quality of food', 'services', 'living

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room' and 'facilities' delivered [2]. The correctness of Sentiment Analysis can be deliberate through several methods, but the most general methodology is tally accuracy in association to a human. So any NLP technique which marks nearby 85% is considered good work along with exactness [2].

Data preparation is a way of gathering the appraisals regarding certain products from Web or any e-commerce portals. The gathered statistics may be either in unstructured format [6]. There are many openly accessible datasets which offer the massive gatherings of appraisals which can be used in sentiment analysis methodology [6].

Training data is statistics of movie appraisal and base material of movie rating prediction systems [1]. But training data is not basically well appropriate to analyze particular tendencies since it is categorized by movie. So, it can restructure arrangements by consumer as a pre-processing [1].

Statistics of objective consumer and film through review records are mined and clearing methodology is employed to spot reliability of consumer statistics established on surveyed film ranking opinion about objective consumer [7]. Clarified consumers are appraised on the basis of mean value of every consumer's film ranking reviews and unclarified users are appraised on the basis of collaborative filtering to evaluate private tendency [8].

Twitter [2] dataset about 1000 reviews were composed and every review was organized in line with .raff file where appraisal statistics and class labels are only characteristics. Class labels characterize the general consumer attitude. "Weka" open source data mining tool used to execute sentiment classification on movie review dataset [2]. Now, the objective is to classify dataset as positive and negative and construct the mutual phrasebook of Twitter dataset and online review dataset [2].

Related user group is formed based on match with the objective consumer. Precisely, objective consumer's ranking point regarding objective movie is anticipated by using likeness calculation of the two and fuzzy inference process is performed to make up for the collaborative filtering [1].

Reliability [1] of surveyed film statistics is very essential for this study. But pointless statistics is present in the training data. For example, a user rates points about 17635 movies per day in the training data from Netflix [1]. This statistics can be easily affected by system performance degradation. Hence, consumer clarifying is a prerequisite to have reliability of associated consumer groups [1]. In their research, they clarified two situations. First, the consumers who surpassed the mean number of valued films each day are clarified, that is, consumers who valued over 250 films each day are clarified [1]. Private tendency about clarified users is considered by means of previous film statistics without assessment with other consumer's tendency. That is, the mean assessment regarding all valued films by the consumer is used to evaluate tendency [9].

III. PROPOSED SYSTEM

Sentiment Analysis in e-commerce using text classification is summarizes the feedback, extracting the opinions, all the reviews from various online e-commerce websites or portals and giving an overall view of the product that could save time and ease the decision process for the users

This proposed system focuses on captivating reviews from online shopping portal like amazon, flipkart and myntra via Multi-domain sentiment dataset. This system uses classifiers like K-Nearest Neighbor (KNN) and Decision Tree Regression (DT Regression) classifiers to organize the reviews as positive and negative. In short, proposed system could summarize the feedback, extracting the opinions from all the reviews and giving an overall view of the product that could save time and ease the decision process for the users.

The proposed system is working on the sequential flow of data following different processing phases step by step as follows:

Data upload - After successful login into the system, this phase uploads all the data that is in the form of product reviews given by consumers are uploaded into the database.

List of Product and Reviews - This phase will show a list of products and reviews given to them by consumers.

Feature Extractor - This phase extracts the six features from all the uploaded data such as sentiment, avgSentiment, objective, positive, negative, and nWords. To extract these features following formulas are used:

- Sentiment = Positive – Negative.
- Avg sentiment = (Positive - Negative) / ngrams* length
- Objective value = 1- (PosScore + NegScore) overall grams
- Positive = Positive Sentiment Value
- Negative = Negative Sentiment Value

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Training Phase - The features extracted in the previous step is used for training the classifier. Then afterward loads all this data into classifiers like K-Nearest Neighbor, Decision Tree, and Decision Tree Regression to get trained classifiers.

Testing Phase - In this phase, features are extracted from the test dataset and then load these features into the previously trained classifier to predict the class or classes of the data in the dataset.

Classifier Analysis - It gives output given by the classifiers in two categories that are positive (TRUE) and negative (FALSE). It is the final phase which gives ideas regarding the accuracy of the classifiers used as well as gives guidance or a little bit of idea regarding the quality of products to the consumers.

Display the Result - This phase shows the result in a list containing positive and negative reviews.

The proposed system contains various processing components, and these components perform several processes during sentiment analysis step by step in a fixed sequential order. . Figure 1 represents the general architecture of the system.

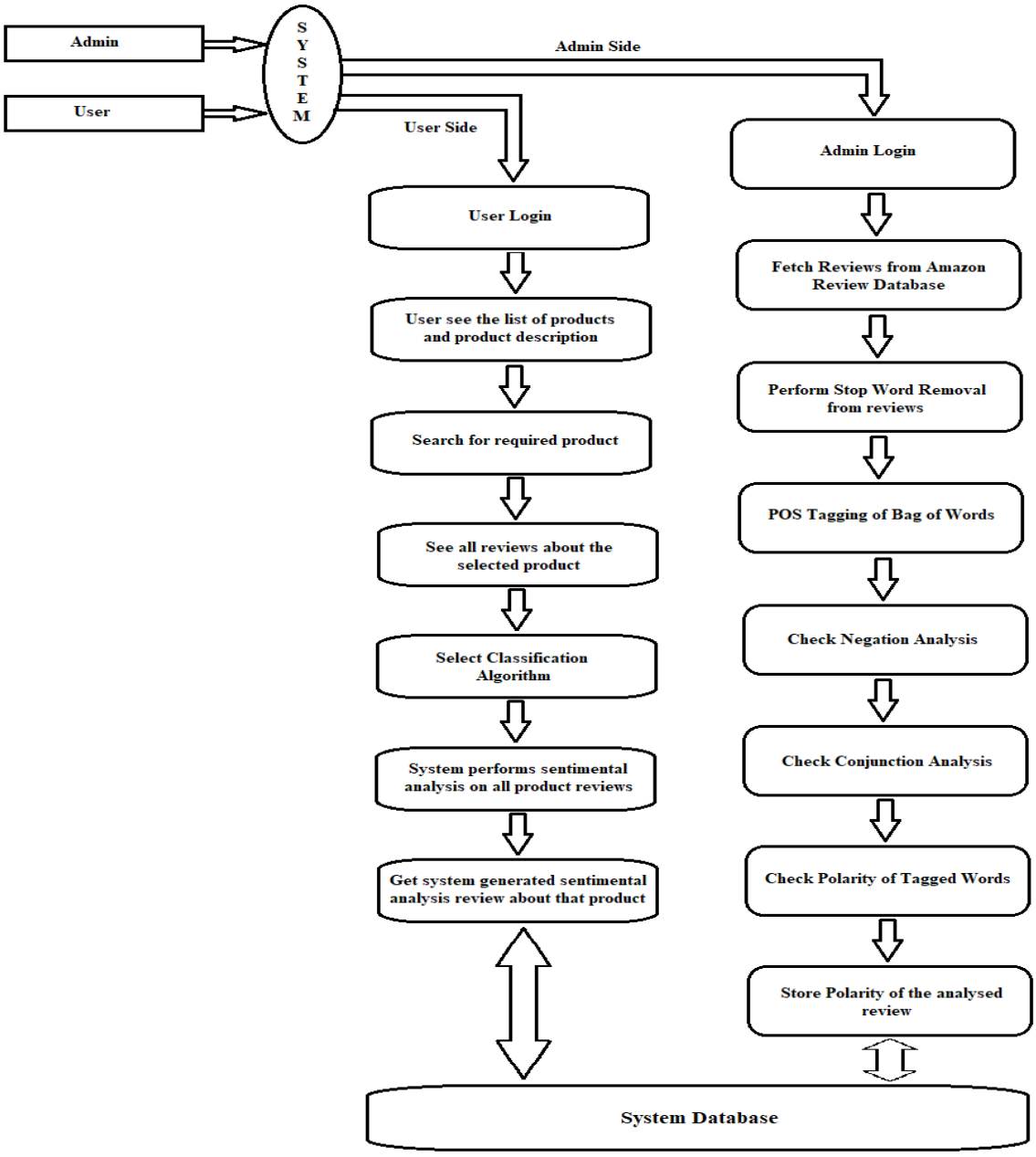

Fig. 1. Proposed System Architecture

IV. Methodology in Text Classification

Extraction and Pre-Processing - In this module the user feedback is reviewed, mined and pre-processed. Users are those who have valuable input and feedback. Consumers who are more aware with enlightening sites can use this structure proficiently. These appreciated feeds will lead to increasing user gratification.

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POS Tagging - Part-of-speech tagging (POS tagging or POS tagging or POST) is nothing but linguistic tagging or word-class negation. This method of marking a word in a text (corpus) corresponds to a specific part of speech established on its dentition and its circumstance.

Negative Analysis - In this module, the purpose of negative analysis is to analyze a word on the basis of negative words such as 'no' or 'non' in the review. Negatives are lyrics that disturb the emotion angle of other lyrics in a verdict. Examples of negative lyrics include: no, not, never, can't, shouldn't, couldn't etc.

Conjunction Analysis - Conjunctions are lyrics that connect phrases together in the verdict. Examples of conjugates include: and, or, but, while, whereas etc. Conjugation analysis is a significant measure of system procedure since it too easily identifies the range of negation in a composite verdict.

Tokenization - In this module, the tokenization methodology is established on sentiment analysis. This analysis is established on the adjectives of lyrics with negative and positive attitudes.

V. Classifiers Used

The classifiers are special hypotheses or discrete-valued methodologies generally used to allocate categories or class labels to particular unlabeled, uncategorized data points. It is also called machine learning algorithms.

The proposed system uses the two classifiers like K-Nearest Neighbor (KNN) and Decision Tree Regression (DT Regression). These classifiers are supervised in nature. The classifier predicts the class or classes of the data in the dataset as well as classifies the review as a positive and negative review.

1) K-Nearest Neighbor (Knn)

K-nearest neighbors (KNN) is a supervised machine learning classifier that performs both classifications and regression analytical complications. But, it is generally used for classification analytical complications in the industry. KNN is a lazy learning classifier because it does not have a specialized training phase and uses all the data for training while classification. KNN is also a non-parametric learning classifier because it doesn't assume anything about the underlying data.

The K-Nearest Neighbor (KNN) classifier assumes that similar things exist in close proximity. In other words, the same things are close to each other. It stores all available cases and classifies new cases according to the degree of similarity (e.g., distance functions). KNN guesses at a time, just by calculating the similarities between the input sample and each training model. KNN does not read the model.

Pseudo Code for K-Nearest Neighbor [10]

1. Load the training and test data.
2. Choose the value of K.
3. For each point in test data:
   - Discover the Euclidean distance to all training data points.
   - Collect the Euclidean distances in a list & sort it.
   - Pick the initial k points.
   - Allocate a class to the test point based on the majority of classes present in the chosen points.
4. Stop.

2) Decision Tree Regression (DT Regression)

Decision Tree Regression shows the relationship between a dependent variable (Y) and one or more independent variables (X). It is commonly used for predictive analysis and modeling. DT Regression is one of the statistical classifiers that predict a Y variable value based on a given X variables feature. DT Regression determines how the X input (words and sentences) relays to the Y output (polarity). It will decide where words and sentences fall based on polarity from "positive" to "negative" and in-between them.

DT Regression is a parametric assessment, which means it creates certain assumptions about the data. These assumptions are Homogeneity of variance (homoscedasticity), independence of observations, normality, and the relationship between the independent and dependent variable is linear or not. In this type of decision tree, decision variables are continuous in format.

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Pseudo Code for Decision Tree Regression

1. Importing the libraries and the dataset.
2. Splitting the dataset into the training set and test set.
3. Training the Decision Tree Regression model on the training set.
4. Predicting the results.
5. Comparing the Actual values with the Predicted Values.
6. Visualizing the Decision Tree Regression Results.

CONCLUSION AND FUTURE WORK

An effort is being prepared to anticipate the sentiments by exploring the appraisals of the consumers based on review available online. In the proposed system, numerous reviews from the consumers will be collected and evaluated. The two classifiers namely K Nearest Neighbor (KNN) and Decision Tree Regression (DTR) will be used proposed system. This proposed system will be useful to know more about the product quality to be liked by consumers or not. The proposed system is very useful, help the consumers while buying any products and also save their times as compared to manual decision based approach. The e-commerce businesses also improve their products and services based on consumer's reviews. This system used only two classifiers but more other different classifiers would be used. This will lead to find out the best text classifier for sentiment analysis and also to find out more accurate information from the consumers' reviews.

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INNOVATIVE AND MAJESTIC STORAGE DEVICES- SSDS

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ABSTRACT
Storage of data is a major problem facing most of us now days. The problem associated with storage are infrastructure, cost, security, corruption, scale, UI(user interface) and accessibility, along with compatibility. This paper presents a innovative superfast and portable SSD(solid state drive). The main aim is to diminish conventional methods of storage like flash drives, thumb drives, and even cloud storage in addition to support an intelligent way of storing the data with durability, reliability, energy organization and less weight and size. The SSDs is designed to access and use data in more efficient and secure way. Solid state drives are called that specifically because they don't rely on moving parts or spinning disk, instead data is saved to a pool of NAND Flash. And NAND itself is made up of what are called floating gate transistors. NAND is a type of non-volatile memory here. Electrons are stored in the floating gate which then read as changed "0" or not-charged "1". In NAND Flash 0 means data is stored in cell and 1 means data is not stored in cell. Thus the data is stored successfully without any corruption and system complexity as well as it can be straightforwardly by the end user.

Keywords: solid state, flash drive, thumb drives, cloud storage, NAND Flash, floating gate transistor, non-volatile.

INTRODUCTION
Storage plays an important role in holding all the information the computer needs to run problem related to storage often hamper the system speed. In today's data intensive world much enterprise focus settles on analytics in other words the central problem becomes what to do with all the data you've collected and how to store it efficiently accompanied by proper maintenance of data privacy. To date most of the population have been using conventional data storing techniques particularly for data storage where they use a technique known as USB Flash Drive also called Thumb Drive in which as soon as the flash drive is plugged in and a command is sent to perform a read request. The data is written on the NAND chip the file is converted to a binary format which is sent to the USB port for forwarding it to the flash drives NAND chip. USB flash drives can withstand between 10,000 to 100,000 write /erase cycles depending on the memory technology used . when the limit is reached some portion of the memory may not function properly, leading to loss of data and corruption. This paper focuses primarily on addressing the problem of infrastructure, cost, security, corruption, scale, UI and accessibility. In addition it saves time, money and energy. The most beautiful and intriguing fact about technology is that its ever changing. It simply never remain stagnant. New tech gadgets are always on rise and trending and at the moment SSDs seem to have captured everyone's attention. However a typical SSDs design doesn't raise many eyebrows anymore, hence they are getting more inventive, special, and methodical by the day from credit card sized SSDs that fit perfectly into your pocket to touch enabled ones that guarantee maximum privacy, innovative SSDs are at an all-time high and the perks are endless. The major drawbacks of the proposed drive is price, recovery of lost data, life expectancy, latest technology and high power.

Fig 1.1:- SSD (solid state drives)

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Fig 1.2:- connections for different purposes

Design and implementation

Solid state drives have impacted the computing platform and storage industry by providing substantially higher bandwidth random and sequential read write performance compared to hard disk drives(HDDs). SSDs have also demanded more and stressed the NAND components beyond the typical usage models of models of removable storage media. It is a storage device that use integrated circuit assemblies as memory to store data. The system composed of a control unit a storage unit(NAND Flash chip or DRAM chip), an optical cache (or buffer)unit and an interface.

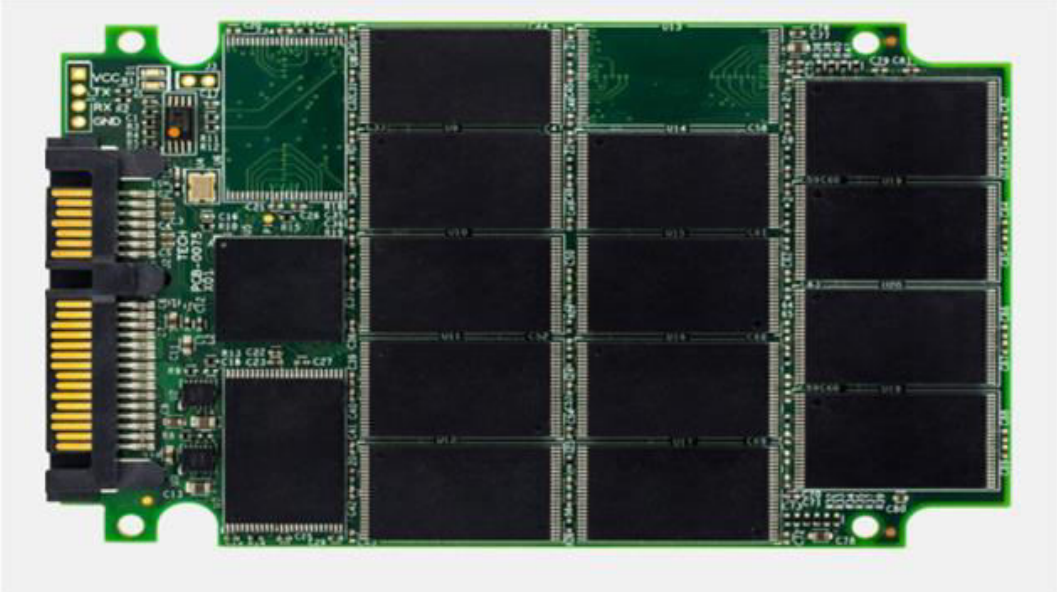

Fig 1.3:- internal structure of SSD

Main Control Chip

Each Ssd Has a Control Unit (Also Called Master Controller), whose Core Compound is Main Chip. The Master Controller Has The Following

- **Connecting the storage unit to the interface so that the data can be transmitted to the computer.**

Responsible for the completion of various instrument within the SSD for illustration: reading and writing data wear levelling (WL), bad block management error, checking and correcting (ECC), garbage collection, etc.

In a word the quality of the main control chip directly determines the actual user experience and the SSD lifespan. The life span of SSD is calculated with two terminologies.

- TBW(terabytes written):- It means that the SSD can write 500 TB before it needs to be replaced
- DWPD(drive writes per day):- If it is 1 and the warranty period is five year, then you can rewrite the entire SSD once daily for 5 years before anticipating failure.

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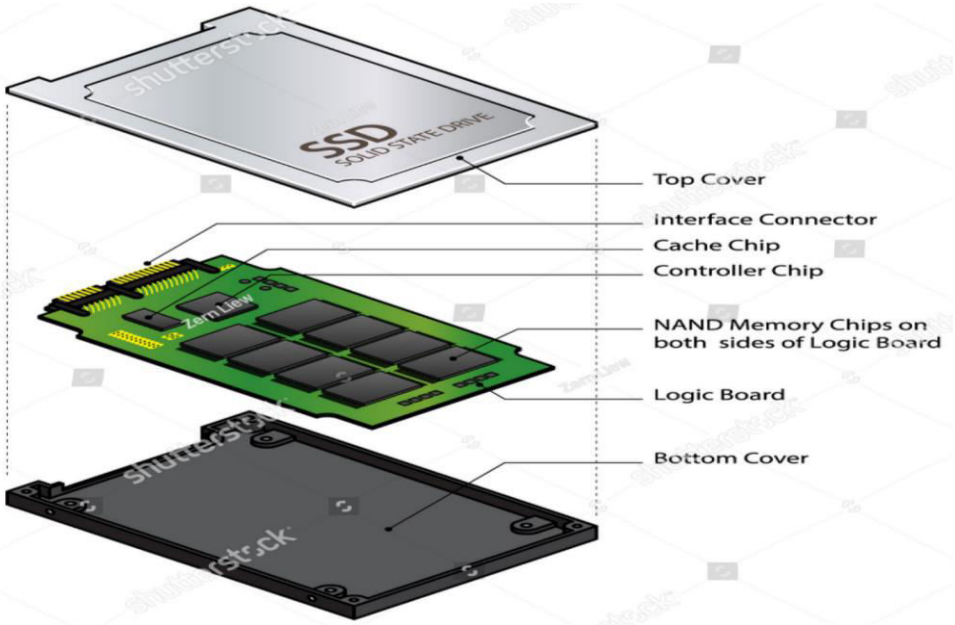

Fig 1.4 design of SSD

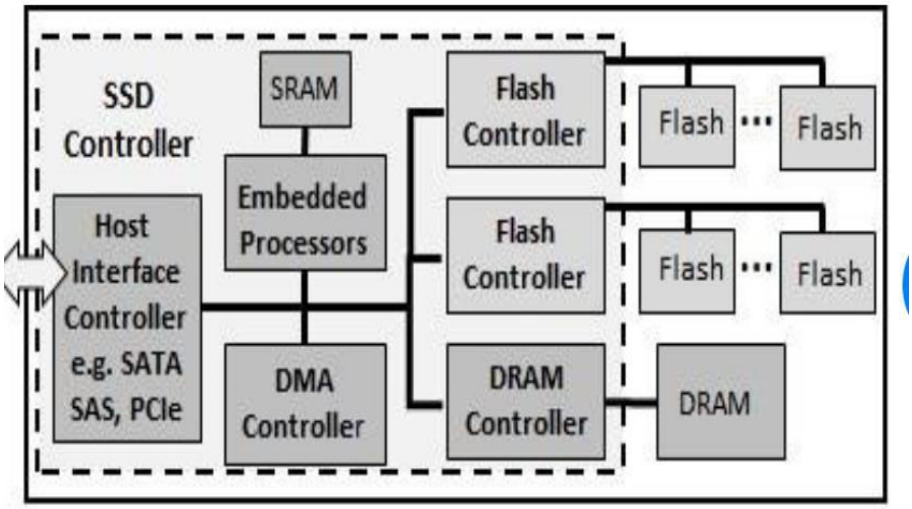

Fig 1.5:- controller Architecture

Memory Chip: - In general, the memory chips can be divided into two types: NAND flash chip, and DRAM chip.

DRAM short for Dynamic random-access memory, features a read-and-write speed faster than NAND flash chip. However, once powered off, DRAM will lose data. Based on the above points, DRAM is usually used in memory banks and only a few SSDs adopt it.

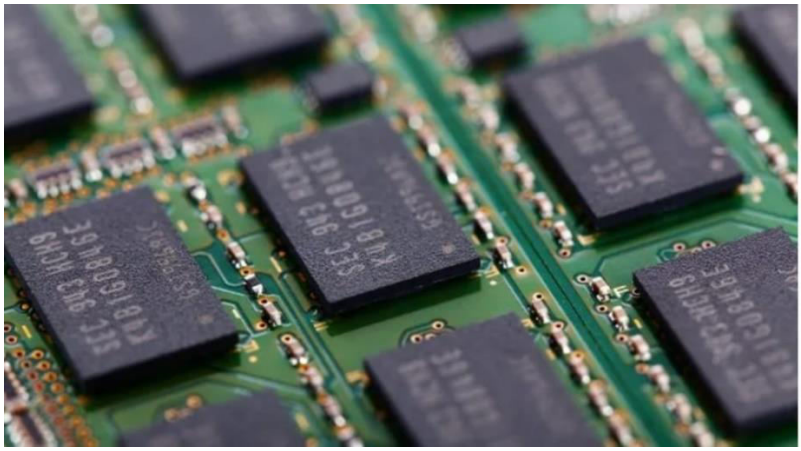

Fig 1.6:- DRAM

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NAND flash is a non-volatile storage technology, that is, data can still be saved after power failure. Due to its advantages like low power consumption, low price, and good performance, it is widely used in SSDs.

NAND flash chip can be divided into SLC (single-level cell) flash memory, MLC (multi-level cell) flash memory, TLC (triple-level cell), and QLC (quad-level cell) NAND flash memory. In addition, NAND flash chip can also be divided into plane NAND flash memory, and 3D NAND flash memory.

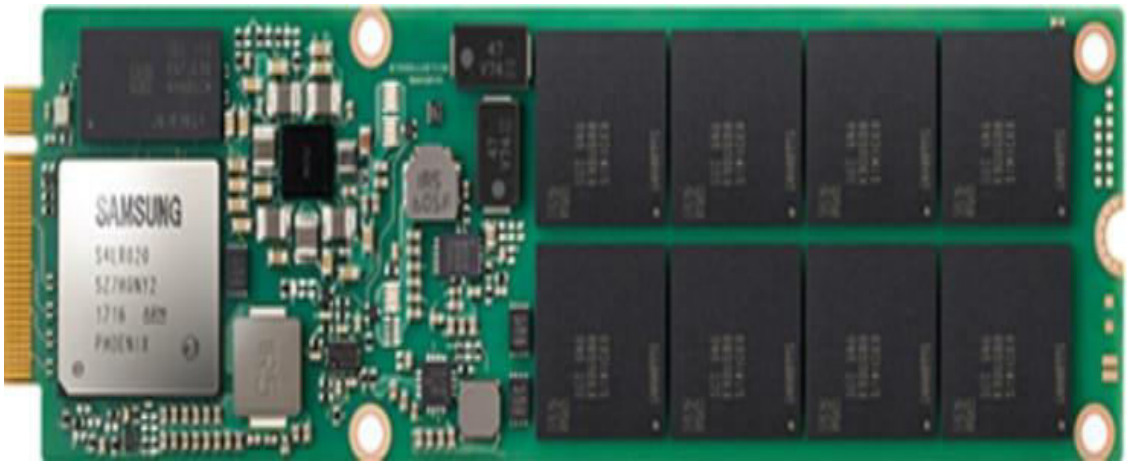

Fig 1.7:- internal structure of memory chip

Buffer Chip

The buffer chip stands next to the controller chip. With it, SSDs can process data faster. However, in order to save costs, some cheap SSD solutions eliminate cache chips, which will certainly degrade the performance of SSDs.

Interface

The hard disk interface is the connection between the hard disk and the host system, which is used to transfer data between them. The hard disk interface determines the connection speed between the hard disk and the computer.

In general, SSD has the interface specification same as common hard disk. For example, it may have interfaces like SATA, mSATA, M.2, and U.2. These interfaces support AHCI protocol. However, SSD also has an interface that only supports NVMe protocol, that is, PCIe.

Fig 1.8:- interface

MECHANISM OF SSD

SSDs serves the same purpose as the HDDs: they store data and files for long term use. The difference is that SSDs use a type of memory called “Flash memory”, which is similar to RAM. But, unlike RAM, which clears its data whenever the computer powers down, the data on an SSD persist even when it losses power. In a SSD the data is saved to a pool of NAND Flash and the NAND is made up of floating gate transistor. Disparate from the transistor designs used in DRAM, which must be refreshed multiple times per second. NAND Flash is non-volatile in nature which retain it’s charge state even when not powered up.

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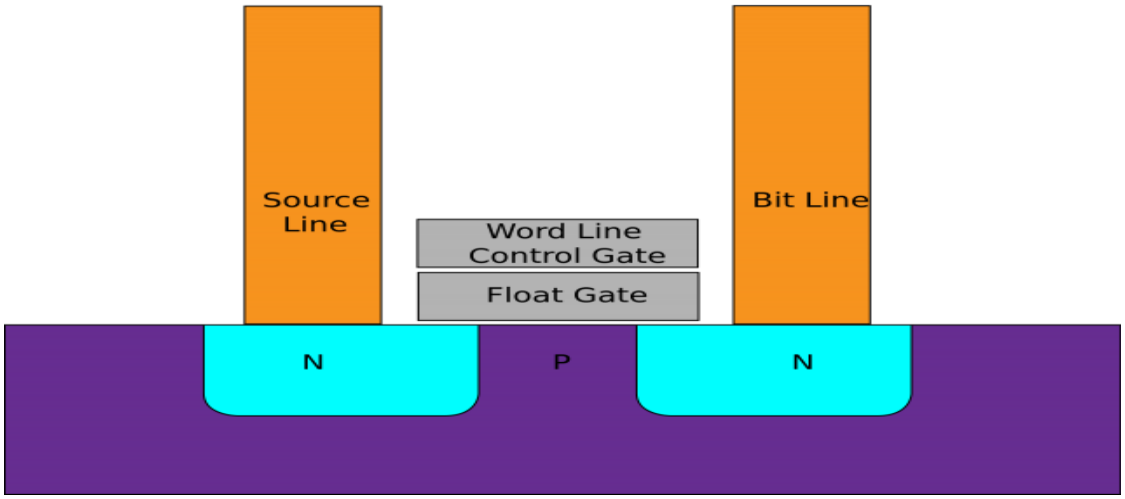

Fig 1.9:- flash cell design

The diagram overhead shows a simple flash cell design. Electrons are stored in the floating gate which then reads as charged "0", or not charged "1". In NAND Flash data stored in cell means 0 – it's opposite of how we typically think of a 0 or 1. If you took apart a typical HDD, you'd see a stack of magnetic plates with a reading needle-kind of like a vinyl record player. Before the needle can read or write data, the plates have to spin around to the right location. Whereas SSD use a grid of electrical cells to send and receive data quickly. These grids are separated into sections called "pages", and these pages are where data is stored. Pages are clumped together to form "blocks". Furthermore, SSDs are called "solid-state" because they have no moving parts. common page size are 2k, 4k, 8k, or 16k with 128 to 256 pages per block. Block size therefore typically varies between 256kb and 4mb. The SSDs can operate with high speed because of absences of moving parts. The following chart shows the access latency for typically storage medium given in microsecond.

	SLC	MLC	TLC	HDD	RAM
P/E cycles	100k	10k	5k	*	*
Bits per cell	1	2	3	*	*
Seek latency (µs)	*	*	*	9000	*
Read latency (µs)	25	50	100	2000-7000	0.04-0.1
Write latency (µs)	250	900	1500	2000-7000	0.04-0.1
Erase latency (µs)	1500	3000	5000	*	*
Notes	* metric is not applicable for that type of memory				
Sources	P/E cycles [20] SLC/MLC latencies [1] TLC latencies [23] Hard disk drive latencies [18, 19, 25] RAM latencies [30, 52] L1 and L2 cache latencies [52]				

Fig 2.1:- the chart of latencies

The working of NAND is as fast as main memory. But its multiple orders of magnitude faster than a hard drive. Although write latencies are apparently slower from NAND Flash than read latencies. SLC stands for single-level cell, MLC for multi-level cell, TLC for triple-level cell and QLC for quadruple-level cell. The latencies for P/E(program erase)cycle is more in SLC then TLC. The bits per cell increase simultaneously in the above chart.

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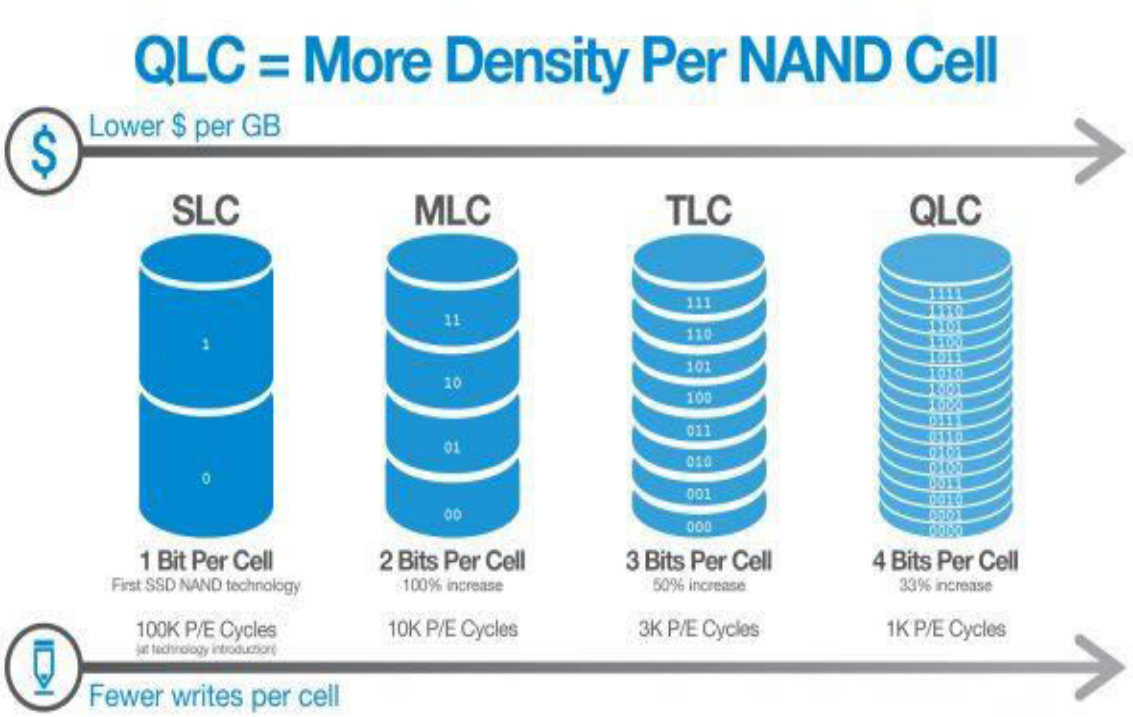

Fig 2.2:- bits of different cell

The addition of more bits in each cell of NAND has a significant impact on the memory performance. The TCL NAND is slower than MLC or SLC and the reason has to do with how data moves in and out of the NAND cells. With SLC NAND the controller only needs to know if the heat is a 0 or a 1. With MLC NAND the cell may have four values- 00, 01, 10, 11. With TLC NAND the cell can have 8 values and QLC has 16 values. The use of precise voltage by memory controller help in reading the proper value out.

RESULT

The used of solid state drives has been increased over a period of time.

Fig 2.3:- popularity of SSD across the world

The SSDs are very popular in the western, European, middle Asian and east Asian countries. These countries prefer using SSDs over HDDs and Thumb drives. The global enterprise SSD market size was valued as $17.85 billion in 2020, and is projected to reach $46.86 billion by 2030, registering a CAGR of 10.2% from 2021 to 2030.

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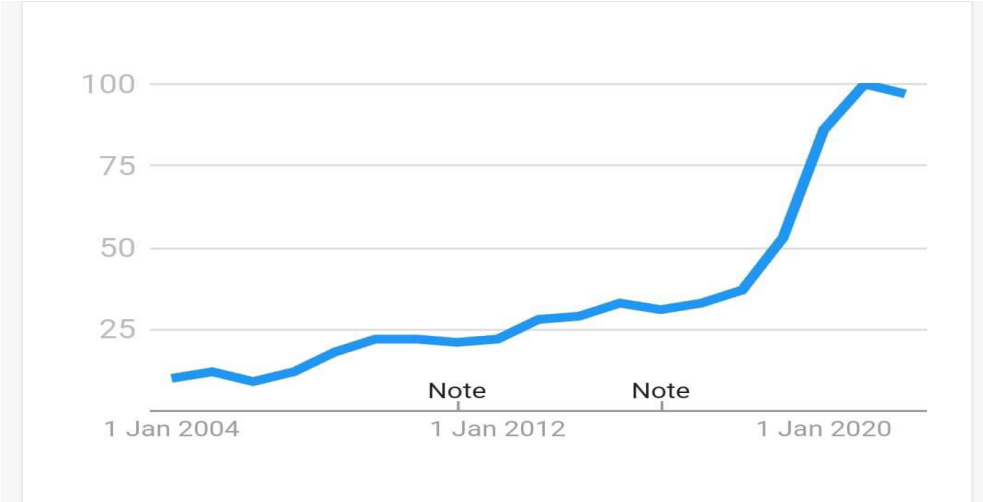

Fig 2.4:- rise in use of SSD from 2004-2020

The above graph shows the popularity rise statistic of the SSDs

Fig 2.5:- popularity of SSD in India

Further talking about the popularity or significant use of SSD in India is show in the chart above. India's SSD market is projected to reach nearly $ 156 million by 2023. However, SSD market in India is poised to grow threefold over the next six years.

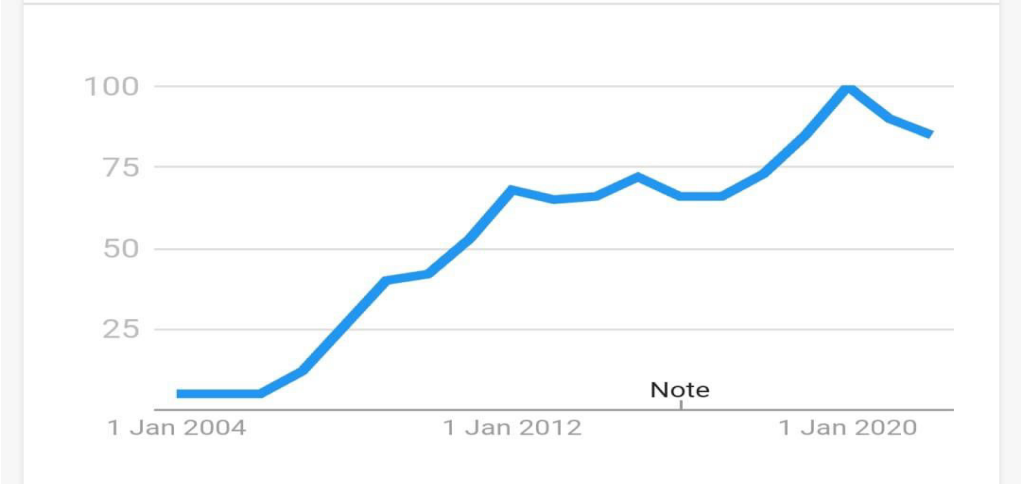

Fig 2.6:- rise in use of SSD from 2004-2020 in India

The above graph depicts the apparent rise of the SSD. Rapid rise in the next generation connected devices, growing premium & high-end PC market, need for higher performance & capacity storage devices, increasing IT spending, and growing number of data centers would proliferate SSD market in India.

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CONCLUSION

This paper proposed the issue related to storage and an innovative method to solve the problem faced by most of us. Infrastructure, cost, security, corruption, scale, UI(user interface) and accessibility, along with compatibility are the major problem faced by the storage devices. The proposed drive has emphasized an efficient and significant way of storing the data. It is the simple and popular data storing device with boundless perks as compared to other data storing devices. Our memory can be volatile but the memory of SSDs are non volatile. The SSD can help save the money, time and power.

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A SURVEY ON CLASSIFICATION AND CLUSTERING TECHNIQUES USED IN HEALTHCARE

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ABSTRACT
Internet of Healthcare Things (IoHT) is one of the emerging fields in the healthcare. Due to advancement in technology, huge amount of medical data is being collected and stored on the clouds. This data can be analyzed and results can be used by medical practitioners to give recommendations to patients and to predict the future problems. To analyze this data different data mining techniques are being used. This paper contains various data mining techniques in two categories i.e. classification and clustering. And it also describes in brief about their usage for healthcare purpose.

Keywords: IoHT, Clustering, Classification

1. INTRODUCTION
Currently, huge amount of data is received from healthcare sector. This data contains patient's details like their medical history, medical test results, patient's location information, etc. Manually it is not possible to analyze that huge and complex data. Data mining techniques can be used to extract useful information from huge datasets. In medical field datamining techniques can be used in the analysis of healthcare data. This analysis can help in predicting disease, causes of disease, medical treatment suggestions etc. It can also be used in research field of medical treatment in making efficient policies, construction of drug recommendation system and health policies for individual persons.

All these scenarios already exist. But due to rapid advancement in the Internet and sensor based systems healthcare system is growing in new dimension i.e. IoHT. In IoHT "health things" like devices, sensors, applications are connected through Internet. Data is collected from these health things and analyzed to extract useful information that helps medical practitioners to improve the delivery of care or operations that support care. Health care systems which are based on clouds, they collect health data from the sensors attached to the body and then this data is stored and processed inside the cloud servers. Health data can contain elements like body temperature, blood pressure etc. This data can be analyzed to predict the health status of individuals.

Different data mining techniques like classification and clustering are being used in healthcare sector for analyzing the data and extracting the information regarding patient's health condition.

Classification is supervised learning method. Classification techniques can be used to predict the target class for each observation for example, whether patient is at **high risk** or **low risk** for a particular kind of disease. Classification techniques such as K-NN, SVM, decision tree, etc. can be used for this purpose.

Clustering is unsupervised learning technique. Main objective of clustering methods is to divide given dataset into homogeneous groups called clusters. But in clustering there are no target classes predefined. On the basis of similarity between observations clusters are formed. All observations in one cluster will have some common characteristics, those will be different from observations in another cluster.

In last five years, in the field of health care, mostly classification methods have been used as compared to clustering methods for analysis purpose.

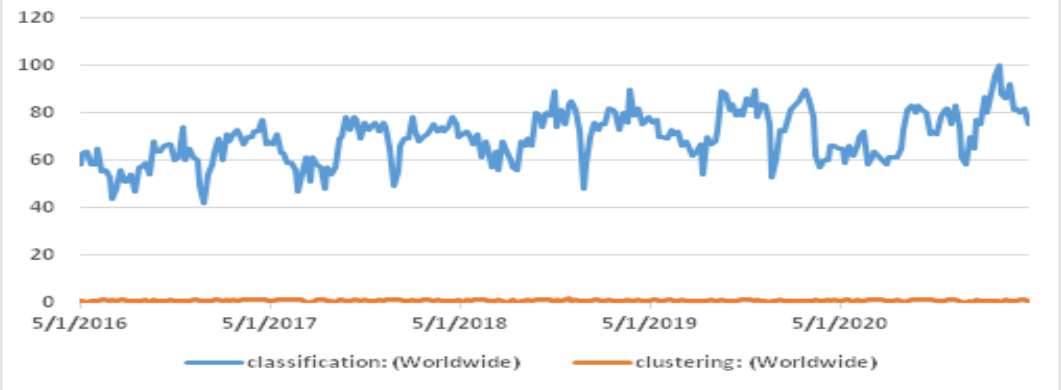

Figure 1: Classification Vs Clustering Methods in Health sector in the last 5 years

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2. RELATED WORK

A huge amount of data is being collected daily by healthcare sector related to patients including clinical examination, vital parameters, investigation reports, treatment follow-ups, and drug decisions etc. Previously it was not being analyzed and mined in an appropriate way [12].

After the advancement in the storage, communication, sensor and analysis technology, now a days most of the healthcare data is being stored and analyzed for different purposes.

Different classification techniques have been used for the analysis of the healthcare data. Few examples are: K-NN, SVM, random forest, MLP [2], decision tree, Naive Bayes Classifier, ID3, and Neural Networks [1].

Many clustering techniques have been used to analyze healthcare data, for example: optimized K-means [4], enhanced K-means [5] [6], G-means [5], hierarchical clustering [9].

3. OBJECTIVE OF PRESENT WORK

One of the main objective of this work is to discuss about usage of different classification and clustering techniques that have been used in the field of healthcare especially in IoHT. Another objective is to identify more popular data mining technique in healthcare sector out of clustering and classification.

4. RESULTS AND DISCUSSION

Table 1: Clustering techniques used in healthcare

S. No.	Name of Clustering Algorithm	Application area in healthcare	Title of the paper
1	K-means and Hierarchical Clustering	These methods have been used to analyze health care claims data. With this analysis cost change patterns of the patients can be identified in case of end-stage renal disease	Cluster analysis and its application to healthcare claims data: a study of end-stage renal disease patients who initiated hemodialysis[9]
2	K-means	This paper analyzed data(symptoms, location information) collected from the patients and suggests them nearest specialist doctor.	Designing a Cloud based Framework for HealthCare System and applying Clustering techniques for Region Wise Diagnosis.[7]
3	G-means(Greedy K-means)	It has been used to cluster huge amount of healthcare data as compared to K-means in lesser number of reads (i.e. passes). This methods can be used in grouping the patients having similar kind of diseases, so that appropriate treatment can be given to them.	An Enhanced k-Means Clustering Algorithm for Pattern Discovery in Healthcare Data [5]
4	Enhanced K-means	It has been used to analyze clinical documents to extract symptoms and then accordingly medication name can also be extracted	Enhanced K-means Clustering Approach for Health Care Analysis Using Clinical Documents[6]
5	Optimized K-means	Optimized version takes less execution time as compared to standard K-means algorithm. Both the approaches have tested using some randomly generated data.	An Optimized Version of the K-Means Clustering Algorithm[4]

Table 2: Classification techniques used in healthcare

S. No.	Name of Clustering Algorithm	Application area in healthcare	Source Paper Title
1	*K*-nearest neighbor (*K*-NN)	Used in the prediction of diseases, like, breast cancer, diabetes, heart disease, Spect-heart, thyroid, surgery, dermatology and liver	A healthcare monitoring system using random forest[2]

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		disorder by analyzing public datasets.	
2	decision tree	Used in medicine for classification of prostate cancer	Data Mining In HealthCare Datasets[1]
3	Linear-support vector machine (linear -SVM)	Used in the prediction of diseases, like, breast cancer, diabetes, heart disease, Spect-heart, thyroid, surgery, dermatology and liver disorder by analyzing public datasets.	A healthcare monitoring system using random forest[2]
4	Random Forest	Used in the prediction of diseases, like, breast cancer, diabetes, heart disease, Spect-heart, thyroid, surgery, dermatology and liver disorder by analyzing public datasets.	A healthcare monitoring system using random forest[2]
5	MLP	Used in the prediction of diseases, like, breast cancer, diabetes, heart disease, Spect-heart, thyroid, surgery, dermatology and liver disorder by analyzing public datasets.	A healthcare monitoring system using random forest[2]
6	Naive Bayes Classifier	Used in the prediction of patient's prognosis	Data Mining In HealthCare Datasets[1]
7.	ID3 (Iterative Dichotomized 3)	ID3 algorithm was used in supporting medical diagnosis.	Data Mining In HealthCare Datasets[1]
8	Neural Networks	Used in cardiovascular artery disorder and converting of EEG indicators.	Data Mining In HealthCare Datasets[1]

5. OBSERVATION

Going through lot of research work that has been already done I observed that out of clustering and classification more popular technique in healthcare sector is clustering. Similar kind of analysis I got through trnds.google.com. In past five year lot of work has been done using classification methods as compared to clustering in the healthcare.

6. CONCLUSION

Different Clustering and classification methods used in healthcare sector have been reviewed in this paper. This paper also compared number of clustering and classification methods used worldwide in health sector. It has been observed that mostly classification methods have been used in last five years as compared to clustering methods.

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STUDENTS' PERSPECTIVES ON THE ONLINE TEACHING-LEARNING PROCESS

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ABSTRACT
When the COVID-19 pandemic broke out in Spring 2020, all the teachers across the world quickly changed their classes to an online format. Resources quickly became available that mirrored faculty and administration's views on online learning, but it is only now that student viewpoints can be assessed after they have gone through the process. This article reports on a study whose primary aim was to find out Students' perspectives on the online teaching-learning process. Mostly students felt that online teaching is good, it has good impact on students, very less students said that online teaching is not effective, mostly students agreed that teaching should be offline, most of them also agreed that they are satisfied with online teaching-learning process. Most of the students agreed for online exam mode and most of them are not sure that online teaching-learning process will build their career.

Keywords: Online-Teaching learning process, career, impact, satisfied, school, college.

INTRODUCTION
In March 2020, COVID-19 was declared a global pandemic (WHO, 2020, Almahasees et al., 2021). It had an impact on every aspect of life, including education. Schools and Universities were forced to close as a result. The academic institution was put under a lot of pressure to deal with the unprecedented change from traditional to online learning as a result of the shutdown. The pandemic prompted innovative approaches to online education. Where the medium of education has transitioned into either synchronous or asynchronous modes, most governments have set limits. In more than 190 countries around the world, the most significant educational system disruption in history has occurred. Academic institution closures have impacted up to 99 percent of the world's student population in low- and middle-income countries (The Economic Times, 2020, Almahasees et al., 2021). The closing of higher education institutions necessitates online learning, which teaches course material.

To combat the spread of the pandemic, India has substituted face-to-face training with online learning systems. The government had enforced a nationwide curfew, forcing universities and schools to close. The majority of global institutions use both synchronous and asynchronous online teaching methods: synchronous refers to faculty and students meeting at a pre-determined time for interactive learning classes, whereas asynchronous refers to the faculty giving the course without interaction with the students. There isn't any interaction between the professors and the pupils. Students can access online information anytime they want with asynchronous types of online learning (Easy LMS, 2021; Almahasees et al., 2021). Faculty have an important role in making learning fun, moulding students' attitudes and personalities, and assisting students in passing. COVID-19 has a lot of different spreads. When new teaching methodologies are adopted and new technologies are introduced, the student perspective is very crucial (Arthur, 2009; Crews & Butterfield, 2014; Van Wart, Ni, Ready, Shayo, & Court, 2020; Van Wart et al., 2020). Hence, the present study aims at finding student's perspective on the online teaching-learning process as schools and colleges are open and students can give their true response regarding the worth of face-to-face teaching learning process.

RESEARCH METHODOLOGY
A Google form was prepared with questions related to the topic. It was circulated in students whatsapp group to get their responses.

RESULTS AND DISCUSSION
Students from different schools and colleges have given their responses. Total 334 responses were collected through the google form. The responses are as follows:

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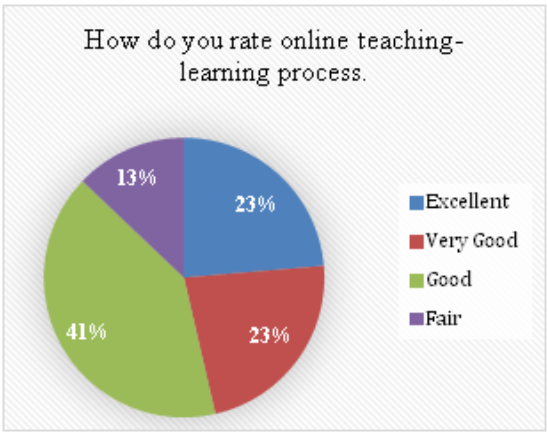

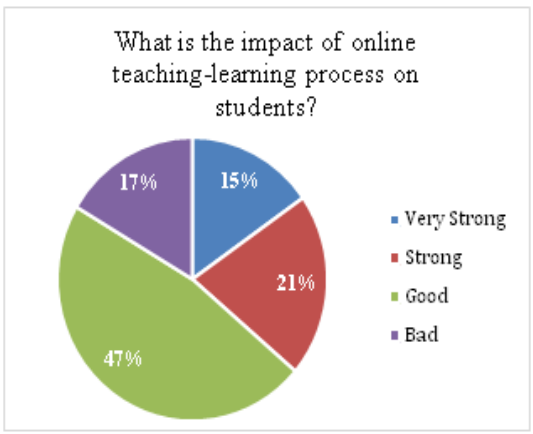

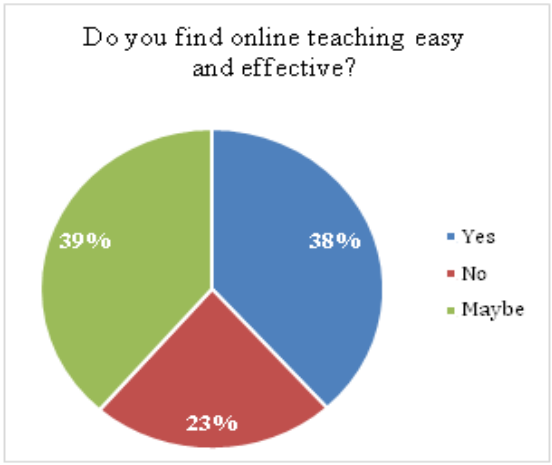

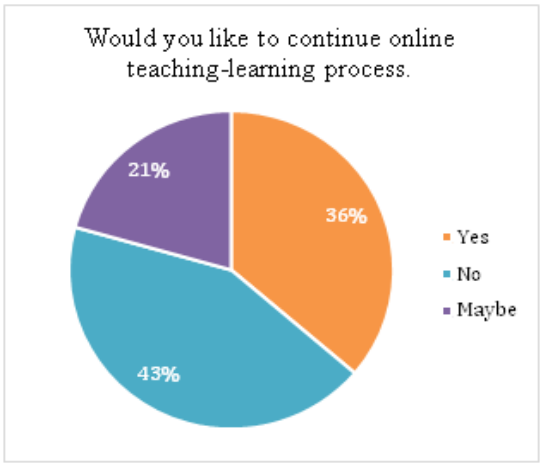

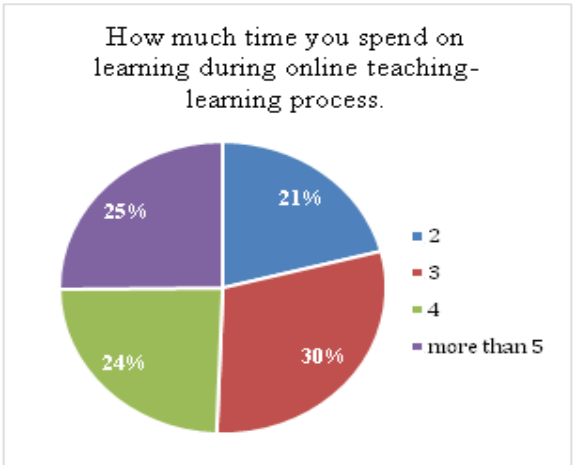

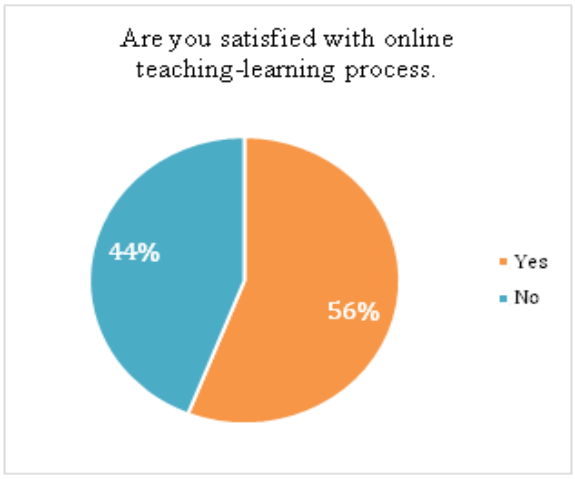

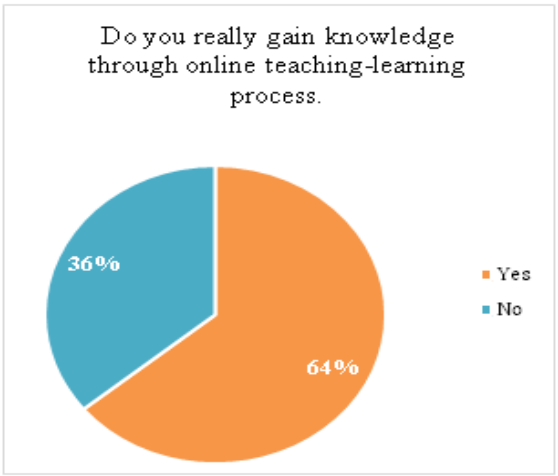

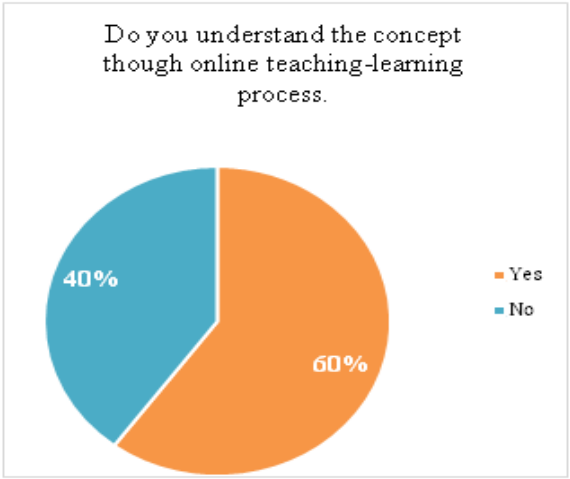

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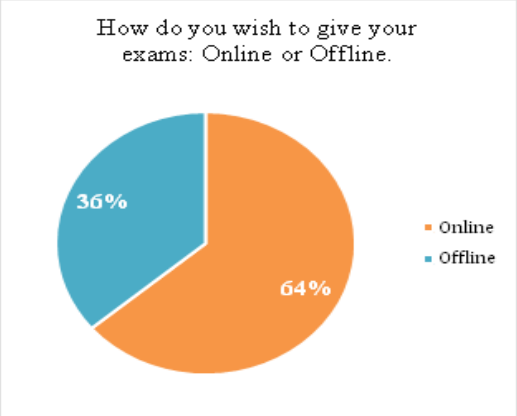

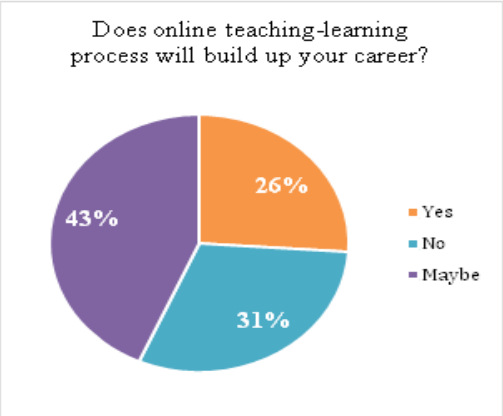

Efficiency, cost-effectiveness, and 24-hour access are among the advantages, whereas technical challenges, a lack of engagement, and training are among the drawbacks (Gautam, 2020, Almahasees et al., 2021).

These are the feedback of Students

If online. Why?
Because half year is in online teaching
It's good, when 1 month remaining, syllabus is pending, extra lecture are conducting, minimum time to study
Almost lectures were online that's why we are not ready for offline exam
Because of I like online study
Because we have not given offline exam since last 2 years. So, we are not prepared for any offline exam.
Because, students have access to recorded videos and online reading material, they can easily attend lectures as and when it is convenient.
Because 50 % syllabus complete in online mode.
Because According to me it's convenient to all. Anyone from anywhere can give the exam and It'll also time-saving and there will be no disturbance of classmates, so that the studious one can concentrate better.
Because everything was thought online so it should be online exams because the lessons are not that clear to anyone.
Because if we give exams online then paper will not get wasted.
Because in between our lectures were online and now we have the habit of online exams
Because it much easy and provide us more time for study
because it's more efficient as students save time and energy by staying at home
Because most of the lecture were online and sometimes due to network issue it was difficult to attend every lecture.
Because now it’s our last sem. of FY and we have not studied that we can score good marks and also we have not understood many concepts. So I think this year there should be online from next year the exams should be conducted offline.
Because online has MCQ and that is easy to pass
Because our course is done in moderate mode and some concept is clear some is not
Because our whole syllabus was taught on online platform
Because patients are increasing
Because some chapters are teaching in online classes and that concepts didn't understood
Because Students cannot write proper answer they can do copy.
Because the lectures are half online and offline. And disconnect due to network problem so the concepts are not well understood
Because we are not mentally prepared for offline
Because our maximum lecture was online
Being at home is a comfort and safe

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Better feel in online exam
Because we have studied online and we have no experience and practice of writing 100 marks paper, this is my reason.
College is far away from my home, take time to travel daily and cost effective
Because Now the habit of offline exam is lost
Easy formats and methods
It lowers the risk of highly contagious disease i.e. COVID 19
I want my exams online because most of our lectures where online and during online lectures , I was having network issue and because of network issue I missed most of topics that's why
In covid-19 pandemic situation exam should be online because the student's protection is our first priority. Online exam is very good option who are in native place. Many students give exam at a time. Online exam is better than offline. So, I prefer online exam.
In online exam we don't have pressure and help us to give exam quickly
It's convenient when it's online because it's nowadays everything is in online method so it's preferable to give online only
It's not that panicking and we don't feel nervous or scared.
It's not time consuming and it helps to gain conceptual knowledge of the subject by taking exams through McQ mode
Online because sitting at our own home, in our own comfort zone is very peaceful to write the paper
Online Exams are more convenient and they test our understanding of the concept
Online exams because still half of the lecturers are conducting through online mode. still there is no proper conduction of offline lectures
Online exams helps us revise to the chapter in small summary way and we can give our remaining academic time to other creative curriculum activities to gain practical knowledge
Remote invigilation, or online proctoring, gives candidates the ability to sit a secure and invigilated online assessment from the comfort of their home, which is less stressful and saves time and money going to a test center
Short and easy way to explain the concept.
Some students are not able to come college for those who live in long distance. So online is better
Syllabus is completing in online mode so why not online exam
The college has taken the lectures online offline both but the link is breaking of our study because of these online offline lectures
The one year teaching online that's why take online exam
The reason for online exam from my point of view is because I'm not physically fit for appearing for offline exam
We are preparing for other study
We can give exam anywhere through online
Yet some student cannot attend the lectures offline due to some problem think so for that... online would be convenient for all
You never have to print an exam for students and hand them out. Saves paper. If you only use multiple choice questions you never have to check an exam again.

If offline. Why?
It's makes us understand and provide knowledge
As we should be able to inculcate our brain to write the topics which we have learnt throughout the year
Atleast we can mentally prepare nobody can focus on online lecture it not effective more than offline lectures. In offline we can do practically, physically so we understand properly and many more reason are there.
Bad feel in online exam

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Bcoz offline is the best exam
Because in online students are not honest they copy that's why offline exam should be conducted
Because I want to bring good outputs in exam by an offline paper
Because it is easy for students to write more answer content in offline exams
Because it is effective and what knowledge we get how we use in paper
Because it is more convenient
Because it's easy to understand
Because it's so difficult
Because of 12th Board, We Have to Familiar with Offline Exam Because we have to give offline board Exam very Next Year.
Because of offline teaching is more understanding & clearing the concept of students
Because offline exam is very best to understand ours ability to write and how much we will apply ours knowledge on writing part.
because on the supervision ma'am we feel like gave the exam and write the answer very honestly.....students get marks by their knowledge.
Because Students can write proper answer without copy.
Because knowledge is increase .
Because if we go online for always it will effect on our career , so we should attend lecture offline give exam offline
Better concept understanding, gain more practical knowledge
Better than online. Atleast we will get genuine marks
Challenging
Colleges are basically for communication based studies with zero physical interaction our communication has been worse throughout the year and in online exam malpractices are common now.
Concept clear, understanding of practical knowledge
Concept is not clearly covered. From next sem take the exam offline
Offline Exams should not be conducted since last 2 years exam are online hence no knowledge gained
For time management and doing effect on our studies
If offline exams is there so I can't do cheating in exam
If Offline I Am Not Coming Properly That Is Why I Am Out Of Mumbai
If offline then it will also be perfect to read and solve
If offline then you can see how many of students have been studying
If the exams will be offline we will understand how much knowledge we are getting through our studies
If there is offline teaching then exams should be offline because students cannot do cheating and know their potential how they can go through offline board exams
In offline we write our paper by our own and in online we take the help of our elders or our friends.
It develops discipline in student and due to the fear of offline exam the students do studies seriously
It gives more value and credibility in market
It gives the real idea and real understanding approach of education system
It increases our confidence level
It is more efficient and we do hard study to get knowledge
It is very important
It is easy to write on paper rather than google forms and we can write more content of answers in offline exams.
It let us know, how much knowledge we have about particular concept.
It may very difficult

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It will help to improvise our knowledge
It would help us to know our capabilities
It's get easy to write
It's more effective for us
Less chances of cheating
More precise writing ..typing takes time
No I am not prepare for offline exam
No offline
No suggestions
Not take vaccine and come to college.
Nothing
Offline because there will be no partiality and those who are deserving will get good marks
Offline Also good not a bad
Offline back to normal and to start agar with the writing practice
Offline exam gives to seat in on the one place for 2 to 3 hour and this is good for our future also we learn answer and this improve our memory power.
Offline exam is best
Offline exam is better than online exam
Offline examination is the best in every aspect. Online examination is just worthless.
Offline exams are more accurate and most honest one .....
Offline exams will give more accurate results
Offline is easy too and some of them will don't copy in exam
Offline we don't want for second semester
Offline.... back to normal and to start agar with the writing practice..
Offline exam better then online exam
Online teaching is very good
Our all concept will be clear and the exam will be fair enough better than online exam
Since this pandemic we students have lost the touch of written exams which in future will create trouble for us so I wish the exams to be offline.
Students can be examined fairly
Students would focus on study
Teacher is in front of us and students are also attentive
That will show how much we understand in the lecture
There are malpractices performed by students when the exams are not at the center which is not fair for the ones who do hard work
This is the very good way for the study
to come back to normal and also for writing practice
Traveling time is more
Unfair happening with really talented students. There is lack of knowledge amongst students
We ask doubt
We can score more on offline than online.
We can understand concepts more clearly
We could interact without any problem
We get to know more theoretical knowledge
We study genuinely

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We will know at what platform we are standing.
We will understand more in class or interact with teacher
Will come to understand the concept of subject more properly
Yes. if the college will offline and students prepared well then ready to go offline exams

CONCLUSION

The study investigated how students felt about online learning and the value of offline teaching-learning. According to the findings, online education is ineffective when compared to offline classrooms. Still many students agree with online exam as it is easier than offline exams. The sincere and hardworking students favored and recommended offline teaching learning process. Hence, E-learning platforms encourage student-centered learning and are adaptable in the face of adversity, such as COVID-19.

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EV THE FUTURE OF TRANSPORTATION

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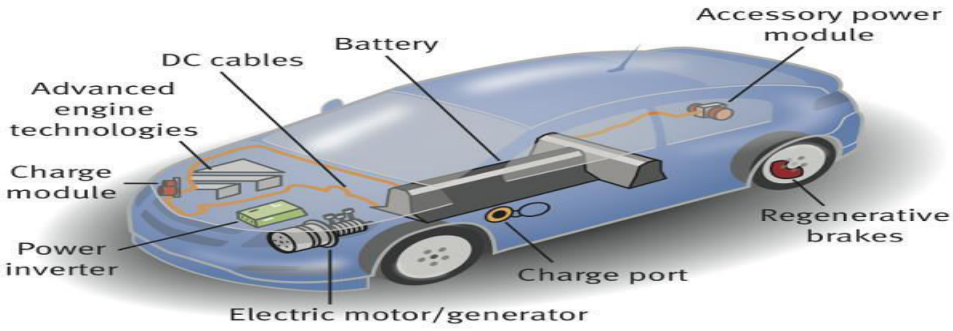
ABSTRACT
Nowadays we have seen increases in the prices of petrol and diesel which is the biggest concerned for every common people for transportation as well as for the government to import or to depend on other country for petroleum. And the dollar which we are spending on large amount for petroleum can be invested in other field like researches. So the best alternative for all these is the electric vehicle which can help us to keep our environment pollution free and by which we can develop our own electric vehicle where we are using our own manpower providing employment to people of the same state or village that can play the role of atmanirbhar bharat and the dollar that we were investing in large amount for importing petroleum can be used in these researches of electric vehicle already tata motors has launched its nexon ev which is among the the most selled car in india. And even tata motor is working on next generation of electric vehicle recently they have launched there new EV concept curv. For EV we have to spend Rs1 or Rs2 per km of travel , against Rs5 per km for a fossil fuel .And it varies from state to city. Automobiles are the primary source of air pollution in India's major cities. In India, transportation sector emits an estimated 261 tonnes of CO2, of which 94.5% is contributed by road transport. So considering this all things in mind everyone has to take initiative like on social media platform and by showing the advertisement these all must be provided by the government itself make people aware and positivness of using electric vehicle and the media must take this initiative to promte it instead of showing other useless stuff

Keywords: Atmanirbhar bharat, dollar, fossil fuel, awareness, initiative, air pollution.

INTRODUCTION
Nowadays it has been seen that the non-renewable energy sources is been getting extinct day by day. Due to this the cost of fuels for running the vehicles has been increasing. The use of electric vehicle has been taken into consideration. Since normal vehicle work due to combustion of non-renewable fuel which leads to global warning. It also emits harmful gases like, CO2 and CO, etc. which leads to ozone depletion, also non-renewable resources are limited and they need centuries to form. The main point is that we can't produce them according to ours needs. "Mother Nature take its own time to fill those resources". So taking in account the uses and needs of energy from fuel. We need to move to alternative resources and here comes the renewable energy into consideration. A renewable vehicle is light weight, more efficient, pollution free, and does not harm our nature in any sense. Also renewable vehicle doesn't consist of oils, pistons, which makes the vehicle light weight and thus easy to handle. Control of this EV is easy and one can easily ride them and reach to their destination. Many automobile industries are moving towards the renewable source to power their vehicle. "We have to serve a better future to our next generation so just go green".

An electric car is powered by an electric motor instead of a petrol engine. The electric motor gets energy from a controller, which regulates the amount of power—based on the driver's use of an accelerator pedal. The electric car (also known as electric vehicle or EV) uses energy stored in its rechargeable batteries, which are recharged by common household electricity.



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Thus an Electric Vehicle will have Three Basic Components:

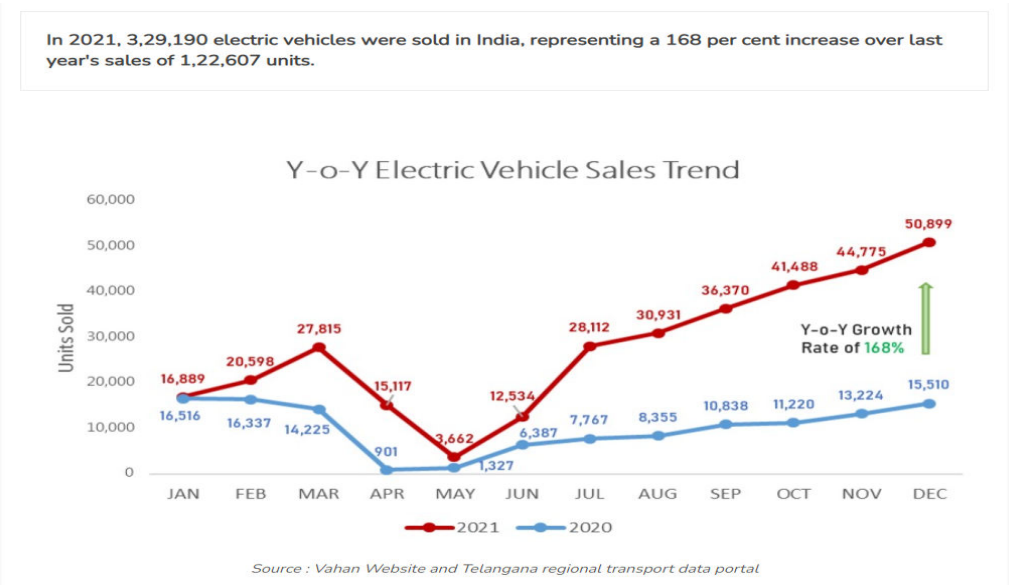
- Energy Storage Unit
- Controller
- Propulsion system

The energy storage unit will have a way to store power. A chemical battery is the most common energy storage technology currently, although it can be different - for example - A fuel cell (which gets its electricity from hydrogen rather than a battery pack), can be used instead of a chemical battery as the energy storage unit.

The controller acts as a pipeline or gateway to the electric motor.. The controller will do other things too - it moderates the power, will also act as a converter - converts power from DC to AC, or it might also increase or decrease the amperage etc. The controller is the brains of the system

We have to spend Rs 80-202 to charge our EV at a charging station, but the cost will be higher at Rs 160-450 if you do it at home.Depending on which car model you have, how big the battery is and how fast the charging point is, it can take anywhere from around 60 minutes to 8-9 hours for an electric car to charge up to 80%. However, with rapid chargers, you can reduce this time to 30-40 minutes. These EV's get their power from rechargeable batteries installed inside the car. These batteries are not only used to power the car but also used for the functioning of lights and wipers. But at last these all is possible when each and every citizens will respond it in a positive manner and instead of buying petrol and diesel vehicle prefer electric vehicle and t to promote the atmanirbhar bharat and make india pollution free,As

Growth Rate in Purchasing Electric Vehicle In 2020 2021



With a combined market share of 90%. 2-Wheelers and low-speed L3category 3-Whheelers are the most popular electric vehicles. Due to pandemic,EV sales declined in April and may,but sales began to pick up in June,with a steady growth rate.

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Vehicle segment wise contribution in 2021

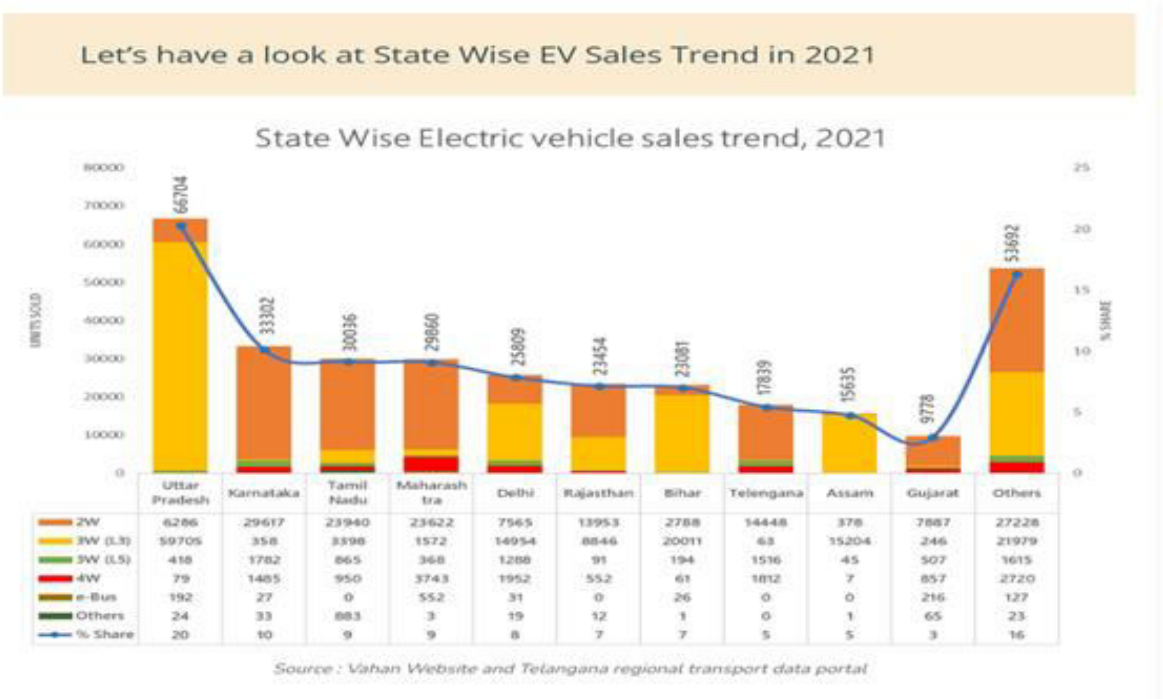
Electric 2WS – 48 %

Electric L3 – 45 %

Electric L5 – 3 %

Electric 4WS – 4 %

1,57,712 UNITS OF HIGH SPEED Electric 2W were sold in 2021 while 1,46,336 units sold of L3 category e-3Ws were sold in 2021. Sales of L5 electric 3W increased from 1612 units in 2020 to 8689 units in 2021,while the sales of electric 4Wsales rose from 4642 units in 2020 to 14,218 units in 2021



LITERATURE REVIEW

In 1828, the Hungarian priest and physicist Ányos Jedlik invented an early type of electric motor, and created a small model car powered by his new motor. Rechargeable batteries that provided a viable means for storing electricity on board a vehicle did not come into being until 1859, with the invention of the lead–acid battery by French physicist Gaston Planté. Camille Alphonse Faure, another French scientist, significantly improved the design of the battery in 1881; his improvements greatly increased the capacity of such batteries and led directly to their manufacture on an industrial scale.

Interest in motor vehicles increased greatly in the late 1890s and early 1900s. Electric battery-powered taxis became available at the end of the 19th century. In London, Walter Bersey designed a fleet of such cabs and introduced them to the streets of London in 1897. The company ran until 1898 with up to 62 cabs operating until it was reformed by its financiers to form the Electric Vehicle Company.

Electric vehicles had a number of advantages over their early-1900s competitors. They did not have the vibration, smell, and noise associated with gasoline cars. They also did not require gear changes. (While steam-powered cars also had no gear shifting, they suffered from long start-up times of up to 45 minutes on cold mornings.) The cars were also preferred because they did not require a manual effort to start, as did gasoline cars which featured a hand crank to start the engine.

OBJECTIVE

To make people aware of electric vehicle and to spread awareness and the benefit of using electric vehicle and make environment pollution free and achive the title of sustainable developmentas well as make use renewable energy in large amount and make electricity cheaper and easily available everywhere

SCOPE

1. No Gas Required
2. 2. More Convenient

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3. Savings
4. No Emissions
5. Less Greenhouse EmissionsSafe to Drive
6. Cost-Effective
7. Low Maintenance
8. Reduced Noise Pollution
9. Battery Life & Cost

RESEARCH METHODOLOGY

Primary Data- It is collected through questionnaires.

Secondary Data- It is collected through different websites, e-notes, research papers, journals etc.

CONCLUSION

Considering the demand for oil and the problem related to it for the common people and for the country as well as for the environment the best solution is moving towards (my ideas)EV which gtes the power from electricity and as the demand and supply for electric vehicle increases the more research will be done on EV considering the market needs and we can also think on various other technology like how we can make electricity easily available through ecofriendly means and cost efficient and recently our road transport and highway minister Nitin Gadkari has talked about the project where vehicles can be get charge while driving that is Dynamic induction where where the road could supply electricity to the vehicles driving on it. This way the driver would have an electric car with the ability to charge while driving, cutting down the need for high-capacity batteries and charging stations. and even other while driving itself they will get charged where the car will consist of two battery and while driving the car will work on one engine till that time other will get charge which will be used after the 1st battery will get its battery uptill 10 %,the vehicle will consist of solar roof which will automatically get charged using the solar energy technique and the same technique of using solar energy can be implemented in the charging station that the electricity that is been stored in charging station will get the energy through solar, or we can exchange the battery in the power station that can take less time instead of charging the vehicle this technique can be used in case of emergency and by doing more and more research the today's problem will get the solution for tomorrow like the alternative solution of increasing the range of electric vehicle, and get the vehicle charge within a very less time and also it will help to make use of renewable resources in a very large amount by which we are even focusing on making electricity cheaper and easily available

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PHYSIOGNOMY ANALYSIS FOR CHILD SAFETY AND PARENTING: -USING AI AND COMPUTER VISION

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ABSTRACT
As Generation (kids born after the 1990s) are facing threats to their physical and mental wellbeing so we are seeing an overwhelming number of parents searching for the substantial solutions for best way to raising and monitoring kids in their absenteeism. In this research paper, we will see how a technological blend of Artificial Intelligent and Computer Vision can be used for child safety and parenting for proper maintaining work life balance. We also combine Deep Learning & Machine Learning Models like VGG-Face, Google FaceNet, OpenFace, Facebook Deep Face, Deeside, Arc Face, and Dlib for Face Sentiment Analysis. This will give us Insights into how Advanced Computer Vision Technology is and how it assists our Human civilization for example in public safety, Biometric verification, terrorist identification, public traffic management, human trafficking and helping parents to find their missing children.

We will also try to make computer vision technologies compatible with divyang children (physically handicap) such as to help them "see" their surroundings better or help them know who is around them. Also, our goal is to apply this computer vision technology to finding missing children or keep track of child/human trafficker's activities and stop them.

These are the following area that our research will tackle:

- *parent-child relationship*
- *Work-Life balance*
- *Child /human Trafficking*
- *Monitoring Human mental health*
- *Human Behavioral Analysis*

Keywords: Computer vision, Child Safety, Parenting, face recognition, child physiognomy, DeepFace, child Trafficking, child suicide, mental health, AI, Deep learning

INTRODUCTION
We will use the computer vision technology for ensuring children's safety both mental and physical health. Our ultimate goal is to be able to full feel the social obligations toward young children, like child safety and security, providing a better familial environment for their development, Identifying their psychological problems, and notifying their guardians about their health.

What is computer vision?. If AI enables computers to think and understand, computer vision enables them to see. Computer vision is a field of artificial intelligence (AI) that allow computers and systems to derive meaningful information from digital images.[12]

Now let us get some information with regards to the technologies that we will be using

Deepface:- This is a deep learning face recognition framework. It identifies and understands human faces in digital images.[3]

Redis:- Redis, which stands for Remote Dictionary Server, Redis is an in-memory key-value data store. Redis provides Super-fast data performance with average read or write operations taking less than a millisecond, it is basically a cache memory system. [13]

Problem Specification
Now let us consider why using computer vision for child safety is a must! Here we will look at the problem that children face in their daily lives and their severity.

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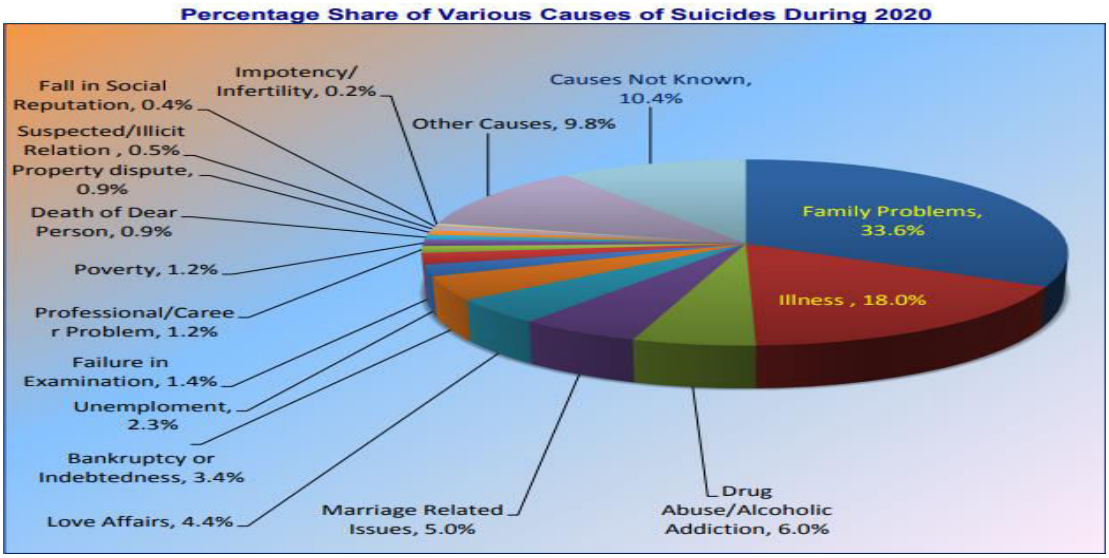
Child Mental Health [10]



"As the years increase, there is a steady increase in mental health and suicide problem,out of which 33.6% are due to Family"

Table 1: (Number of suicides,Growth of Population and Rate of suicides During 2016-2020)

Sr No.	Year	Total Number of suicides	Mid-Year Projected population* (in Lakh)	Rates of suicides (col3/col4)
1	**2016**	1,31,008	12,739.9	10.3
Table2	**2017**	1,29,887	13091.6	9.9
3	**2018**	1,34,516	13233.8	10.2
4	**2019**	1,39,123	13376.1	10.4
5	**2020**	1,53,052	13533.9	11.3

Human Trafficking [16]: -

According to a 2020 report there were 1.714 child trafficking were reported in India,refer below table.

Table 2: Human Trafficking Data from 2015 to 2020.

Sr. No	Year	Cases
1	2020	1714
2	2019	2208
3	2018	2278
4	2017	2854
5	2016	8132
6	2015	6877

Parent Concern

As part of being a parent, it is common to worry about children's safety and security, According to the survey conducted in a corporate magazine, parents were asked if their productivity and efficiency during work is effected due to concerns related to their children physical and mental health. Most of the parents agreed that their productivity was compromised due to their children's related problems.

Existing System

NOTE: -At present, there are no computer vision technologies that focus on children's emotions and mental health but we were able to find technologies that focus on human emotions in general.

Table 3: comparison table for existing systems.

Name	Tasks Performed	Price	Launched	Link
Amazon Rekognition	Facial recognition, people count (traffic management), Face verification	Free for 1 year and First 1 million images	30 November 2016	https://aws.amazon.com/rekognition/
Trueface.ai	Face recognition	99$/month	2014	https://www.trueface.

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	verification, weapon detection			ai/
skyBiometry	Face detection and verification, attributes determination	100$/month	01 October 2012	https://skybiometry.com/
Kairos	Face detection and verification, gender and age detection	Student 19$ Developer 99$ Business 249 $	2012	https://www.kairos.com/
DeepVision AI	recognizing age, gender, and ethnicity/race detection	10 requests /0.008$	2015	https://deepvision.io/
BioID	Verification, face eye movement detection, attributes, voice recognition	Contact BioID	2007	https://www.bioid.com/
BetaFace	Face recognition, emotion, ethnicity, surveillance	0.0035 euro's /500images a day	2005	https://www.betafaceapi.com/demo.html

RESEARCH DESIGN AND METHODOLOGY

- **Analytical Research Methodology**
- **Exploratory Research Methodology**

HYPOTHESIS/PROPOSED SYSTEM

The System that we will be creating is designed to make a computer "see" and Identify children's emotions (Fear, Anger, Surprise, Happy, Sad, Disgust, Neutral) and other attributes displayed on the human face such as Age, Gender, race. The project will help us to understand computer vision techniques and their effects on humans' society. the project aims to improve communication between children and parents and also increase the working efficiency of parents, and stop child trafficking by using Deep Learning & Machine Learning Models Like VGG-Face, Google FaceNet, OpenFace, Facebook DeepFace, DeepID, ArcFace, and Dlib for Face Sentiment Analysis. We also plan to improve children's mental health, their safety and also plan to develop a system that will try to identify missing child's faces from wild images available on the internet or any missing child database. The Accuracy level of Deep Learning & Machine Learning Models Like VGG-Face, Google FaceNet, OpenFace, Facebook DeepFace, DeepID, ArcFace, and Dlib.

Note: Accuracy of models used [3].

Model	LFW Score	YTF Score
Facenet512	99.65%	-
ArcFace	99.41%	-
Dlib	99.38 %	-
Facenet	99.20%	-
VGG-Face	98.78%	97.40%
Human-beings	97.53%	-
OpenFace	93.80%	-
DeepID	-	97.05%

Table 4: Note- LFW (Labeled Faces in the Wild) and YTF (YouTube Faces) [3]

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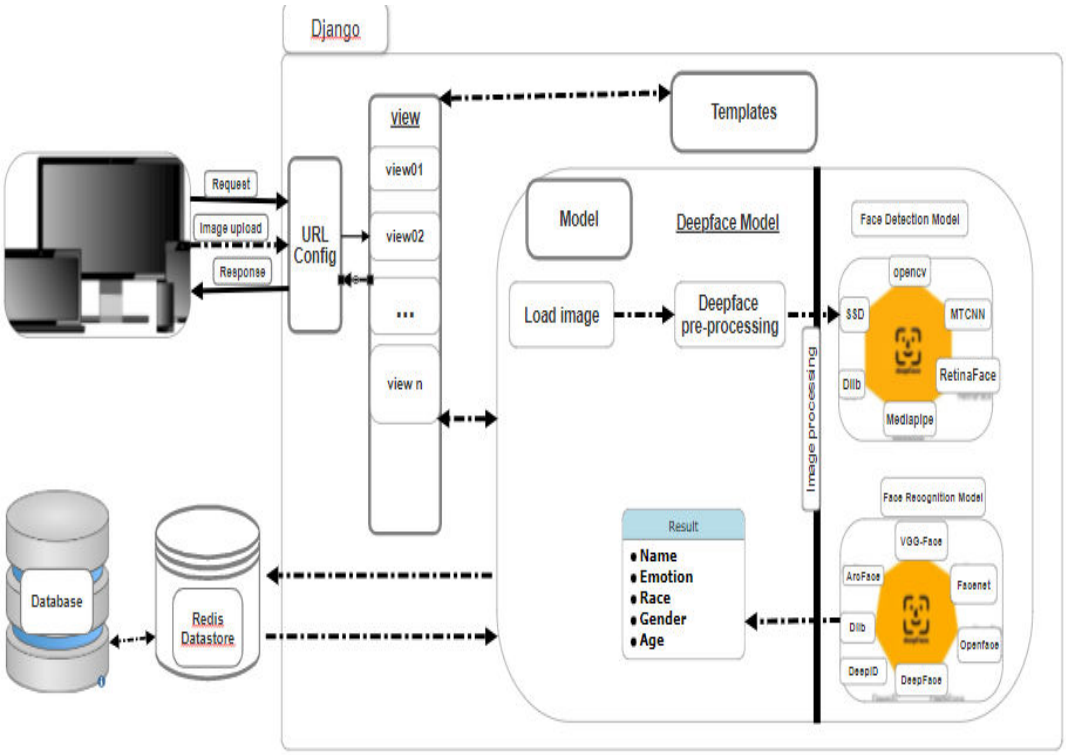

Architecture Diagram

OBJECTIVES

- Improve communication between children and parents by using Deep Learning & Machine Learning Models.
- To keep track of the Child's mental health.
- Make an alert notification of the Child's mood swings to the parent.
- To identify a child's emotional condition and help a parent better understand their child.
- Improve parent-child relationship.
- Help in maintaining work-family balance.

System Specification

- To make a system that allows users to capture real-time images or enable an option to the user to select the desired image from the folder for performing sentimental/facial Analysis on the image.
- To make a web-based face analysis interface that is fast, easy to use, interactive, and user friendly.
- The Face interface should allow the user to select different face recognition and face detection models.

Image Capture: - Provide users a way that allows them to capture real-time images or help them select their desired image from the folder.

Load Image: - Write a program that directly loads images into deep learning and machine learning models.

Images Analysis: - Perform Sentimental/Facial Analysis to extract facial attributes (dominant emotion, emotions, age, race, gender) from the uploaded image.

Report: - Display the result of the Sentimental/Facial Analysis in a very detailed manner. The report should contain dominant emotions, emotions, age, race, and gender and it should also contain an analysis of seven basic emotions i.e., happy, surprise, neutral, disgust, angry, sad, and fear.

Expected Outcomes /Benefits to the society

- Better mental health of children (In the long-term better mental health of the whole society).
- Less or no child trafficking.
- Better familial relationships.

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- Improved way to help disabled children (autistic, paralyzed children) in expressing their emotions.
- Help blind children know their surrounding environment and help them recognize people around them.
- Better productivity of parent employees, better work-family balance.

FUTURE SCOPE

For instance, the following industries that will be enhanced with further refinement and development [14][8]:

• Image-based rendering: websites can take real-time images of the person to verify age.

• Human-machine interaction: make machines aware on how to treat children when approched

• Surveillance and Public Safety: Increase children safety in public places

• Computer Vision Aided diagnosis (Health Care)

• Virtual reality (VR) and Augmented reality (AR): Identify children when using AR,VR technologies and take respective measures

• Smart Assistance for Elderly and disabled/differently-abled people

• Self-Driving cars: Driver Alertness and pedestrian detection systems

• Facial Recognition

• Autonomous cashless face-based check-out/Payment

• Transportation: Violations Detection, Traffic Flow Analysis

• Media & Entertainment: Interactive Media, Smart glasses, camera doodles

• E-commerce: - customer reaction-based product recommendation

• Character Recognition (google smart lens translation and hand gesture recognition): Help children read different languages and help them understand various symbols and signs

LIMITATIONS

- "Computer vision is not actually a vision but an alternative way to see things in a digital representation". The current field of computer vision is mostly based on machine learning techniques and machine learning techniques are actually derived from statistics and probability theory. So, the actual limitation is that we are closed inside the box of digits and can't think outside of that box.
- Invalid image uploaded or image is not clear.
- Dependent on Sensors i.e., cameras (quality of camera).
- Privacy concerns.
- The necessity of specialists: there is a huge necessity of specialists related to the field of Machine Learning and Artificial Intelligence that can use facial attributes in complex algorithms and other systems.

CONCLUSION

As the issues related to child mental health and crimes are increasing now it's high time for us to venture into new options to protect our children. Scientists and engineers have been trying to develop ways for machines to see and understand visual data for about 60 years. If AI enables computers to think, computer vision enables them to see, observe and understand. Computer vision is a field of artificial intelligence (AI) that enables computers and systems to derive meaningful information from digital images.

As we saw in this research paper how effectively and efficiently we blend the technology to get desire output in protecting, safeguarding and monitoring our children's mental and physical health by balancing proper work life. With further Developed it can be used in thousands of innocent's life." If one piece of technology such as this can save some innocent child's life from becoming hell, I think it's worth giving it a shot"

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THE APPLICABILITY OF DIELECTRIC SPECTROSCOPY IN AGRICULTURE

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ABSTRACT
The study lays forth the scientific background for dielectric spectroscopy techniques as well as some instances of agrophysical applications. Agrophysics is the study of materials and processes in agriculture using physical methods and techniques. Dielectric spectroscopy, which analyses a sample's dielectric characteristics as a function of frequency, may be used to investigate the properties of diverse materials. As test materials, agrophysical items such as soil, fruits, vegetables, food service industry intermediate and final products, grain, oils, and other agrophysical objects may be employed. Dielectric spectroscopy techniques offer non-destructive assessments of agricultural materials without the need of equipment that break the skin, as a result, technologies for quickly assessing their water quantity and quality have been developed. Due to the relatively expensive cost of the relevant measuring equipment, there is a limited amount of study in the field of dielectric spectroscopy of agricultural items. With the fast growth of current technology, especially in high frequency applications, dielectric spectroscopy provides tremendous potential for expansion in agrophysics, both in conceptual and practical aspects.

Keywords: dielectric spectroscopy, TDR, agrophysics

1. INTRODUCTION
agrophysics defines as a specific scientific field formed from the agricultural sciences division[1]. Its goal is to use physical methods to investigate the qualities of materials and processes that occur during the production and processing of agricultural crops and foods. The dielectric characteristics of all natural materials are determined by their molecular structure. They are particularly reliant on the distribution of electric charges, which are either permanently incorporated inside the molecules or induced on their surfaces. Objects' physical and chemical qualities are also determined by their molecular structure, as is well known. As a result, it's reasonable to assume that the dielectric characteristics of mixes of diverse molecules that make up a certain substance will distinguish it from others. The physicochemical parameters of a tested material can be successfully varied using dielectric characteristics. Figure 1 depicts this concept. The usage of dielectric spectroscopic measurement techniques' advantages for quick and non-destructive evaluation of the quality of agricultural items is critical in the application of dielectric spectroscopy measurement methods in agrophysics. It is possible to do so by looking for correlations between dielectric characteristics and other physical and chemical properties of agriculturally tested materials. The behaviour of each substance in an electric field is distinct according to its molecular structure. Physical and chemical properties of materials, on the other hand, impact their quality, which in the case of food items is closely tied to commercial and nutritional importance. As a result, it's logical to believe that the dielectric characteristics of a material made up of pure or mixed compounds mixed in varied proportions might provide information about its quality.

Several scientific studies on the diversification of quality measures based on electric, particularly dielectric properties of investigated objects have backed up this point[1-6].Realistic dielectric spectroscopy applications for materials characterization across a wide frequency range, on the other hand, are still rare. This may be accomplishedby improving dielectric measurement precision and developing sensors and measuring systems[7].

Let's have a look at a basic example-we're on the market for some quality buttermilk. Regardless of the subjective nature of the term “quality buttermilk," a physiochemical examination of a sample of buttermilk may produce a set of metrics that accurately indicate the physical and chemical properties of the sample.

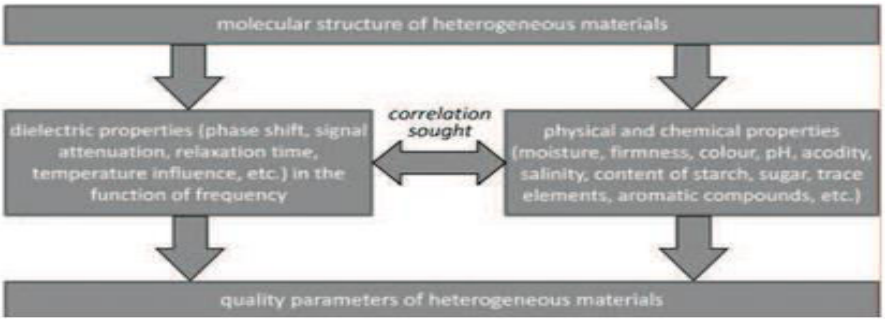

Fig. 1. Quality parameters of heterogeneous materials

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Density, viscosity, protein content, fat content, moisture content, mineral content, and other characteristics are all taken into account. As a result, it's easy to recreate the buttermilk sample while maintaining its 'goodness.' Even though, some of the required tests take time and necessitate the use of costly laboratory equipment. The majority of the time, we want to know if a fresh batch of buttermilk is the same as the previous one, which has been well tested and proved to be profitable. As a result, a rapid and reliable indicator is required, as well as extensive information on the qualities of "quality buttermilk". Buttermilk's dielectric characteristics are expected to have such an indication. Rather than being easy to judge, a quality indicator that truly portrays the uniqueness of a tested substance is required. Methods that are non-destructive or even non-invasive are also desirable. The following material summarises the current state of the art as well as some basic physical ideas in this topic. Prospective techniques for accomplishing this goal may be found in dielectric spectroscopy of agrophysical objects.

2. Physical Fundamentals of Dielectric Spectroscopy

Dielectric spectroscopy is used to investigate the interactions of the electric field with the materials under inquiry. When determining the item's dielectric permittivity, a number of dielectric processes and polarisation effects must be considered. The electric charges become polarised to compensate for the applied electric field, with positive and negative charges travelling in opposite directions.

The limiting frequency of each polarisation mechanism (ionic, dipolar, atomic, and electronic) is distinct (Fig. 2).

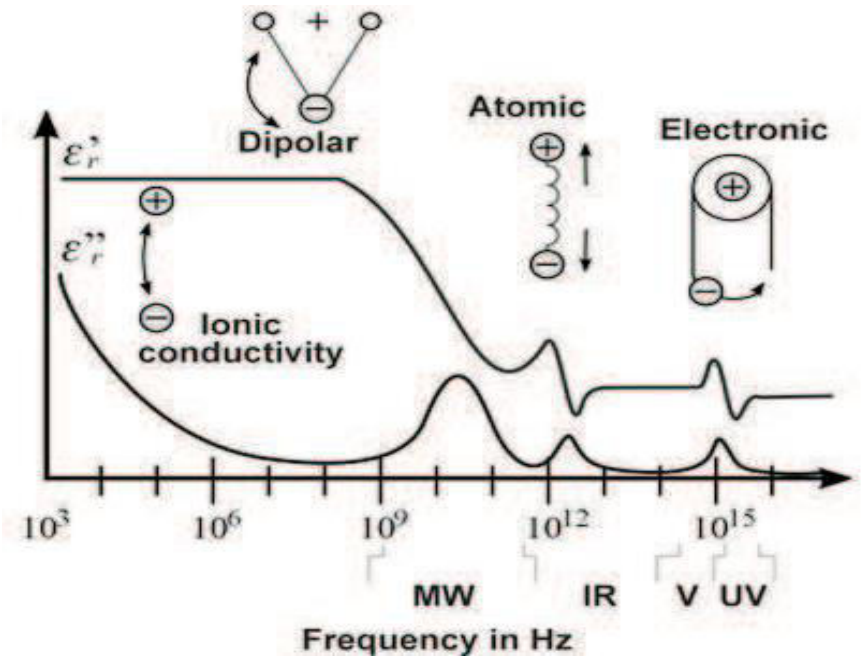

Fig. 2. Frequency dependence of the dielectric polarization mechanisms

When the frequency surpasses a certain limiting value, the slower process that previously determined the complex permittivity's real component gives way to the faster effect. For practical agrophysics applications, the applied frequencies are generally less than 20 GHz. It's due to the particular role of water, which has a relaxation frequency of roughly 19 GHz [8]. As a result, we'll focus on two types of dielectrics: ionic and dipolar dielectrics. The dielectric permittivity and electrical conductivity of most substances are only constant over a small frequency range. Agrophysical materials have often been biological in origin and exhibit a lot of dispersion, particularly at low frequencies, due to interfacial polarisation on the surfaces of the constituents of the tested material[9] .

For many years, researchers have been studying dielectric approaches of multiphase materials and the verification of these models theoretically[10]. Nowadays, dielectric spectroscopic measurement methods are continuously developing. The development of dielectric models of agrophysical objects may now be verified because of the availability of suitable measurement instruments in the microwave frequency range. This progress may be seen in both frequency-domain (FDR) and time-domain (TDR) approaches for high-frequency data[11–14] .

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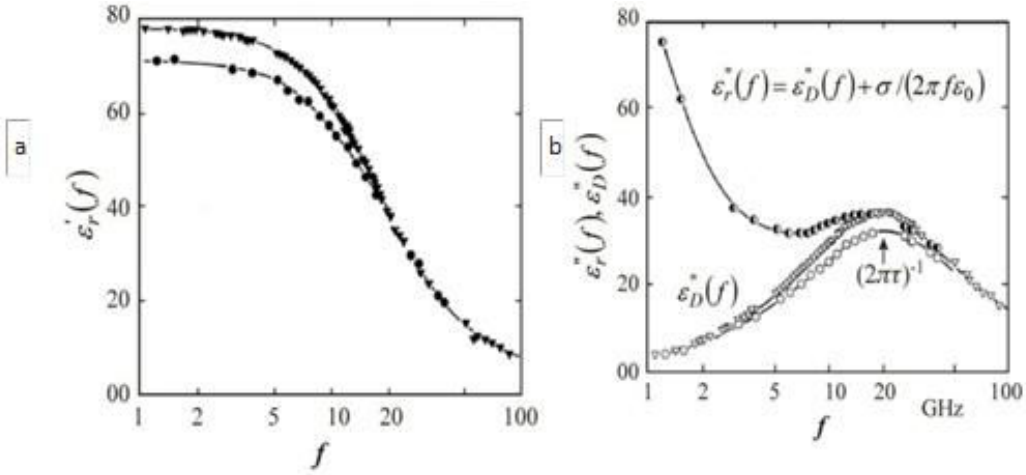

Fig. 3. The real part (a) and the absolute value of the imaginary part (b) of spectra of the complex dielectric permittivity of water (inverted triangles)

The reflectometric and transmission tools to analyze the response of a tested material to a given electric signal are two approaches in the high-frequency domain that can be distinguished (Fig. 4). Reflectometric techniques employed in dielectric spectroscopy, in contrast to transmission procedures, allow for the fabrication of portable sensors and metres for measuring material dielectric properties. As a result, dielectric spectroscopy[6] is a potential tool for evaluating the quality of agricultural resources and products, as well as organic matter, in the manufacturing industry[15]. It is possible to control the quality of the materials indicated above in real time while they are processed utilising these techniques. They can also be used to evaluate the quality of agricultural inputs and finished goods[3].

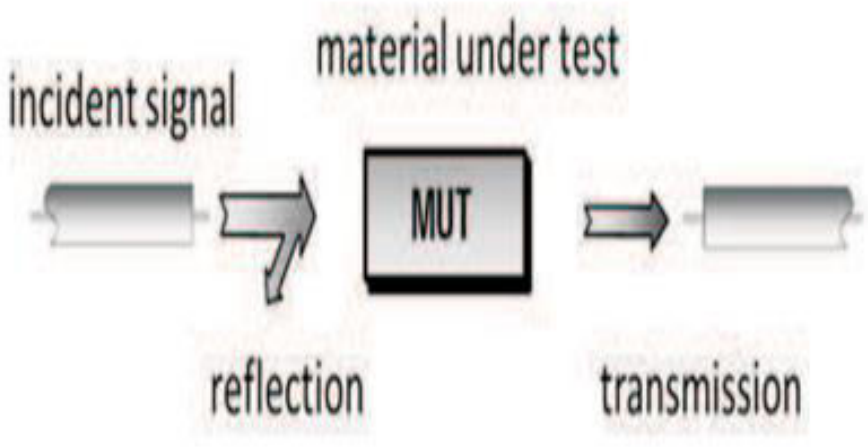

Fig. 4. Dielectric spectroscopy methods for analysing reflected and transmitted signals

3. Applicability Examples

The necessity for optimization of micro-wave drying and heating processes**[5]** , and also the development of trustworthy methodologies for quick assessments of the water content, has sparked interest in the dielectric characteristics of agricultural materials and food items of agricultural origin**[16]** .

a) Porous Substance Microwave Aquametry

The natural features of water guide applications of dielectric spectroscopy in agrophysics to assessments of moisture contents in porous materials. Moisture and salinity are important elements in affecting the quality of agricultural porous media such as soil, granular, and powder agricultural goods. Grain in silos should not be kept too wet since, being a biological product; it degrades in the presence of moisture. In agricultural commodities, water and organic salt content are key drivers of quality, which translates into economic value [17] .In the manufacturing, commerce, processing, and preservation of porous media, microwave technology allows non-destructive means of monitoring moisture content. Microwave approaches for moisture evaluation have proven to be more favourable than other methods, such as radio frequencies, infrared, or ionising radiation, due to specific features of microwave frequencies between 1 and 100 GHz.

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b) Dielectric Properties of Liquid Materials of Agricultural Origin

The researchers looked at a variety of liquid meals and agricultural components [17] for example, investigated the dielectric characteristics of vegetable oils and fatty acids at low frequencies (0.1-1 MHz) . It was discovered that by analysing the frequency spectra of the dielectric permittivity, one may differentiate distinct oils and fatty acids for the applied frequencies. As a result of this study, it is now feasible to determine whether olive oil has been tainted with less expensive vegetable oil[18] .

Following that, Bohigas and Tejada investigated acetic acid and vinegar solutions in the frequency range 1-20 GHz [19], while Zhu et al. investigated the dielectric characteristics of several fruit juices (apple, pear, orange, grape, and pineapple) across frequencies 20-4 500 MHz over temperatures 15-95°C [20] . The actual component of dielectric permittivity reduces linearly as temperature rises, it was revealed. In addition, the values of both halves of the complex dielectric permittivity are employed to distinguish between different juices. Dairy products are another intriguing agrophysical material for dielectric investigations because of their intricate chemical characteristics. The impact of spoilage and organic component concentration on the dielectric properties of milk was studied by Nunes et al. [20]. The anticipated result has been noticed. However, the spectra produced were far too flat to differentiate between chemical species in milk. Dielectric characteristics of natural and sweetened yoghurt have also been investigated at frequencies ranging from 1 to 20 GHz [21]. The researchers came to the conclusion that dielectric spectroscopy measurements are sensitive enough to identify sugar levels in yoghurt samples.

c) Dielectric Properties of Fruit

Several articles have addressed the variations in dielectric permittivity values between the peel and pulp of apples and melons[3], [22], [23] . In order to determine processes of electric polarisation happening in the tested materials, permittivity values of fresh fruit and vegetables are evaluated in frequency ranges of 10-1800 MHz [24] and 0.2-20 GHz [23]. In addition, the dielectric properties of fruit pulps were examined to evaluate postharvest changes under various storage conditions. The soluble solids content, notably glucose and fructose, is demonstrated to be closely connected to the dielectric constant and loss factor in melon pulp, as well as watermelons and apples [16], [23]. The acquired data, on the other hand, could not be utilised to estimate glucose and fructose concentration in watermelons or apples. By comparing the dielectric characteristics of tested items with their other physical and chemical properties, the reasons of changes in dielectric permittivity of fruit during storage are investigated. The apple maturity index and the recently formulated dielectric maturity index[25] have been discovered to have a strong relationship.

d) Microwave Heating

Microwave (MW) or radio frequency (RF) heating can be used to selectively kill grain weevils that feed on grains. The development of successful pasteurisation processes may be aided by heating with an alternating electric field. Pasteurization techniques are typically used before the finished product is packaged to eradicate hazardous germs. Thermal conditioning has also been employed to dissolve sugar crystals, delay crystallisation, and preserve the commercial quality of food to the fullest extent feasible. Due to their limited heat conductivity, traditional thermal treatments take a long time and demand high temperatures. As a result, removing vitamins and nutritional components from the processed items may have a negative influence [22] .

Dielectric heating allows for rapid heating of a chosen volume at RF and MW frequencies by transferring electromagnetic energy directly into the interior of the substance [26]. Because of the high rate of RF and MW heating, energy efficiency, and bulk effects on a sample, the sample retains product quality and improves pasteurisation procedures' performance. However, for obtaining high RF and MW heating efficiency for a particular material undergoing thermal treatment, the ideal frequency selection and penetration depth are required parameters [24] .

4. Measuring Equipment

The texture of the examined dielectric material, such as liquids, solids, or mixtures, the measurement volume, frequency range, accuracy required, availability of equipment, and other necessary measures, such as financial resources, all influence the selection of Dielectric permittivity measuring equipment and the construction of test fixtures [27] . Vector network analyzers are pricey, but they are quite adaptable and effective for broadband frequency examinations, such as study into dipolar polarisation mechanisms of a test material. Less costly are impedance analyzers and scalar network analyzers. The frequency range, in which they may be employed, however, is restricted.

A regularly used instrument for measurements of the complicated dielectric permittivity spectrum of liquids, biological materials, and multiphase mixtures is an open-coax probe type 85070 from Agilent Technologies

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operating in the frequency range 0.2-50 GHz. When the dielectric permittivity sensor is considered as a lumped parameter system, it is possible to apply techniques and equipment employed in impedance spectroscopy at low measurement frequencies. Sensors, which are characterized by a capacitor that varies its capacity based on the soil water content, are used in frequency-domain reflectometry meters for soil moisture measurements. For soil moisture measurements, such equipment are readily available on the market [28]. They normally operate at a frequency of less than 100 MHz.

The Fourier transform of a reflectogram of the sensor performance to the forcing pulse may also be used to derive the frequency spectrum of complicated dielectric permittivity of a substance. In this scenario, a dielectric permittivity sensor is made up of a segment of a parallel waveguide made up of two or three stainless steel rods embedded in a test material. A TDR technique was adopted from telecommunication technology by agrophysics as a method for evaluating soil moisture [29]–[31] and soil salinity[14], [29], [30], [32].

The accessibility of TDR equipment, its ability to make automated and non-destructive measurements, the simplicity with which calibrations can be made, and the fact that it can be used to assess the moisture content of a wide range of materials all contribute to its appeal. As a result, this technique can be used to investigate a wide range of topics, which would include spatial variability of soil moisture [33] , soil density determination [34], water conductivity and water capacity of construction materials [35], [36], biomass and biofuels quality determination [37], level estimation of liquid petroleum - based materials in industrial uses [12] , and biomass quality evaluation [38] .

5. CONCLUSION

High-frequency modelling advances have sparked interest in research into the polarisation mechanisms of heterogenic materials, as well as the relationships between their dielectric properties and quality indices, which were previously determined through time-consuming physical and chemical laboratory analyses. It specifically refers to agriculturally derived minerals and products that are essential to human survival. Dielectric measurement techniques increase our quality of life by allowing us to monitor and preserve food quality. In order to use dielectric spectroscopy to agrophysical objects, researchers are investigating polarisation processes and developing sensors and measuring methodologies.

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TELESCOPIC PORTAL TO NEW GALAXIES

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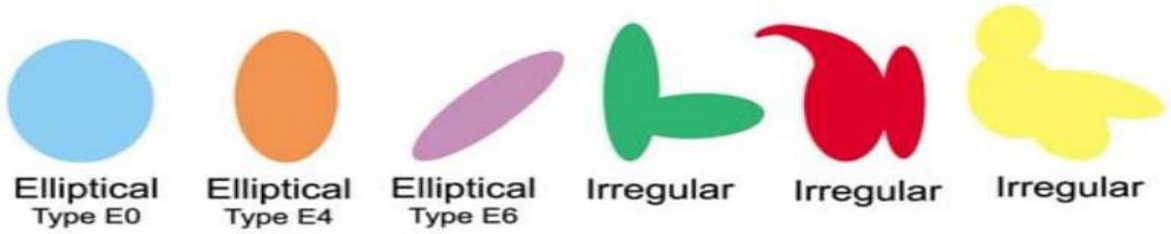
ABSTRACT
The transition towards the field of astronomy is occurring exponentially and with the advent of james webb space telescope a revolution in the cosmology is unquestionable. This paper present a research about james webb space telescope which is also called time machine of space because of it's ability to view very faraway objects. The light which were travelling from a million years ago is also captured by this telescope. The telescope have ability to see the images of the stars or galaxies as they were millions of year ago. This telescope is designed to conduct infrared astronomy. The webb was launched in December 25, 2021 on an ESA Ariane 5 rocket from kourou , French Guiana and on April 2022 it will be tested and align. This telescope was named after james E.webb who was the administrator of NASA from 1961-1968 during the mercury , gemini and apollo programs. It is more powerful then the Hubble telescope. The telescope must be kept extremely cold below 50k(-223 C; -370 F) to observe faint signal in the infrared without interference from other source of warmth. It is deployed in a solar orbit near the sun earth L2 lag range point about 1.5 million kilometers from earth. It have 5 layers kit shaped sunshield which protects it from warming by the sun, earth and moon. The size of the main mirror is about 21.3feet which is nearly 65 meter in diameter. Webb has hexagonal shape to properly capture every changes happening in the universe and to reduce the size and weight of the telescope. thus the telescope help us to better see universe we live in.

Keywords: - Astronomy, cosmology, james webb space telescope, time machine, infrared wavelength, ESA Ariane, kourou.

INTRODUCTION
The galaxy is mainly of four types spiral galaxy, elliptical, peculiar and irregular galaxy. Spiral galaxies have a large concentration of stars at the center, called the "bulge," and "arms" that extend outward.

Some different types of spiral galaxies.

Elliptical galaxies range from spherical to cigar shaped. Irregular galaxies don't have much structure and are generally smaller than spiral or elliptical galaxies.



Some different types of elliptical and irregular galaxies.

The universe is a very big place and it's been around for a very long time. Thus the big bang theory says that the universe began as just a single point then expanded and stretched to grow as large as it is right now- and it is still stretching. James webb space telescope helps to see only at infrared wavelength after the big bang. The telescope tells us about nineteen near by galaxies and how they are adjusted. The image taken from space will allow webb's data to add galactic information about star formation, strong winds, blowing of these stars to

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disturb gas and dust and mature stars potentially hiding in spiral galaxy space is currently in the middle of the mission where engineers are trying to get it's 18 hexagonal mirror into alignment and slowly testing and turning of the instrument. According to NASA webb will began science observation in the summer. The drawbacks of the webb's telescope is infrared, over budget, obsolete, short working life and unserviceable.

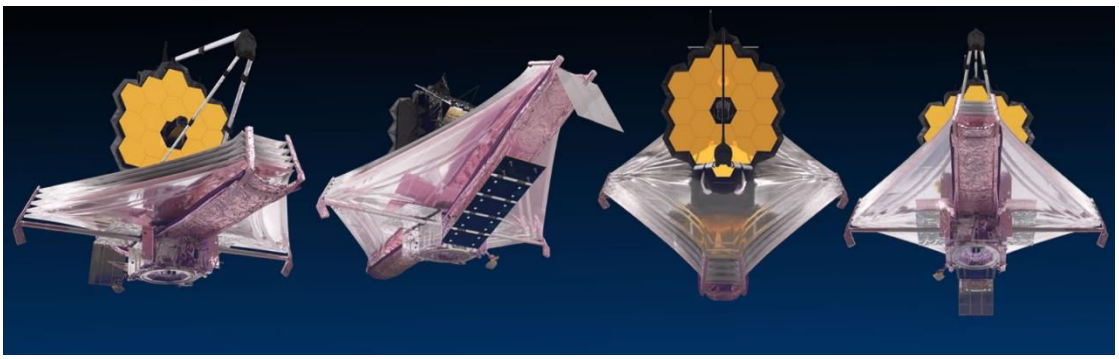

Fig 1.1:- images of James Webb space telescope

DESIGN AND IMPLEMENTATION

The principles used for designing of webb is same as that of hubble telescope. they both are build around a large primary mirror; which has the crucial task of capturing as much light as possible from objects that may be on the very edge of the observable universe. the observatory is the space based portion of the james webb space telescope system. The observatory is mainly divided into three elements:-

1. Optical telescope Element(OTE)
2. The integrated science instrument module(ISIM)
3. The sunshield and the spacecraft bus

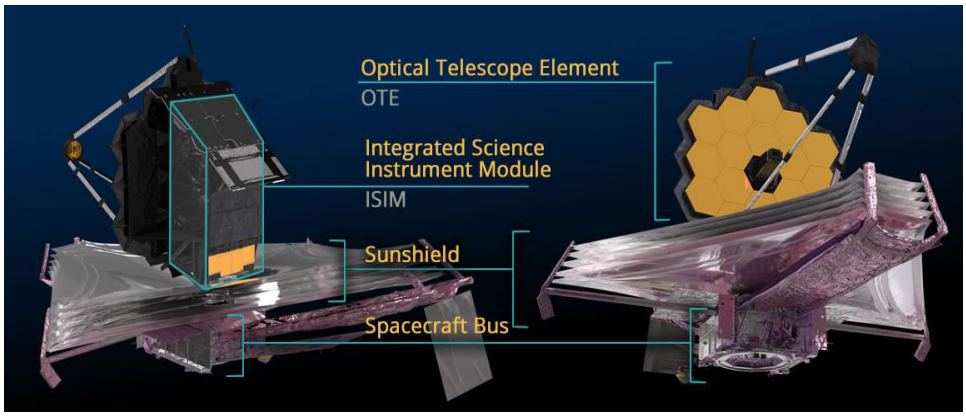

Fig 1.2:- breakdown of observatory elements

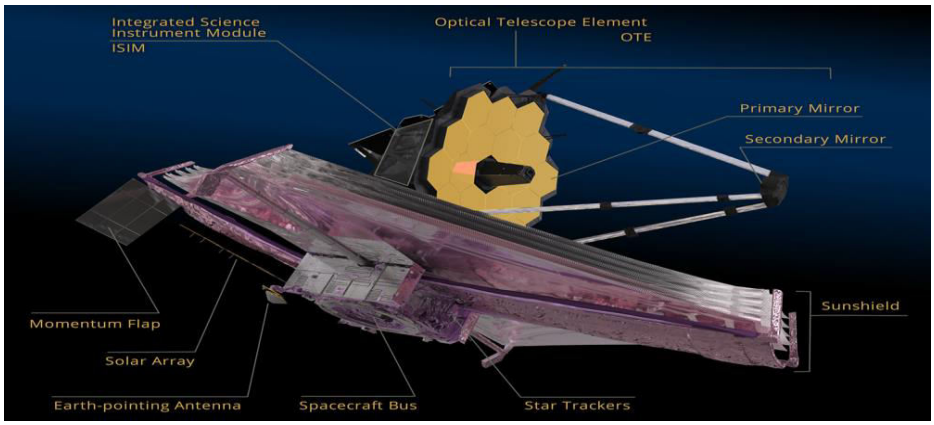

Fig 1.3:- Webb's major elements and subsystem

Optical telescope element:- the optical Telescope element is the optical part of the observatory. It plays the role of eye because it consists of the mirror and the backplane. The function of is to gather the light coming from space and provided it to the science instrument present in the ISIM. The backplane plays the role of spinal chord of webb. As it supports the mirror.

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Fig 1.4:- hexagonal mirror of webb

Fig 1.5:- Webb's backplane

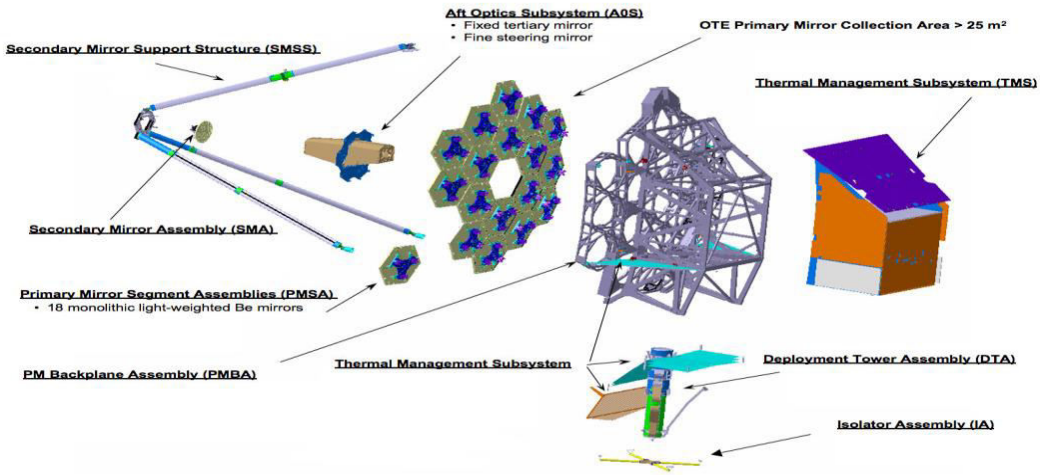

Fig 1.6:- major elements of OTE

Fig 1.7:- mirror of Webb telescope

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The Integrated Science Instrument Module:-the ISIM contains the cameras and instruments of webb telescope. it integrates four major instruments and numerous subsystem into one payload

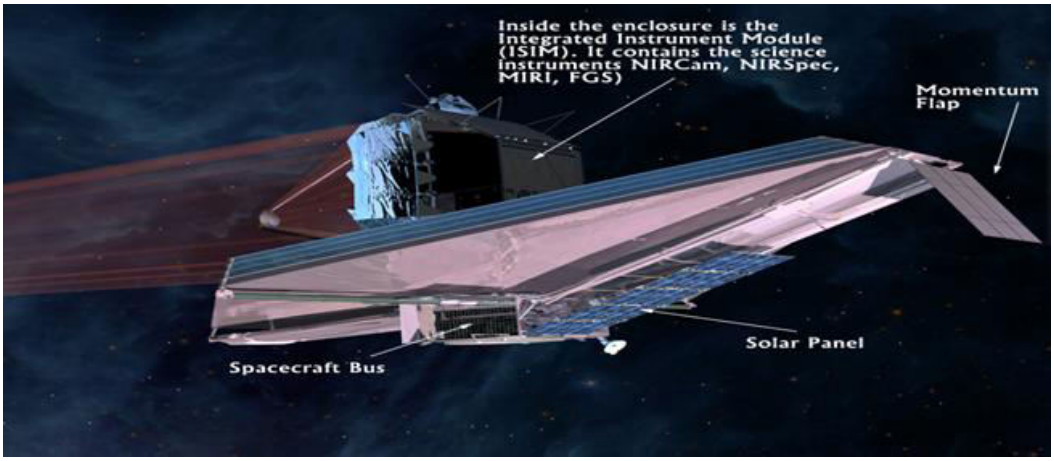
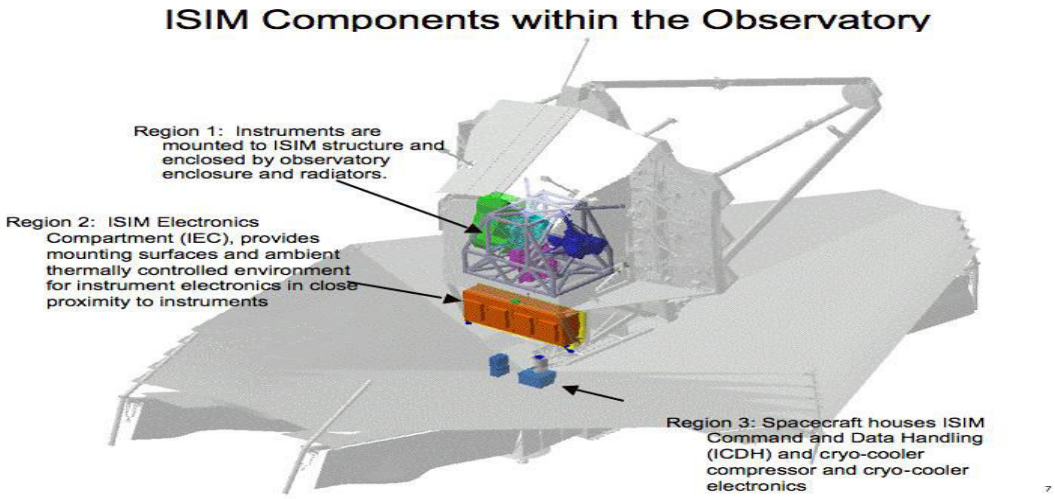


Fig 1.8:- integrated science instrument module elements



1. Mid-infrared instrument(MIRI):-MIRI consist of camera and spectrograph that see light in the mid-infrared region of the electromagnetic spectrum with the wavelength which is not visible through a human eye. The wavelength range of MIRI is 5 to 28. The sensitive detectors help in detecting the redshifted light of distant galaxies, faintly visible comet or newly forming stars. The camera has a spectacular Astrophotographic skills. The MIRI has three arsenic-dopped silicon detector arrays. The camera segment provides wide-filled broadband imagery. The spectrograph segment provide medium-resolution spectroscopy over a smaller field of view compared to the imager. The normal operating temperature of the MIRI is 7k. and for the cooling of MIRI's detectors webb carries an innovative "cryocooler". There is two step process for the cooling of observatory firstly a pluse tube precooler gets the instrument down to 18k. and secondly the joule-thomson loop heat exchanger knocks it down to 7k.

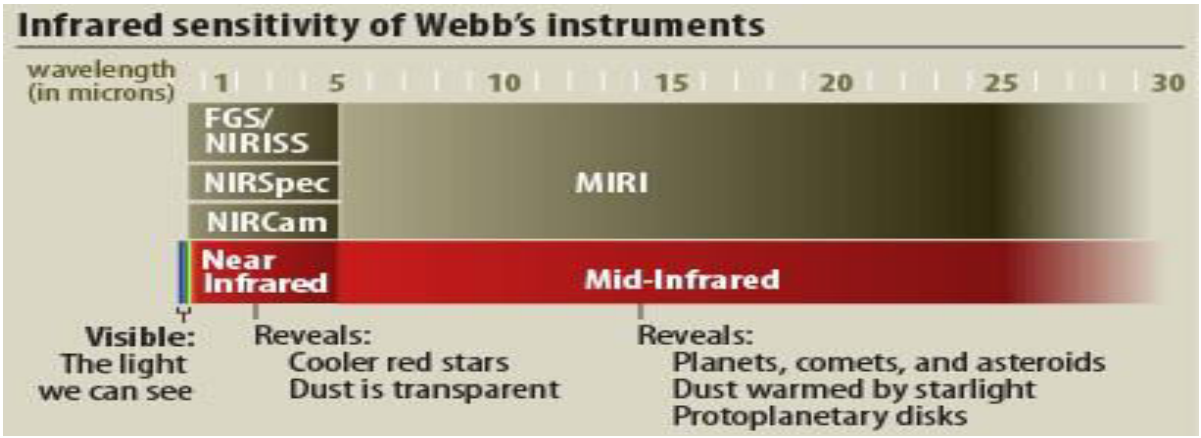


Fig 1.9:- range scale of MIRI (5 – 28)

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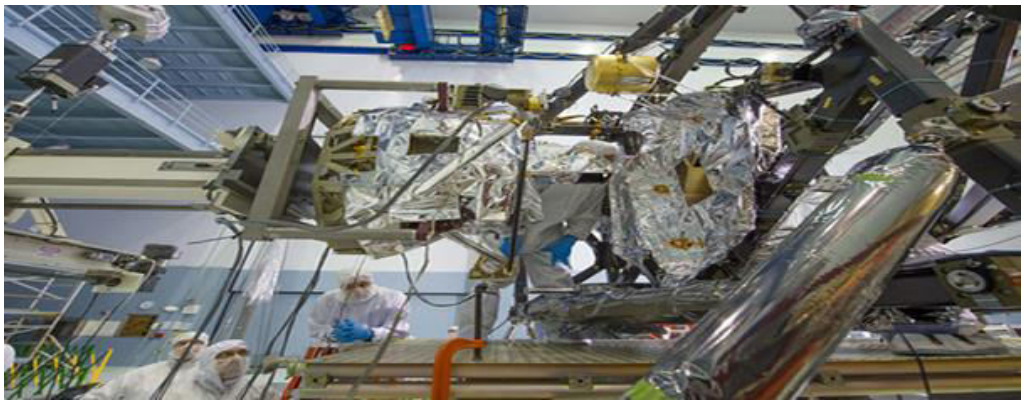

Fig 2.1:- MIRI

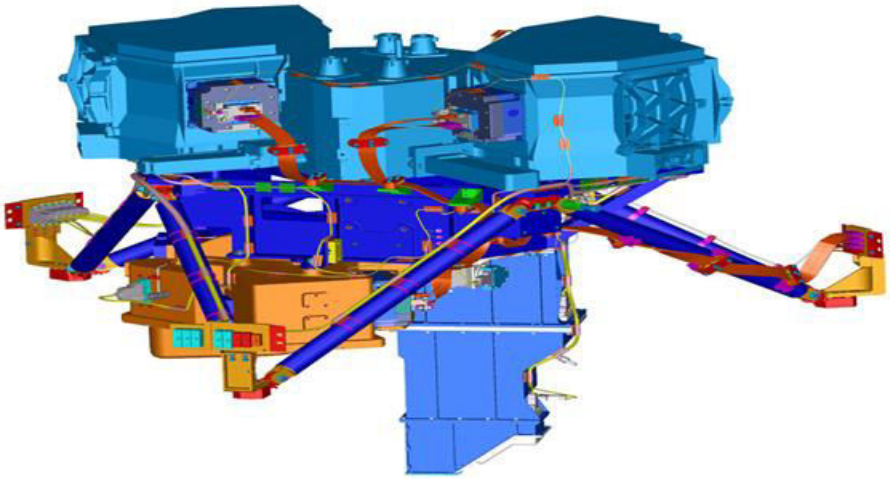

Fig 2.2:- MIRI Engineering Diagram

2. Near-infrared spectrograph (NIRSpec):-the operating wavelength range of NIRSpec is from 0.6 to 5 microns.

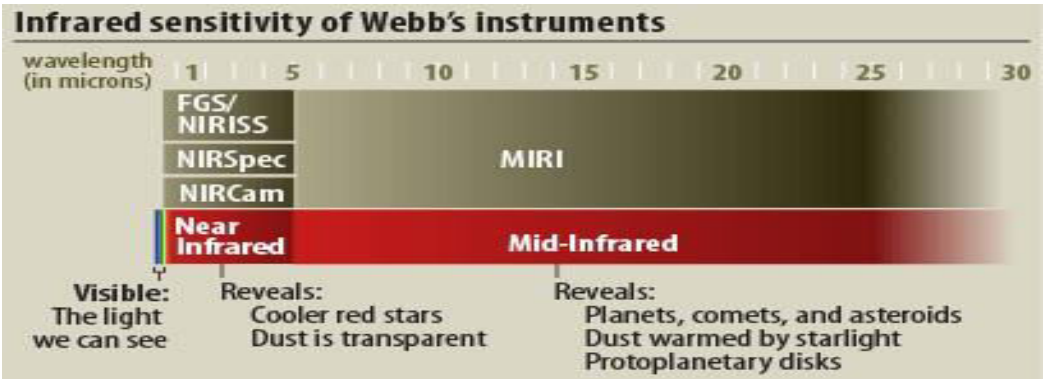

Fig 2.3:- range scale of NIRSpec (0.6 – 5 microns)

A spectrograph also called spectrometer is used for dispersing light from an object into a spectrum. And through the spectrum of the object we can identify the physical properties including temperature, mass, and chemical composition. The molecules and atoms present in the object imprint lines on it's spectrum that uniquely fingerprint each chemical element present and can tell about wealth of information of physical condition in the object. Spectroscopy and spectrometry(the science of interpreting these lines) are among the sharpest tools used in this space telescope for exploring the cosmos. It is designed to observe 100 objects simultaneously and is the first spectrograph in space with the remarkable capabilities of multi-object spectra. The goddard scientists and engineers had made this possible with a new technology micro-shutter system to control how light enter the NIRSpec. The Micro-electromechanical system called as micro-shutter array enables NIRSpec to obtain 100 simultaneous spectra. The each cells of micro-shutter array is as wide as human hair with lids their open and close when magnetic field is applied. This adjustability allow the instrument to do spectroscopy on so many objects simultaneously.

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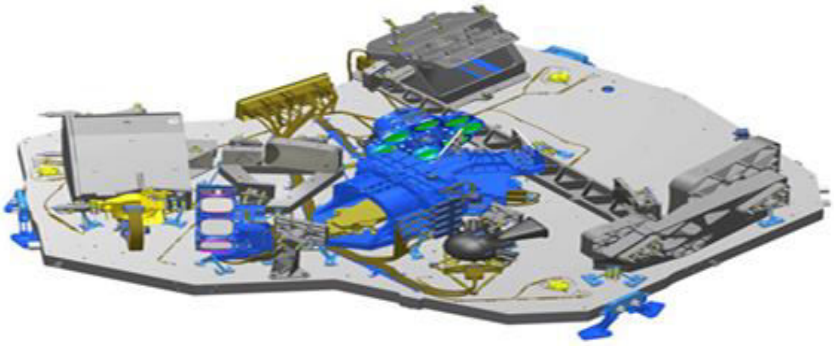

Fig 2.4:- image of completed flight instrument module

3. **Near-infrared camera(NIRCam):-** the NIRCam has ten mercury-cadmium-telluride (HgCdTe) detector arrays. These are analogous to CCDs found in ordinary digital cameras. NIRCam is a science instrument but also an optical telescope element wavefront sensor which provides something similar to instant LASIK vision correction. It is primary imager of webb that will cover the infrared wavelength range 0.6 to 5 microns.

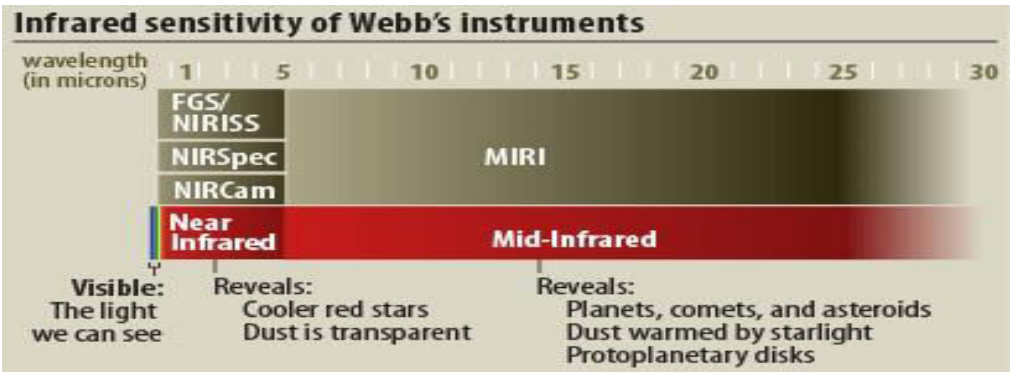

Fig 2.5:- range scale of NIRCAM (0.6 – 5 microns)

It will detect the light from the earliest stars and galaxies the population of stars and galaxies as well as young stars in the milky way and Kuiper belt object. It is equipped with coronagraphs which is an instrument that blocks out light emitted by the sun's actual surface so that the corona can be observed.

Fig 2.6:- NIRCam being installed into the instrument module

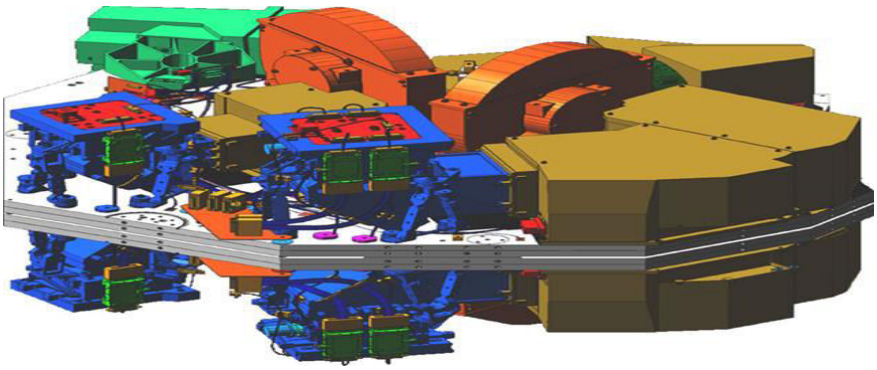

Fig 2.7:- NIRCam engineering diagram

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4. Fine Guidance Sensor/ Near Infrared imager and slitless spectrograph (FGS-NIRISS):- the FGS allow webb to focus precisely to obtain high-quality images. The science object of first light detection, exoplanet detection and characterization and exoplanet transit spectroscopy is investigated by the near infrared imager and slitless spectrograph part of FGS/NIRISS the wavelength range of is 0.8 to 5 microns. FGS is used as "guider" which helps to point the telescope

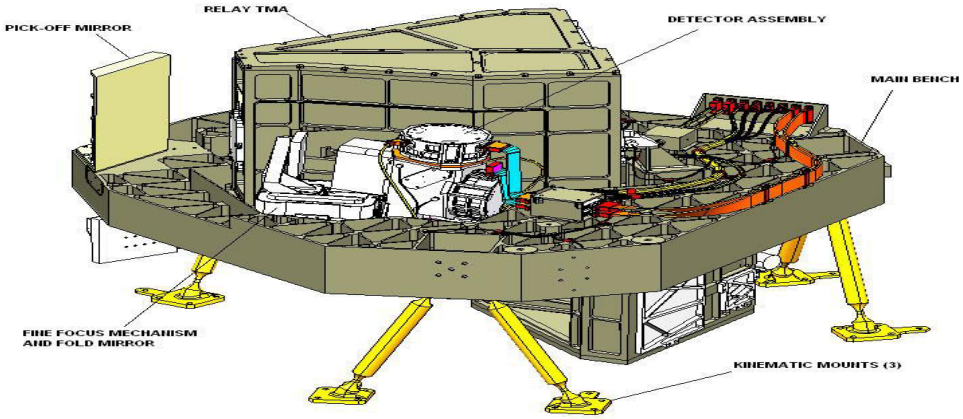

Fig 2.8:- FGS/NIRISS is being built by the Canadian space agency

Sunshield:- to detect faint heat signals from the distant objects, the telescope itself must be kept extremely cold. Webb has a 5 layer tennis court sized sunshield that act like a parasol providing shade from the external source of light and heat like sun , earth and moon as well as the heat emitted by the observatory itself.[actual dimensions: 21.197m x 14.162m (69.5ft x 46.5ft)].

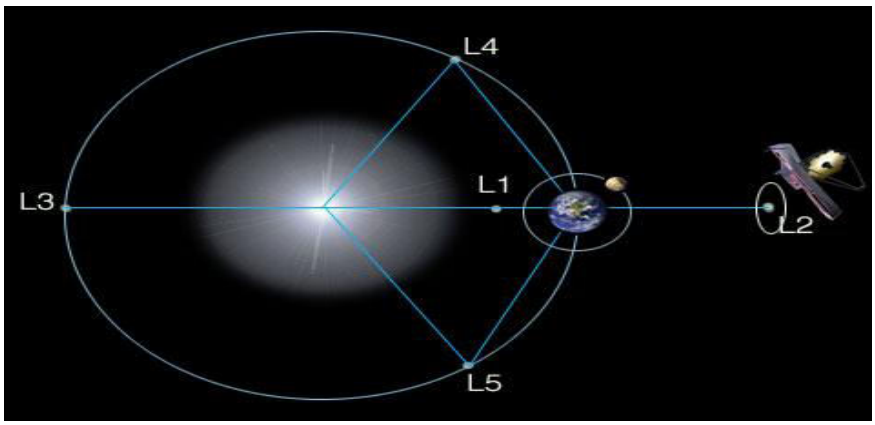

Fig 2.9:- sunshield is positioned between the sun/earth/ moon and the telescope

The sunshield will help the telescope to occupy the temperature below 50 kelvin by radiating it's heat to space. In addition to providing a cold environment but the sunshield also provide a thermally stable environment. The use of five layer instead of one layer is because each successive layer of the sunshield is cooler then the one below. The heat radiates out from between the layers and the vacuum between the layers is a very good insulator. By using the special thermal properties called Kapton the sunshield is transformed into lightweight material.

Fig 3.1:- a piece of kapton

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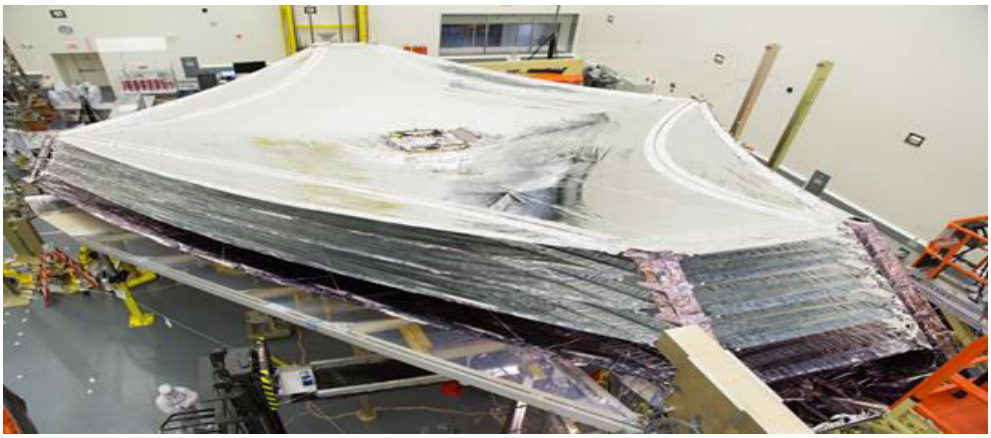


Fig 3.2:- sunshield

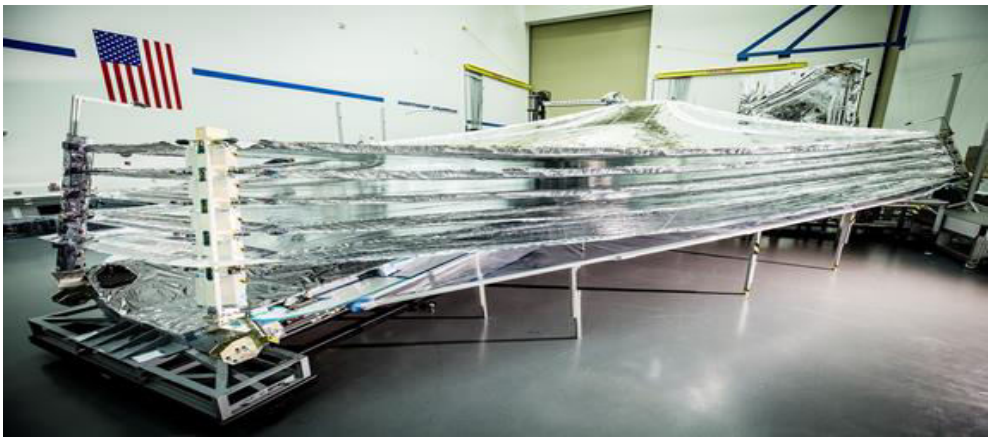
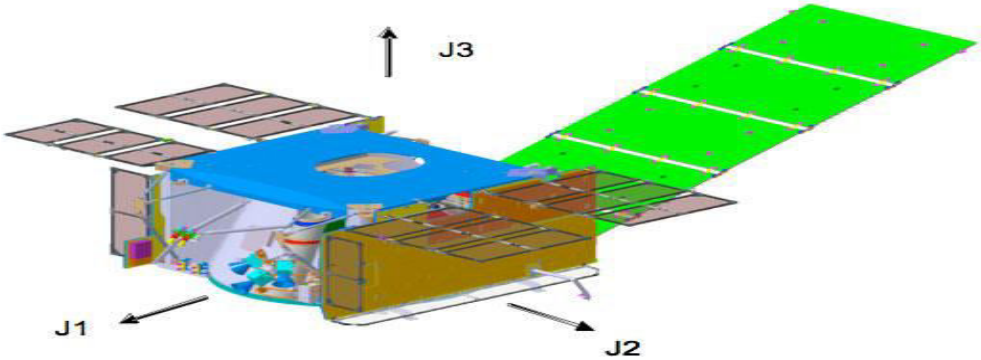


Fig 3.3:-5 layers of sunshield

Spacecraft Bus:-the spacecraft bus provides the essential support functions for the operation of the webb observatory. At left is a top view of the bus. the bus includes six major subsystems:-

Fig 3.4:- spacecraft bus installation



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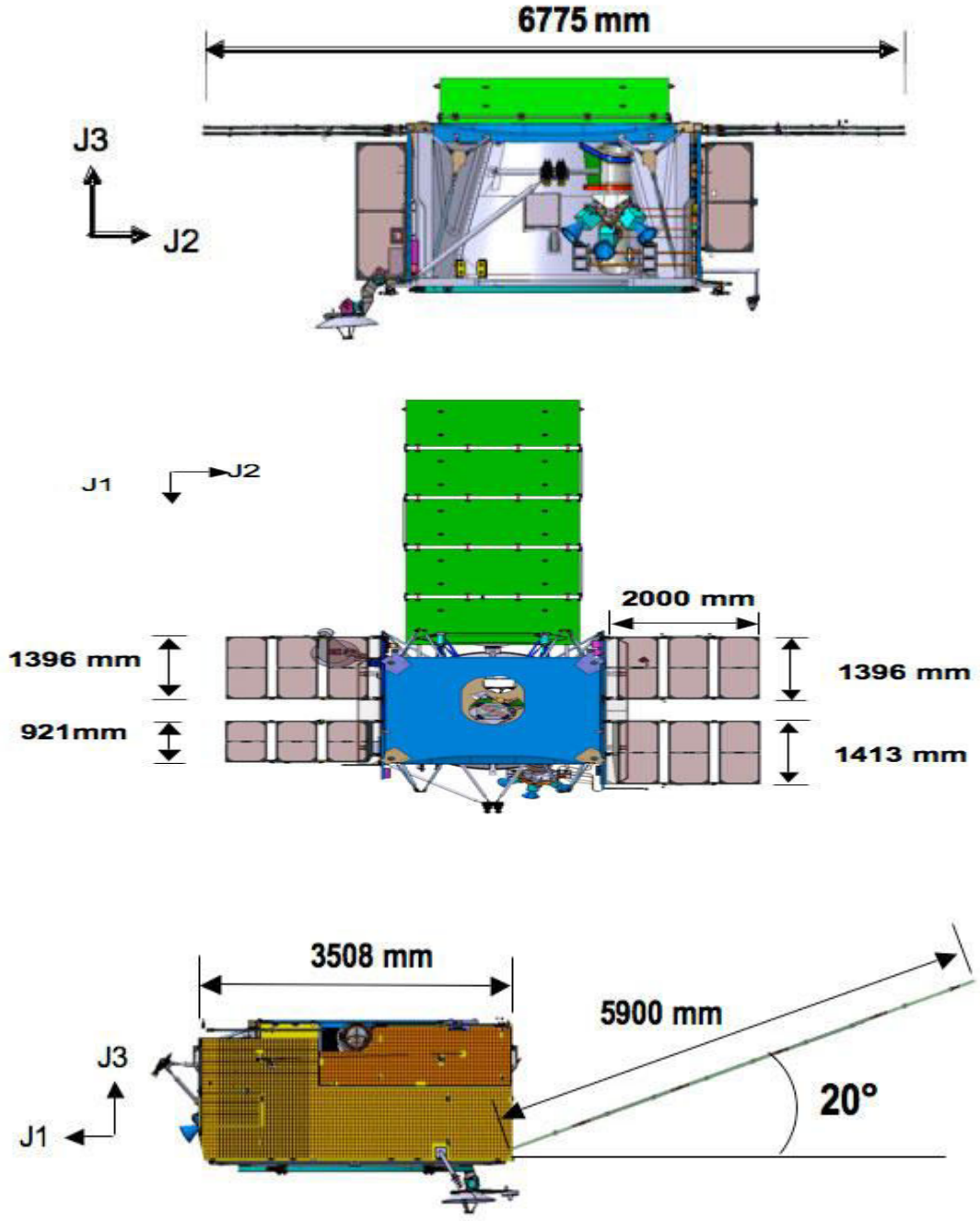

1. Electrical power subsystem
2. Attribute control subsystem
3. Communication subsystem
4. Command and data handling subsystem
5. Propulsion subsystem
6. Thermal control subsystem

Other elements include

Momentum Flap: - it is used for balancing the solar pressure on the sunshield. It is not adjustable on orbit but we can adjust it on the ground.

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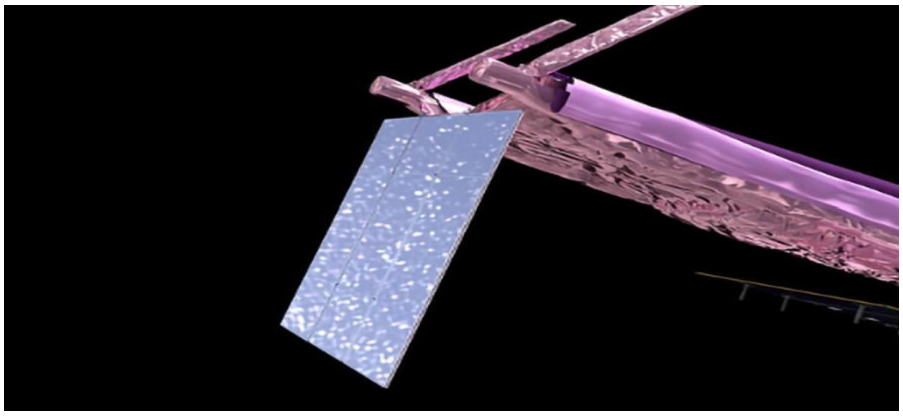
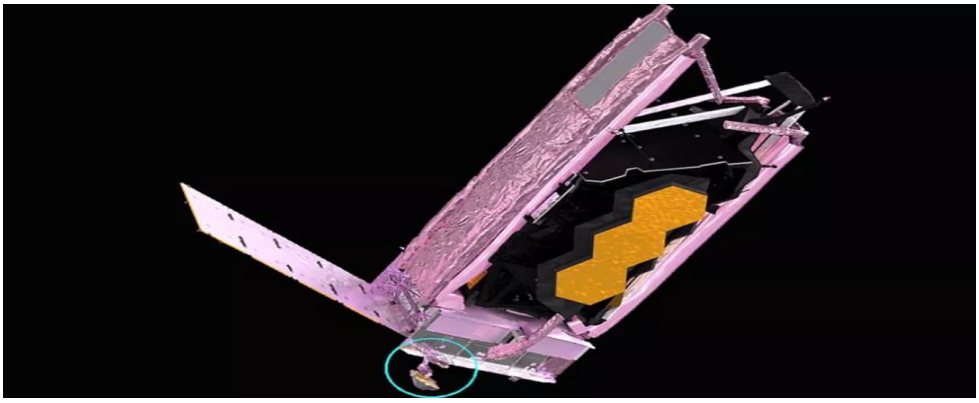
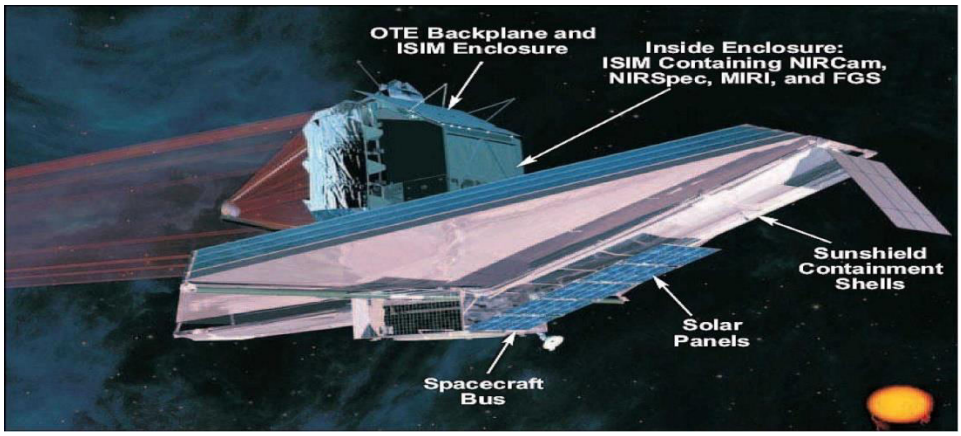


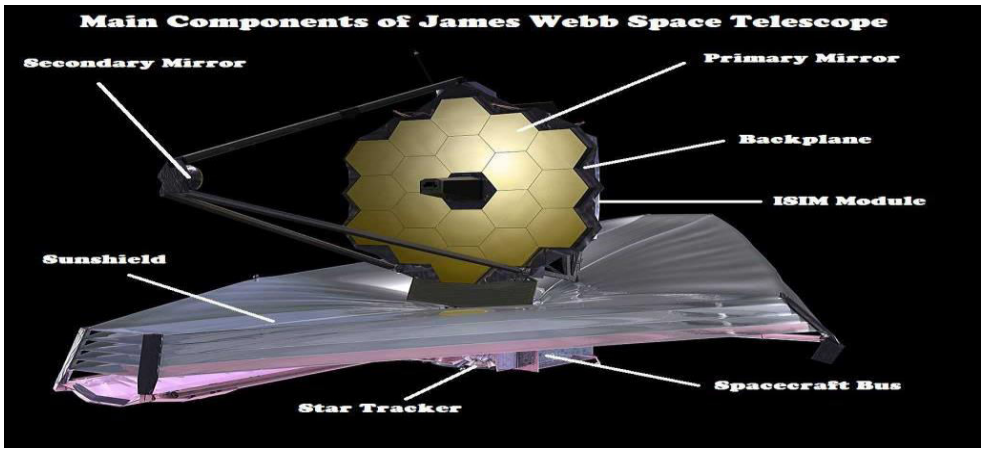
Earth-Pointing Antenna: - it is used for sending the science data on the earth and receiving commands from NASA deep space network.



Solar Array: - it provides power to the observatory by converting solar energy into electrical energy suppling electricity to the observatory.



Star Tracker: - star tracker are small telescopes that use star patterns to target the observatory.



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CONCLUSION

This paper present the main aim of the james webb scape telescope of looking back through the time to when galaxies were young. And this task is achieved by continuously observing galaxies that are at the distance of over 13 billion light year away from us. The telescope will act as a bridge between the earth and the universe. With the cost of $11 billion this telescope took two decades to get ready in national aeronautics and space administration (NASA). The fund to make the satellite was raised by the NASA in conjunction with the European space agency(ESA) and the Canadian space agency(CSA).webb is very powerful and is said to be time machine in space because of it's ability to characterize other planets going around other stars, distant exoplanets, and see if there are oceans, an atmosphere, and what chemical elements are present in the universe. It will us to map the universe. Webb is inspired by the concept of hubble space telescope -the 31-year-old observatory famous for capturing stunning photos of our universe's galaxies. The satellite will perhaps detect chemical signatures of life on other planets.

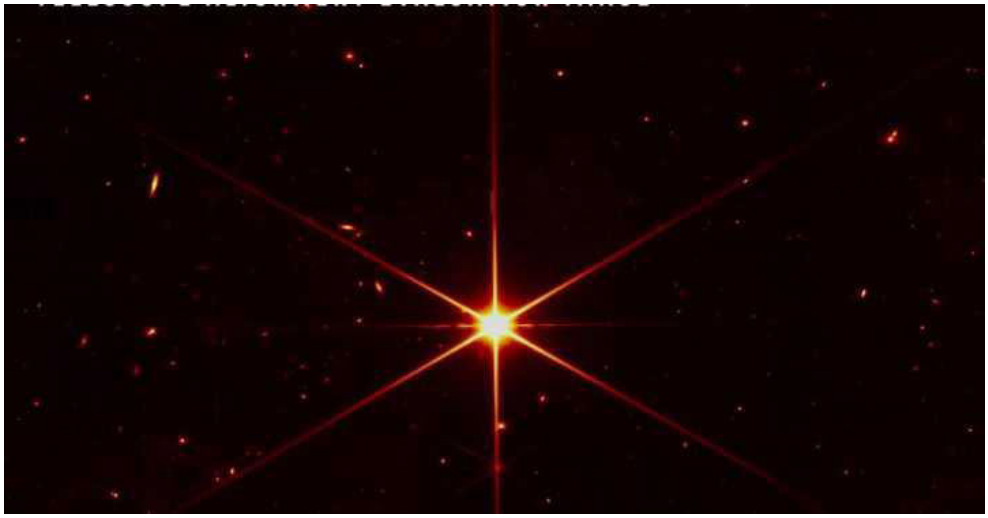

Fig 3.5:-image captured by JWST which is 2000 light year away from earth

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ANALYSIS OF SUSCEPTIBILITY OF DIFFERENT BLOOD GROUPS TO COVID -19

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ABSTRACT
Peoples have different blood groups and some blood groups are susceptible to different diseases. In view of this context, this study is carried out to find susceptibility of different blood groups to COIVD-19. Mainly it's a survey based study, responses were given by all the types of blood groups and varied age groups. Mostly Rh^+ blood group people showed infection of COVID-19. Minimum days required to recover from COVID-19 was 7 days and Maximum 14 days. Out of total population surveyed, 14.7% people suffered from COVID-19 infection.

Keywords: COVID-19, Blood Group, Infection.

INTRODUCTION
Disease is the result of entry and growth of pathogens in the human body. Diarrhoea which is caused due to Escherichia coli is studied to find the severity associated with certain blood groups. People with blood group A had a higher attack rate of diarrhoea than persons with other blood groups (Kumar et. al., 2018). People with blood group O are more prone to diarrhoea than people with other blood groups (Black et. al., 1987). These findings influenced to study the relation of COVID-19 with different blood groups.

METHODOLOGY
A google form was created with many questions and responses were obtained from general population. The responses were analysed and discussed in observation.

OBSERVATION
The responses were obtained from individuals ranging from 13-55 age groups. Out of total responses 72% was given by females and 28% by males. Responses given by different blood groups is shown (Table No.1 and Fig. No. 1). Mostly people have shown no COVID-19 infection and it was shown by only 15%. Number of days required to recover from COVID-19 positive infection by people ranges from 5-14 days (Table No. 2 and Fig. No. 2). COVID-19 positive people showed symptoms like fever, dry cough, tiredness, pink eye (conjunctivitis), running nose (Fig. No. 3). People followed some preventive measures like wearing mask, using hand sanitiser, following social distancing etc.

RESULT AND DISCUSSION
Peoples above 14 years of age and mostly females were infected with COVID-19. Mostly people with Rh+ blood group were infected with COVID-19 and among that B+ blood group showed highest percentage of infection. There is positive relationship between E. coli and O blood group (Black et. al., 1987) and A blood group (Kumar et. al., 2018) causing diarrhoea. Most of the people took 14 days to recover from the infection.

Table No.1: Percent responses by different blood groups.

Blood Groups	%age Response
A-	3
A+	25
AB+	10
B+	34
O-	3
O+	25

Fig No. 1: Percent responses by different blood groups.

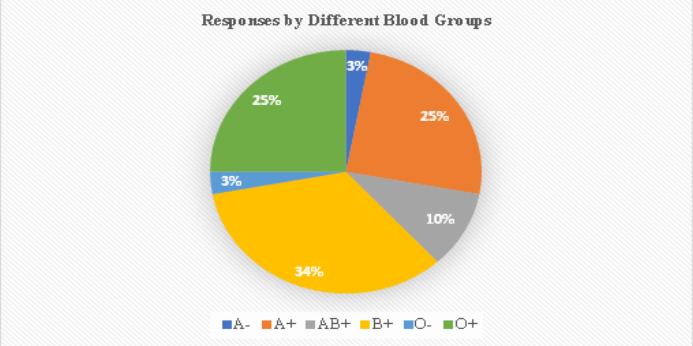

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Table No. 2: Days required for recovery from COVID-19 infection.

Number of people	Number of days Required for Recovery
1	5
3	7
1	10
9	14

Fig. No. 2: Days required for recovery from COVID-19 infection.

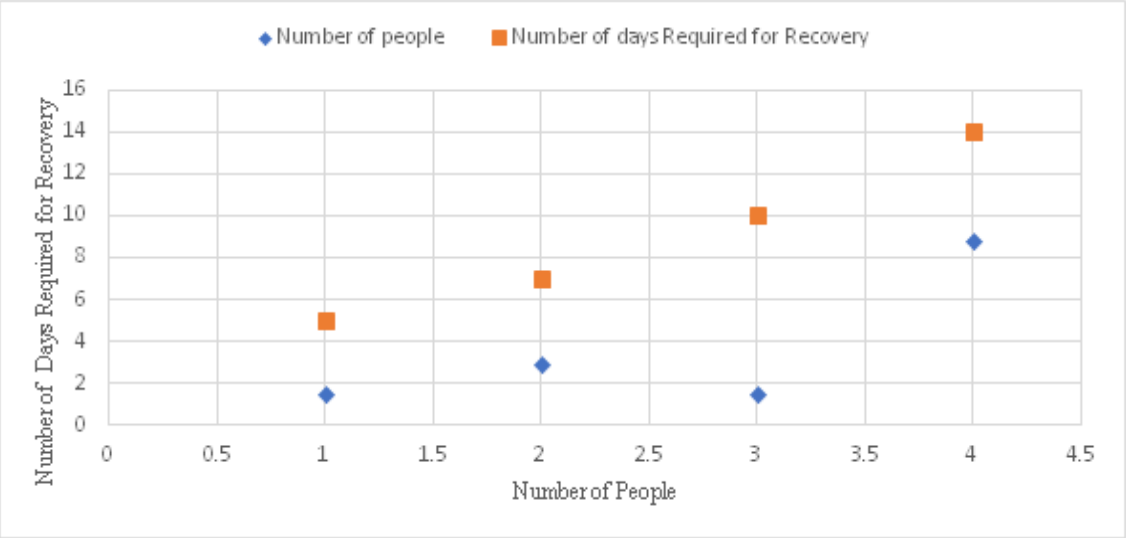
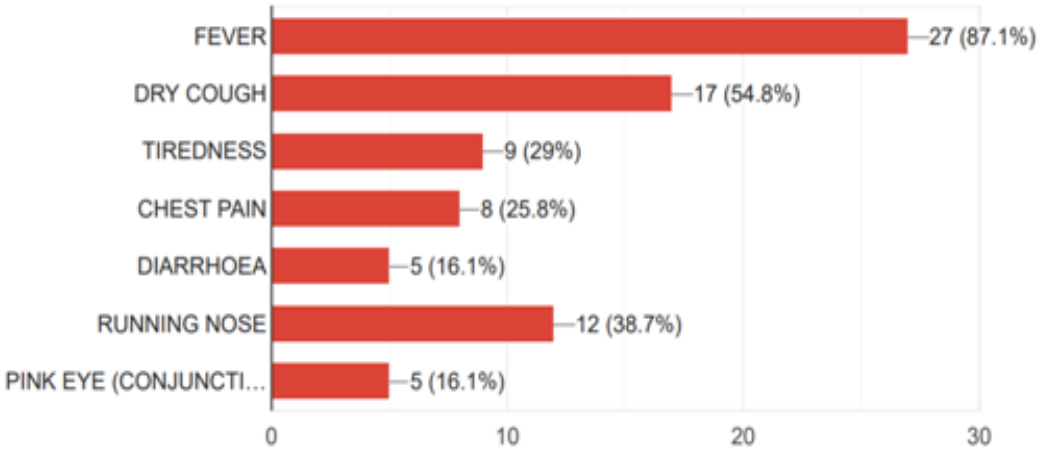


Fig. No. 3: COVID-19 Positive people showed following Symptoms.



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SURVEY AND ANALYSIS OF EYE COLOUR IN KALAMBOLI AREA TO ANALYZE THEIR CHARACTERS BY EYE COLOUR

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ABSTRACT
Eye color is a polygenic phenotypic characteristic. It is determined by two distinct factors which are the pigmentation of the eye's iris and the frequency-dependence of the scattering of light by the turbid medium in the stroma of the iris. Eyes colour occurs in many shades, ranging from dark to light brown, and from green, hazel, and gray, to blue. But despite the many variations that we perceive, there are actually only two different pigments in our eyes: brown and red. Eye color is determined by the pattern of brown and red pigment, collagen fibers, and the topography of the iris. Dark eyes have the most pigment, particularly brown-black eumelanin. In contrast, light blue eyes have the least amount of pigment. In our survey we find that black eye colour is prevailing and green eye colour is rare in peoples of Kalamboli area. We can analyze the characteristics of individuals by their eye colour. Dark eyes are associated with words like "generosity, friendliness, and empathy" than light-eyed people.

Keywords: Eye Colour, Iris, Eumelanin, Pigment, Phenotypic character.

INTRODUCTION
The human eye is both beautiful and unique. Much like a fingerprint, each individual's eye color is specific only to them, with no others sharing the same shape, color and appearance. Iris is the colored area in front of the eye. It is around 12 millimeters in diameter and has an opening in the middle, which is called the pupil. The iris is made from connective tissue and a thin muscle that allows it to open and close in response to light. Melanocytesin the iris make pigment and are responsible for the color of our eyes, hair and our skin. Melanocytes can make two different types of pigment: eumelanin, which is brown-black, and pheomelanin, which is red.

Earlier geneticists believed that a single gene was responsible for deciding an individual's eye color, with brown eyes dominating blue eyes. Now it is recorded that the total number of genes responsible for eye colour is 11. A group of researchers led by Manfred Kayser, who is a professor of forensic molecular biology at Erasmus University Medical Centre Rotterdam in the Netherland recently, analyzed genetic variants in these genes in more than 3,000 people from seven European countries.

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Eye color is determined by the pattern of brown and red pigment, collagen fibers, and the topography of the iris. Dark eyes have the most pigment, particularly brown-black eumelanin. In contrast, light blue eyes have the least amount of pigment. Each eye colour is associated with specific characteristics in the individuals.

MATERIAL AND METHOD
The survey was done in kalamboli area and visited 500 individuals and note down the observation. The survey was completed in about 3 months.

OBSERVATION AND RESULT
Data collected was analysed and observations were recorded in the table below.

Colour	Black	Light Brown	Brown	Dark Brown	Grey	Blue	Green
No of individuals	139	102	103	91	43	12	10

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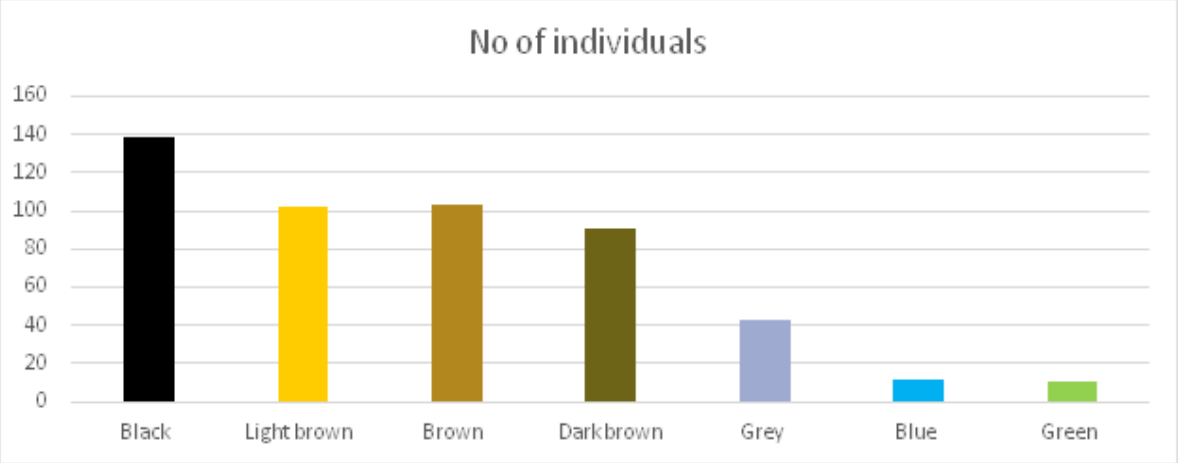

Fig. 1: Bar Graph showing frequency of eye colour in individuals of Kalmboli area.

From the Figure 1 graph it is evident that black colour eye is prevailing in the population of Kalamboli area and whereas green eye colour is rare. The eye colour is individuals are associated with some specific characteristics.

Sr. No.	Eye colour	Characteristics
1	Black	They show "generosity, friendliness, and empathy".
2	Light brown	Very independent, self-confident, determined, trustworthy and offer sense of security and stability to anyone in your periphery.
3	Brown	Being loyal, trustworthy, respectful, and gentle- but certainly not obedient, they generally have poorer sleep cycles.
4	Dark brown	Secretive or mysterious.
5	Grey	well-balanced person, "two-sided coin" type of person. Maybe there is a sort of Jekyll and Hyde thing going, have control over your emotions. They have to work a little harder in life to get to where they wanted to be. You have to work at being taken seriously, but you also keep your defenses up.
6	Blue	Blue-eyed children tended to be cautious of new things and were considerably less open around their peers." They are also 'competitive' and even 'egotistical'." Women with lighter-colored eyes seem to tolerate pain better during childbirth than those with darker eyes. They also appear to handle the stress of childbirth better.
7	Green	They are envious, mysterious, alluring, and sexy. They are agreeable yet dominant (like those with brown eyes), and also strong yet cautious (like those with blue eyes). Have an air of mystery and a quiet self-sufficiency, often unpredictable, but slow to anger, they are original, creative and perform well under great pressure.

ACKNOWLEDGMENT
We are thankful to all our participants who responded and made our paper successful.

I think it is important to keep in mind that though these studies relate our eye colour to our personality traits, our life experiences are what really define who we are and how we react.

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SURVEY AND ANALYSIS OF BLOOD GROUPS IN KALAMBOLI AREA TO FIND BOMBAY BLOOD GROUP

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ABSTRACT
Blood is the circulatory fluid which carries various substances and distributes it throughout the body. Whenever there are any casualties blood transfusion becomes necessary and before transfusing blood it is matched with that of the recipient's blood, if it matches then only rest procedure is done. Our aim in this survey was to find which blood group is dominant in the peoples of Kalamboli and which one rare along with whether there is any Bombay blood group in this area. After survey we find that blood group B+ve is prevailing and O-ve is rare in peoples of Kalamboli area.We did not record any Bombay Blood Group.

Keywords: Survey, Circulatory, Blood group, Kalamboli area.

INTRODUCTION
Blood is the body fluid in human and other animals that delivers necessary substances such as nutrients and oxygen to the cell and transport metabolic waste product away from those same cell. Blood, a connective tissue is inevitable for human existence (5). It is vital to save the lives of patients. Blood group as per the encyclopedia of Genetics, 2008 is defined as the basis of chemical present on the surface of blood cells which are involved in cell recognition. A particular blood group (blood types) dictates the presence or absence of antigens inherited from either parent onto the surface of red blood cells.

The Austrian scientist Karl Landsteiner, is widely credited to the discovery ABO blood group system in 1900 [2]. He described A, B and O blood groups for which he was awarded the Nobel prize in 1930.Alfred Von Decastello and Adriano Sturli discovered the fourth type AB, in 1902 [3].

Blood Type Compatibility

Blood Type	Gives	Receives
A^+	A^+, AB^+	A^+, A^-, O^+, O^-
O^+	O^+, A^+, B^+, AB^+	O^+, O^-
B^+	B^+, AB^+	B^+, B^-, O^+, O^-
AB^+	AB^+	Everyone
A^-	A^+, A^-, AB^+, AB^-	A^-, O^-
O^-	Everyone	O^-
B^-	B^+, B, AB^+, AB	B^-, O^-
AB^-	AB^+, AB^-	AB^-, A^-, B^-, O^-

Parents	A	B	AB	O
A	A, O	A, B, AB, O	A, B, AB	A, O
B	A, B, AB, O	B, O	B, AB	B, O
AB	A, B, AB	B, AB	A, B, AB	A, B, AB
O	A, O	B, O	A, B, AB	O

The Bombay blood group is a rare blood group which is characterized by the absence of A, B and H antigens in the red blood cell surfaces. It is known as the hh blood group or the" Oh" blood group. (2)

Historically it was first discovered by Dr. Y.M. Bhende C. K. Deshpande and H.M Bhaia of the Seth gordhandas Sunderdas Medical College in Bombay (Mumbai) in 1952 who first spelt it as Bombay (7). Thus, it is called as the Bombay Blood group.

Karl Landsteiner in his discovery of the famous ABO blood types identified that the red blood cells have an "H" antigen on their cell surfaces. This H antigen is the precursor of A & B antigens. This H antigen is modified into "A" or "B" antigen like wise and the individual get either "A" ,"B" or "AB" blood group. This modification occurs in the presence of a Transferase Enzyme. If this enzyme is lacking, then the "H "antigen is not modified and these individuals have the "O" blood group. (6)

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MATERIAL AND METHOD

The survey was done in kalamboli area and visited 700 individuals and note down the observation. The survey was completed in about 3 months.

OBSERVATION AND RESULT

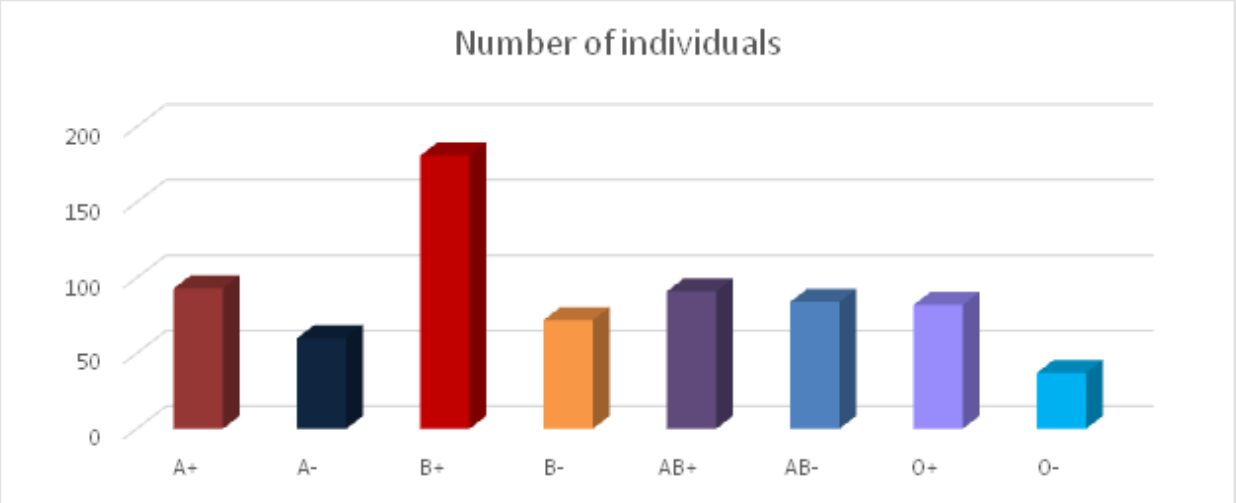
Data collected was analysed and observations were recorded in the table below.

Table 1: Blood groups of individual from Kalamboli Area

Sr. No.	Blood group	Number of individuals
1	A+	93
2	A-	60
3	B+	181
4	B-	72
5	AB+	91
6	AB-	84
7	O+	82
8	O-	37

From table 1 it is clear that 93 individuals have A+, 60 individuals have A-, 181 have B+, 72 have B-, 91 have AB+, 84 have AB-, 82 individual have O+ and 37 have O-. whereas Bombay blood group was not recorded at all. The present study concludes that 'B+' blood group is the commonest blood group.

Figure 1: Graph showing Blood groups of individual from Kalamboli Area



From graph 1 it is evident that B+ Blood group is prevailing in the population of Kalamboli area and whereas O- Blood group is rare. We did not record any Bombay blood group in our survey.

ACKNOWLEDGMENT

We are thankful to all our participants who responded and made our paper successful.

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EFFECT OF DIFFERENT SUGAR CONCENTRATIONS ON THE GROWTH OF SEEDLINGS

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ABSTRACT
Several research has been recently focused on the components and mechanisms that regulate plant growth and development, as well as the functioning of signaling pathways in plant cells, with the goal of uncovering the role of sugars in these processes. Saccharides are structural and storage compounds, respiratory substrates, and intermediate metabolites in many metabolic processes, and they play a significant role in plant life. Sucrose is the most common method of assimilate transport in plants. Sugars can also play a significant function in a plant's defense mechanisms. However, in the present study whole Moong (BN: Vigna radiata) was cultured with table sugar as a cheap carbon source with different dilution factors i.e. 0.1 and 0.5 having 10 fold and 2-fold dilution series respectively. Growth was observed every day. Seeds germinate through a process called imbibition and are affected by different sugar concentrations. This experiment is related to the osmosis process where large sugar concentration causes reverse osmosis and hence reduced growth is observed in plants.

Keywords: Sugar, Concentrations, Seedlings, Germinate, Osmosis, vegetative growth.

INTRODUCTION
Seeds germinate through a process called imbibition. Imbibition is the uptake of water by the seed from the environment. Glucose, sucrose, and trehalose-6-phosphate (Tre6P) have been found to regulate a variety of developmental and metabolic processes, working independently of the basic functions; they can also operate as signaling molecules. During the day and night, as well as during following developmental phases, changes in the concentration, qualitative composition, and transit of sugars occur continually in plant tissues. Plants have evolved a sophisticated system for detecting and transmitting signals triggered by changes in sugar supply. Cell division, germination, vegetative development, flowering, and ageing processes are all affected by changes in their concentration, often independently of metabolic functions (Ciereszko, 2018). Currently, the mechanisms of plant growth regulation that are dependent on sugar availability are becoming more widely known. Hexokinase (as a glucose sensor), trehalose-6-phosphate, and TOR protein kinase are all part of the plant growth boosting system; the absence of Tre6P or TOR kinase slows plant development and transition to the generative phase. Plant growth inhibition is thought to be mediated by SnRK1 protein kinases and C/S1 bZIP transcription factors. Sugar-induced signaling interacts with other pathways in plant tissues (such as hormone pathways), resulting in a complex communication and signaling network in plants that precisely governs plant growth and development (Ciereszko, 2018; (Peviani et al., 2016).

One of the most intriguing features has been the showing of the regulatory function of sugars, which are substrates or products of several chemical processes and have long been known to be involved in basal cell metabolism. Saccharides are largely synthesized in plant tissues from triose-phosphates created during photosynthesis in leaves. The ultimate products of photosynthesis, sucrose and starch, can be temporarily retained in leaves, but the vast majority of the sucrose pool is transferred to acceptor tissues that do not manufacture this sugar (Ruan, 2014; Ciereszko, 2009, 2018).

Throughout the day and night, as well as during consecutive developmental phases, changes in sugar concentrations, qualitative composition, and transit occur in plant tissues (Li and Sheen, 2016; Sami et. al., 2016; Fernandez et. al. 2017; Ciereszko, 2018).

Sugars govern the cell cycle, cell differentiation, vegetative development, organ creation, blooming, fruit formation, and senescence at millimolar concentrations (Ciereszko, 2018). Hence, present study was carried out to observe the effect of different sugar concentrations on the growth of seedlings.

RESEARCH METHODOLOGY
Series of Sucrose serial dilutions were prepared with dilution factors i.e. 0.1 and 0.5 having 10 fold and 2-fold dilution series respectively. Five test tube were prepared having a dilution of 1:10, 1:100, 1:1000, 1:10000 and a control for 10-fold dilution having 0.1 dilution factor. Similarly, another set of five test tube were also prepared having a dilution of 1:2, 1:4, 1:8, 1:16 and a control for 2-fold dilution having 0.5 dilution factor. The test tubes were observed daily for growth of seedlings.

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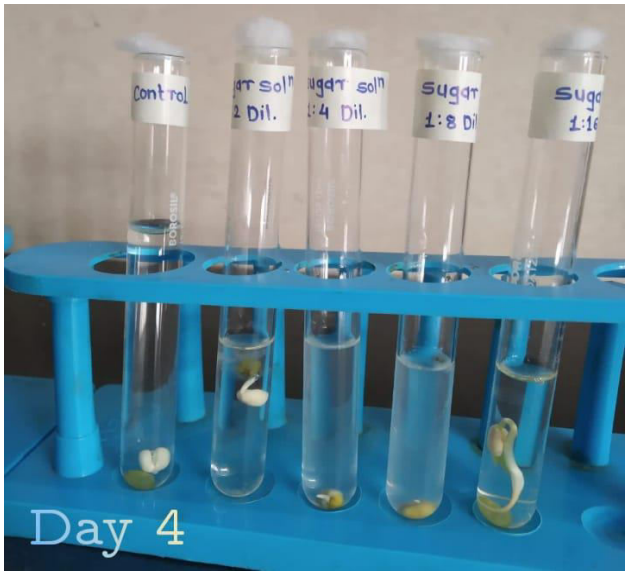
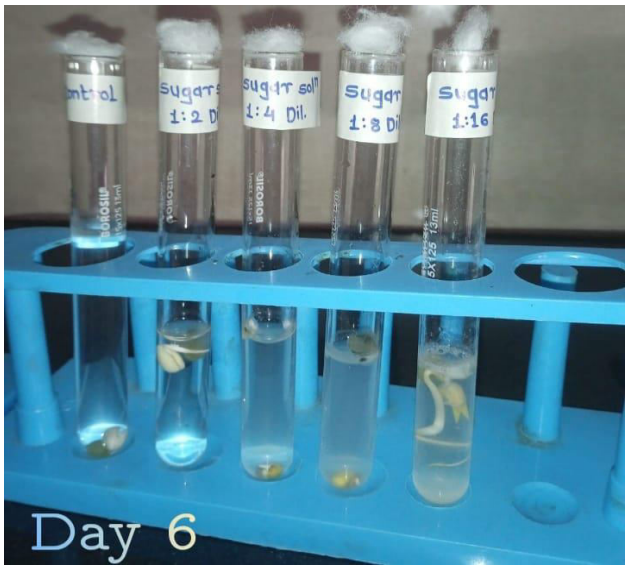
OBSERVATION AND RESULTS

Photographs showing 0.5 dilution factor:





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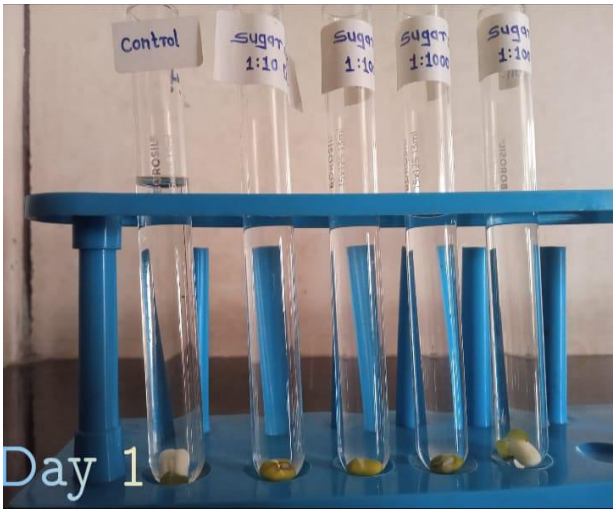
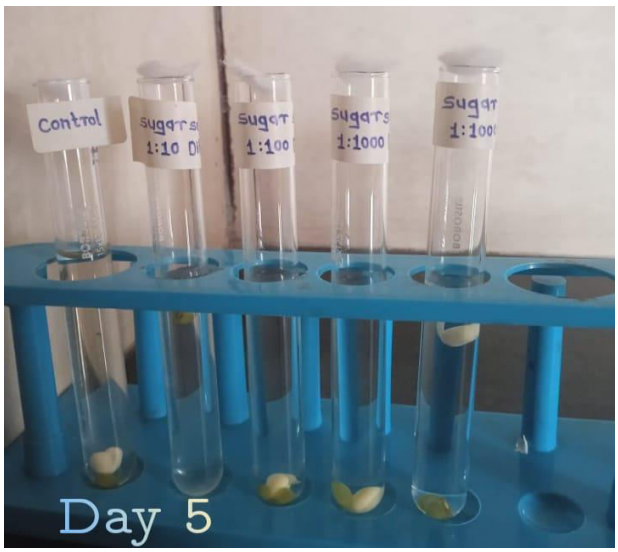
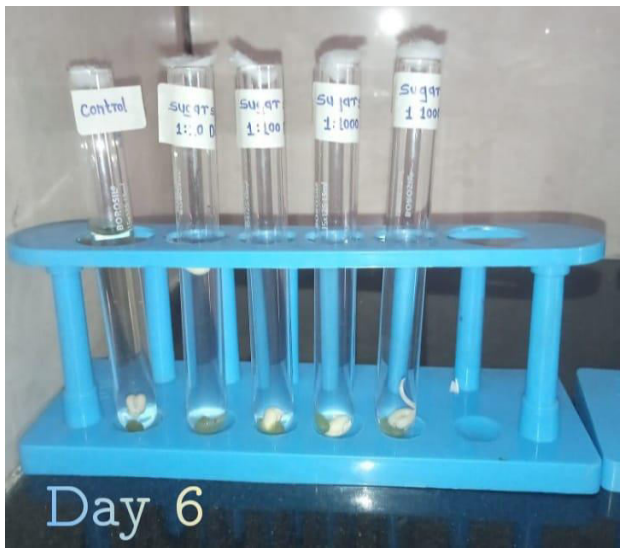
Photographs showing 0.1 dilution factor:







From the above photographs of 0.5 dilution factor it is clear that in 1:16 dilutions, growth of seedling is observed right from 2nd day, where from 4th day onwards growth of shoot is also observed. We can see little growth in 1:2 dilutions, where only growth of radicle is observed. If we added high concentrations of sugar solution to the growth medium, then we see that there is little to no spouting. If we added lower concentrations and see, then there is some sprouting are there. This implies that sugar inhibits seed sprouting. High concentrations of sugar will lower the water potential of the growth medium, reducing the likelihood that water will flow into the seed. Sugar solution changes the ability of the plants to absorb water. Sugar solution /Glucose

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affects plant growth and induces a delay in the development of the juvenile to vegetative phase. Glucose induces the synthesis of chlorophyll, rubisco, and various photo-protective pigments. Glucose alleviates the harmful effects of abiotic stress by increasing antioxidant and sugar levels. The plant hormone gibberellins are necessary for seed germination. Similar results were obtained by (Ćosić et al., 2020), they showed that Plantlet height was decreased with higher concentrations of sucrose (in particular at 9%).

If we observe the photographs of 0.1 dilution factor it is clear that in 1:10000 dilutions, only little growth is seen, where only radicle has developed till the 6^{th} day of culturing. Whereas in other tubes only seed coat was removed due to imbibition, no growth was observed. Seed germination is a process in which the embryo is activated as a result of morphological and physiological changes. Seed absorbs water before germination, causing the seed embryo to expand and elongate. The process of seed germination is accomplished after the radicle has grown out of the covering seed layers (Hermann et al., 2007).

CONCLUSION

It is concluded that sugar is the carbon source for the process of photosynthesis to occur which results into the growth of seedlings. But high concentrations of sugar inhibit the growth of seedlings, which may be due to reverse osmosis.

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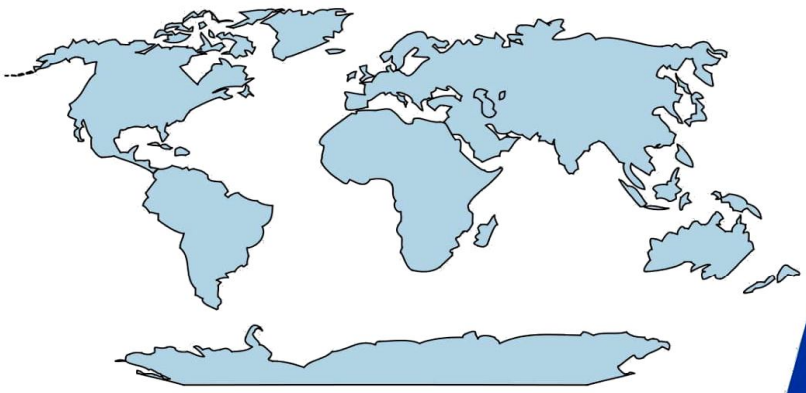

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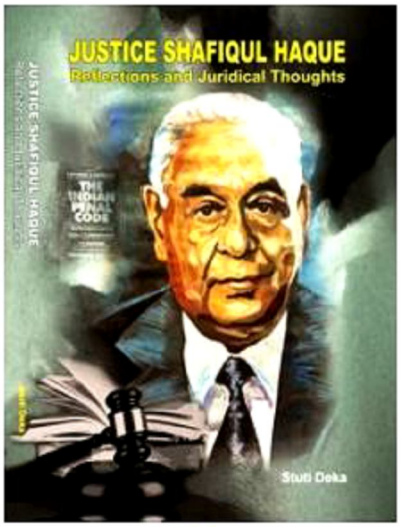

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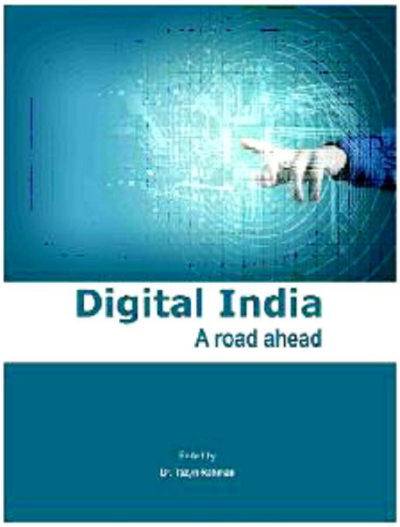

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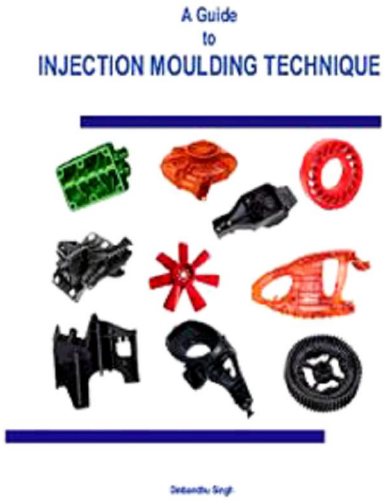

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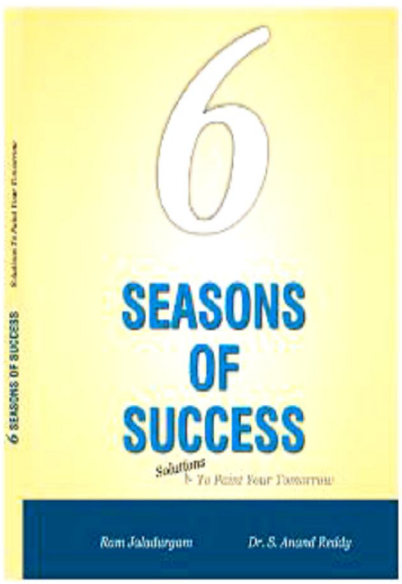

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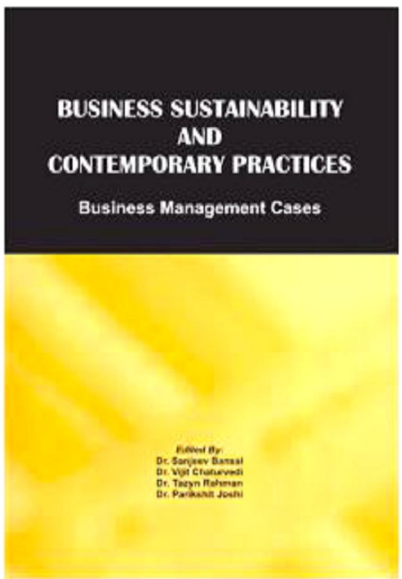

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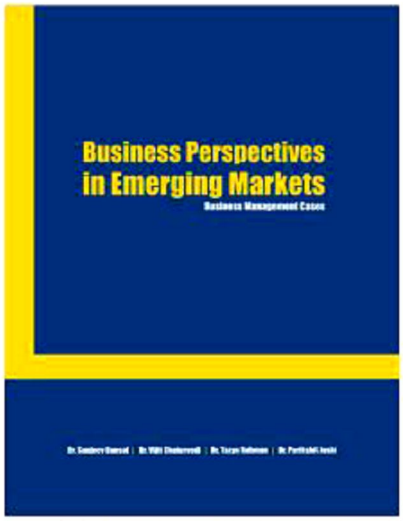

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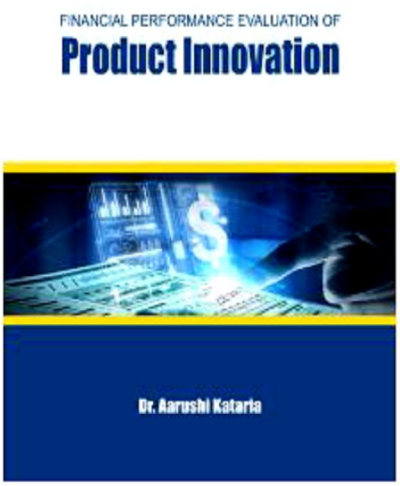

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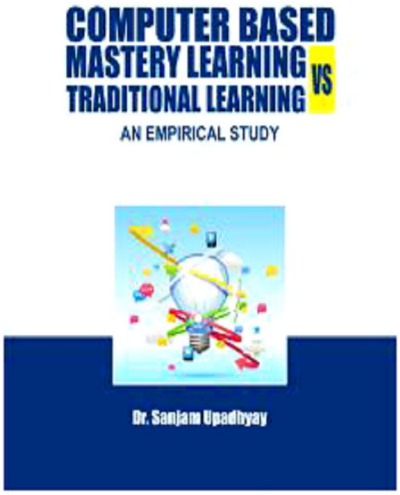

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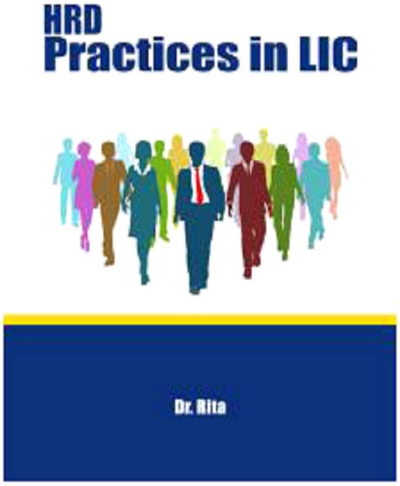

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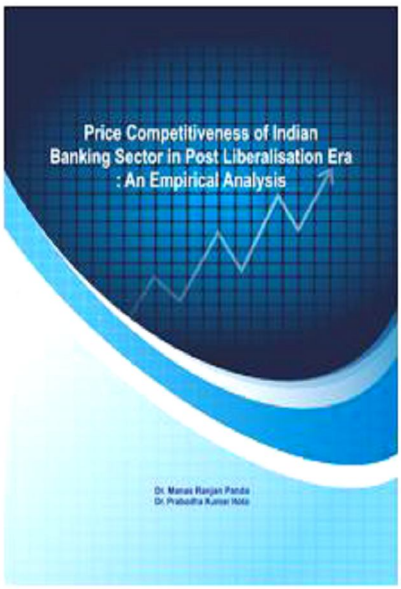

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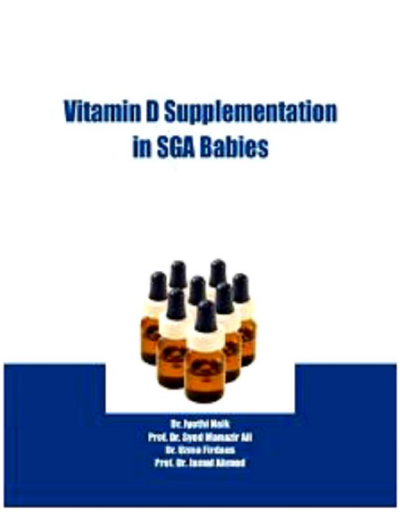

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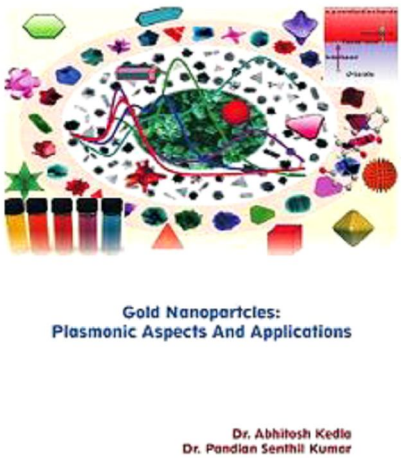

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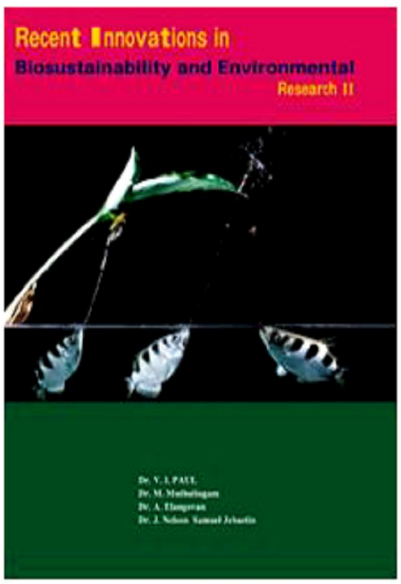

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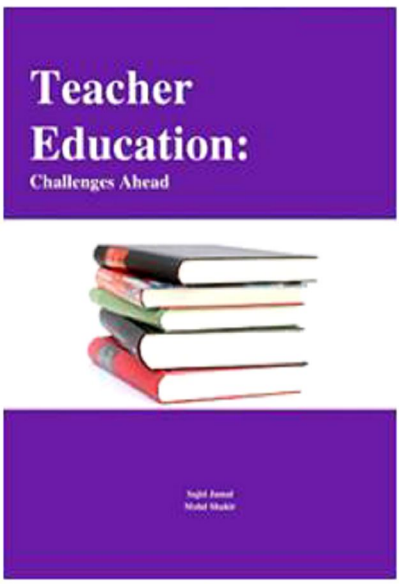

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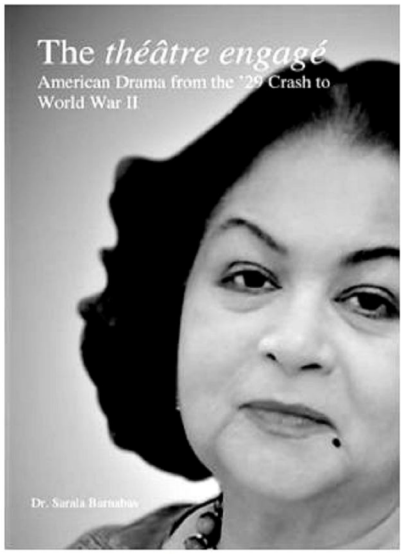

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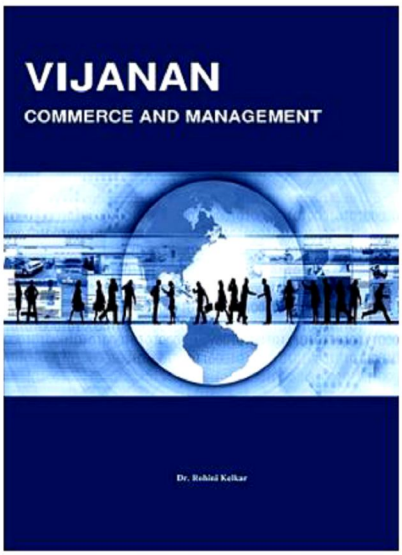

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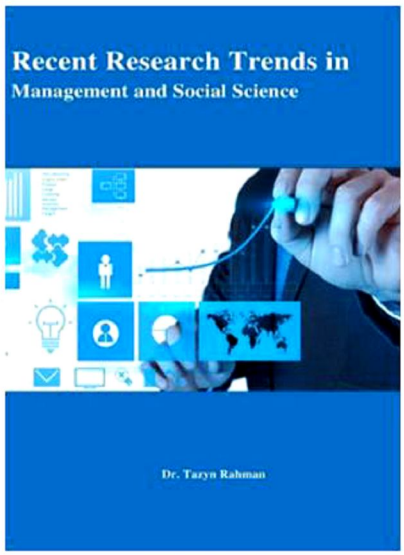

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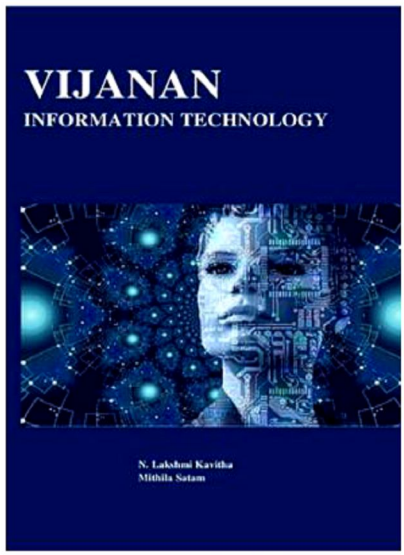

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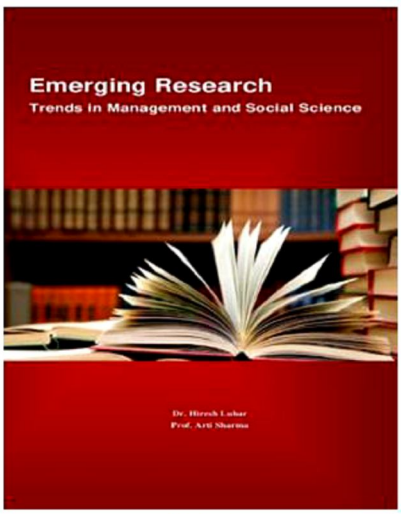

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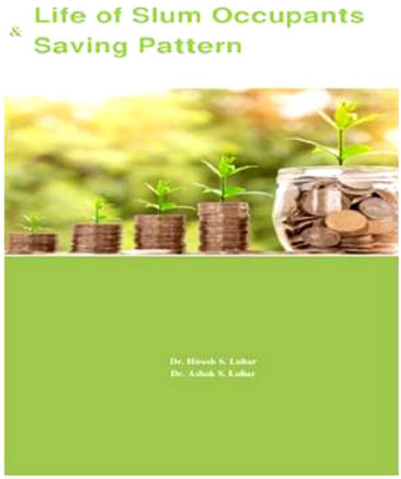

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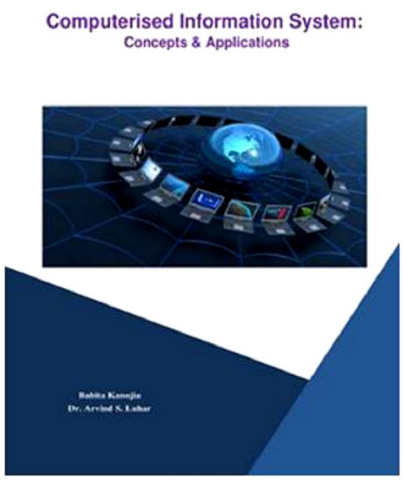

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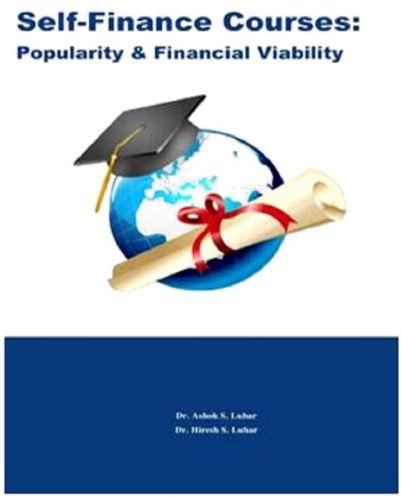

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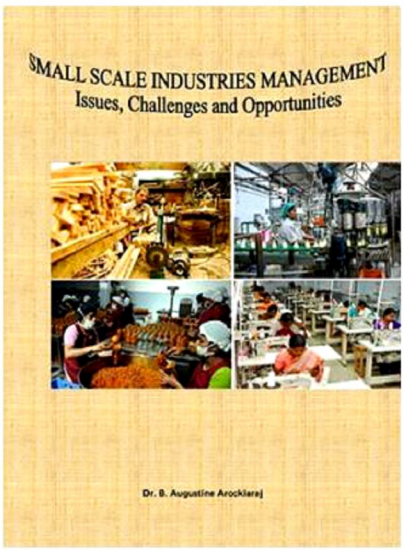

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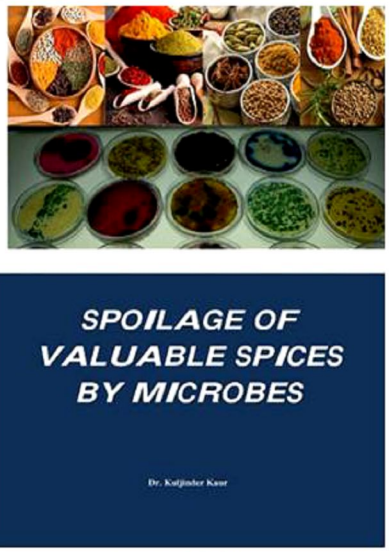

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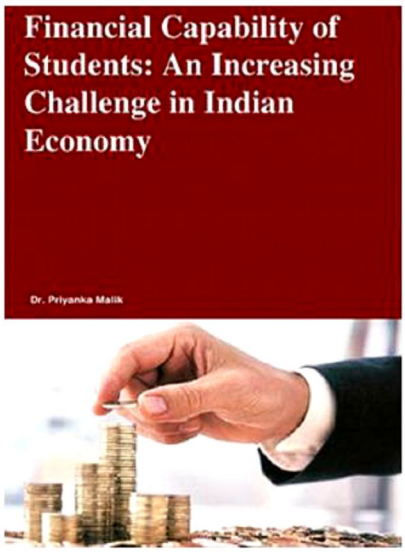

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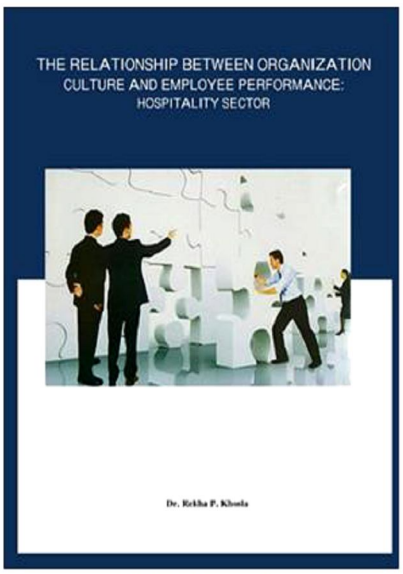

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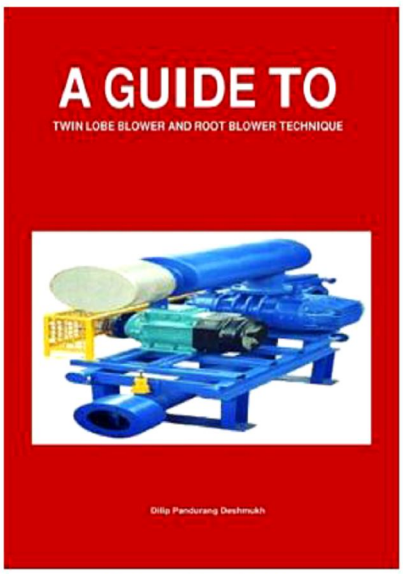

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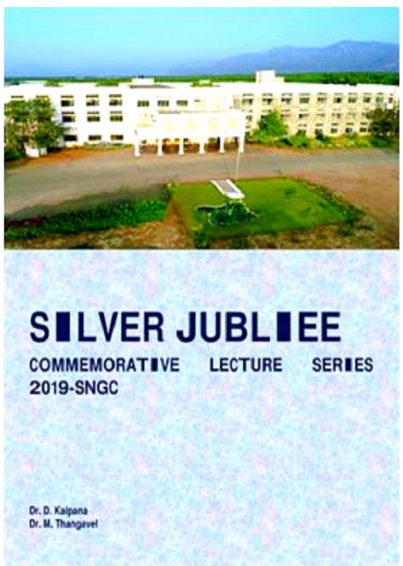

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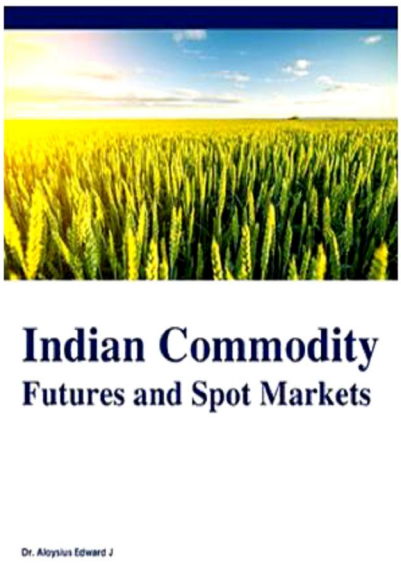

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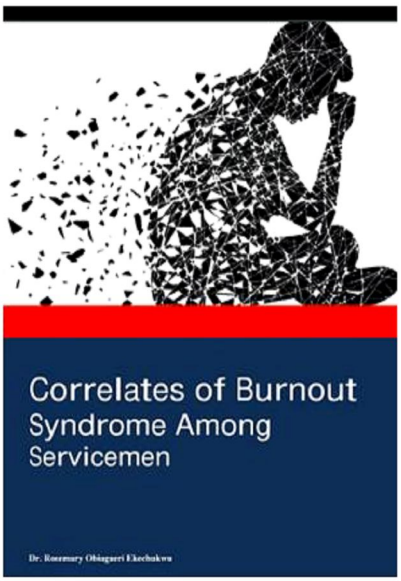

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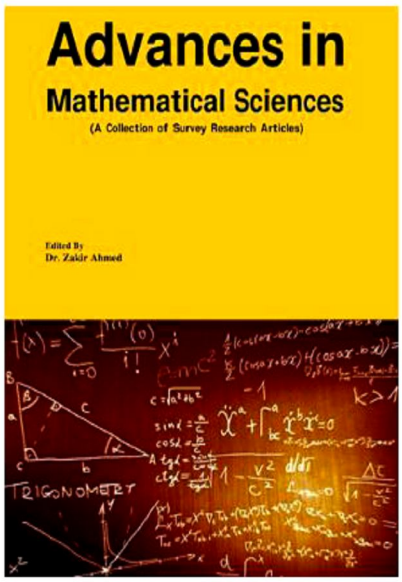

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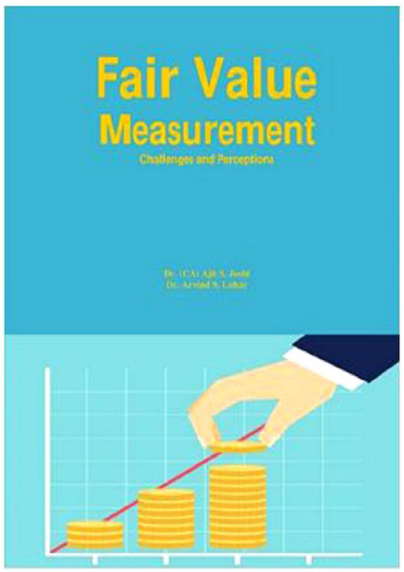

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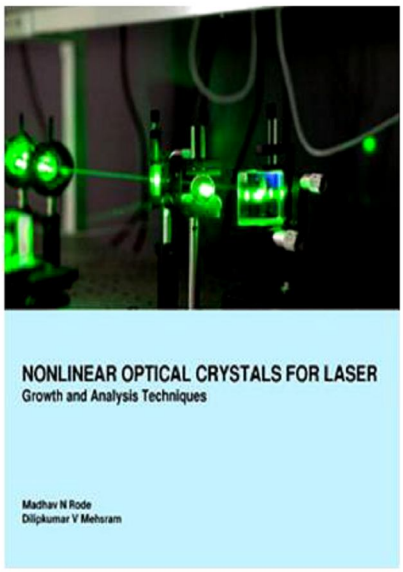

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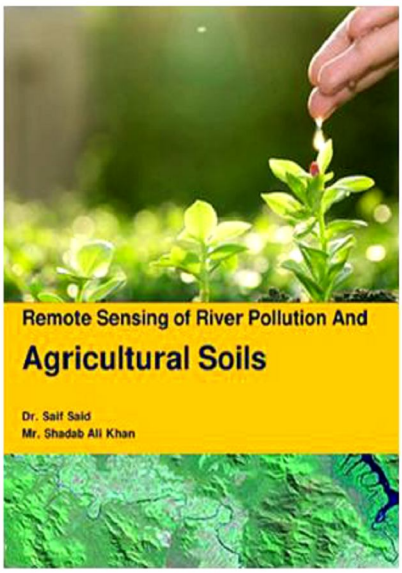

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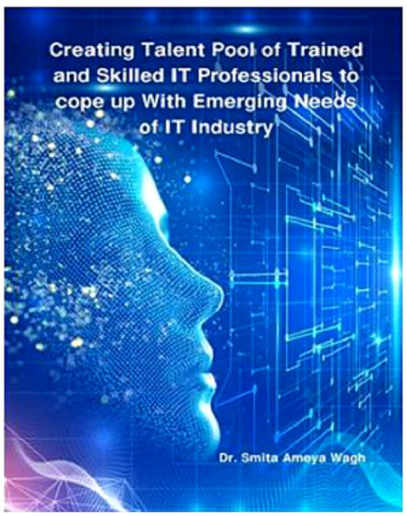

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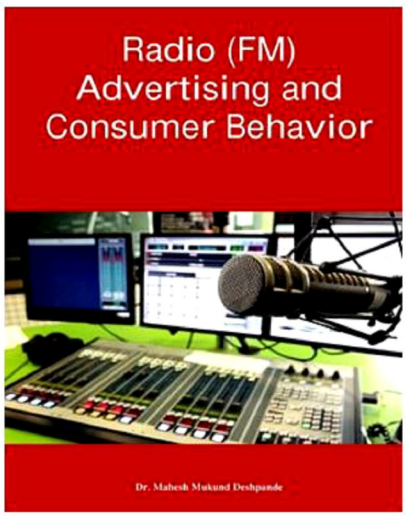

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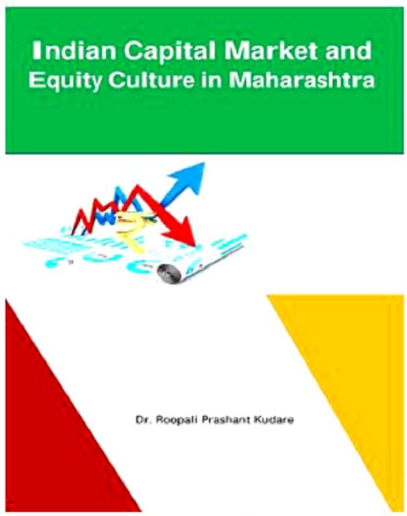

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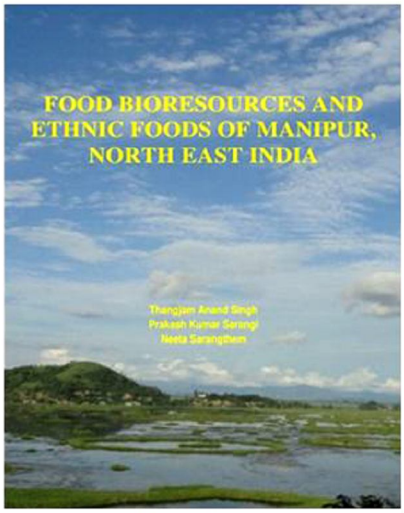

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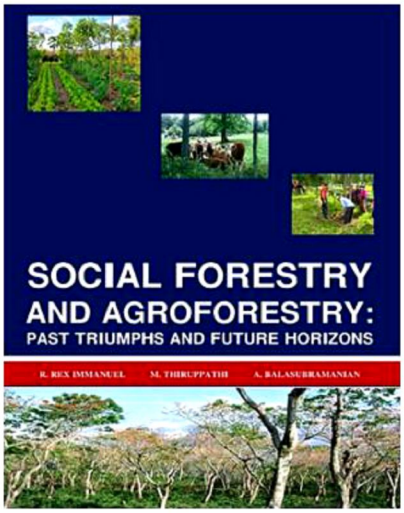

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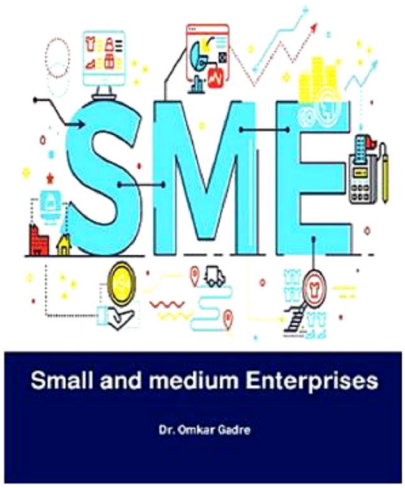

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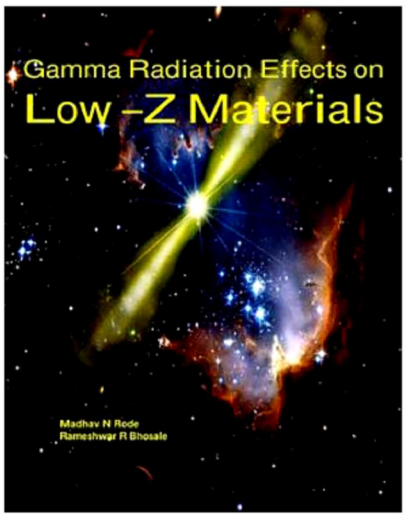

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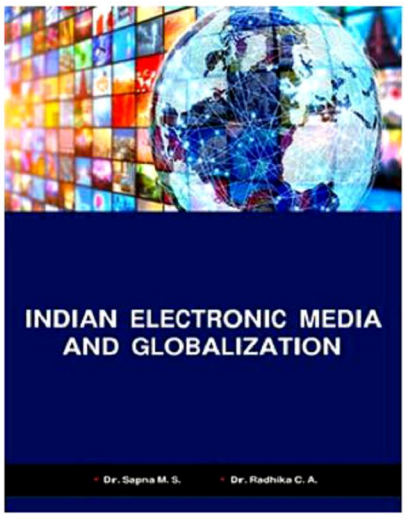

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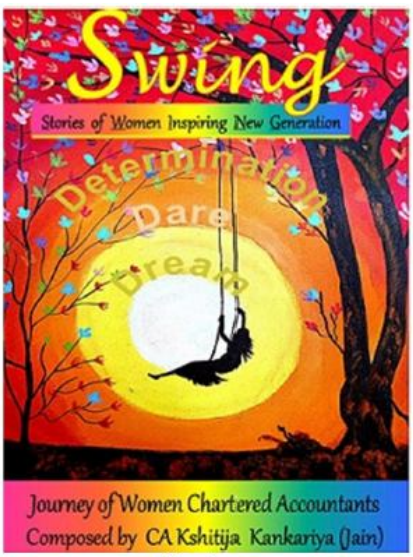

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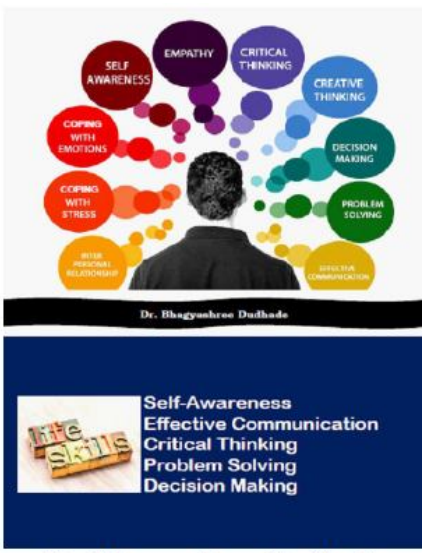

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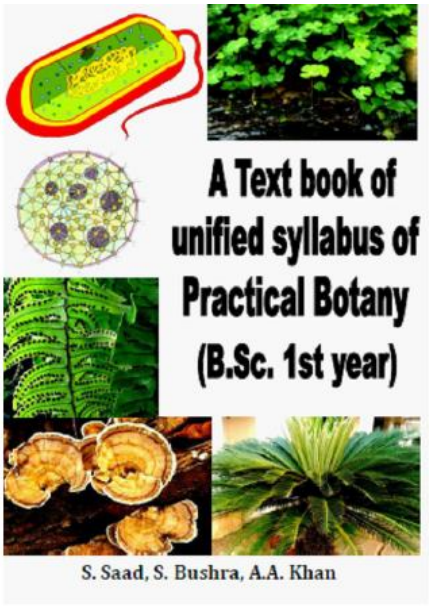

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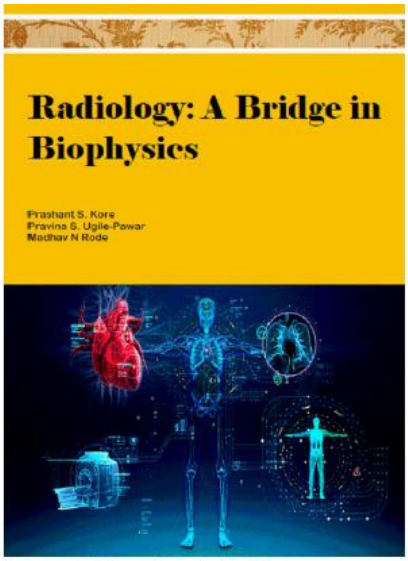

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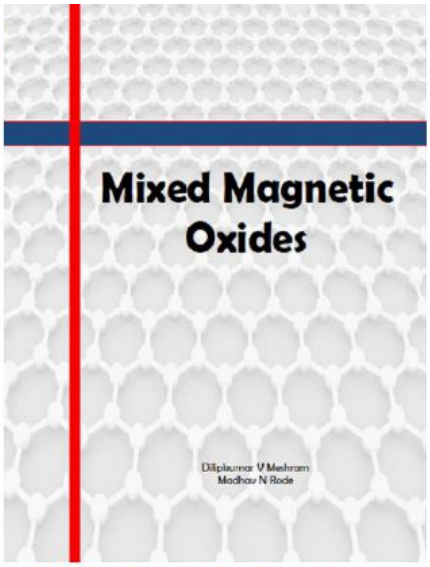

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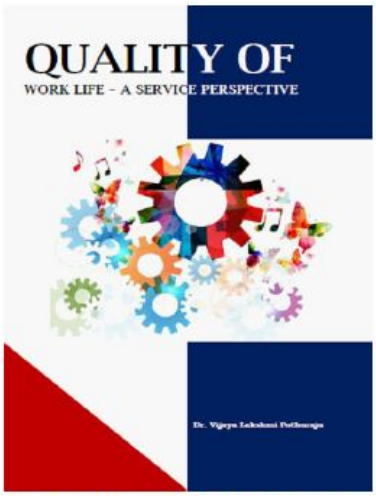

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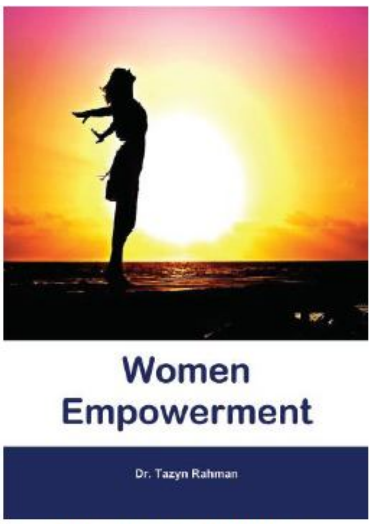

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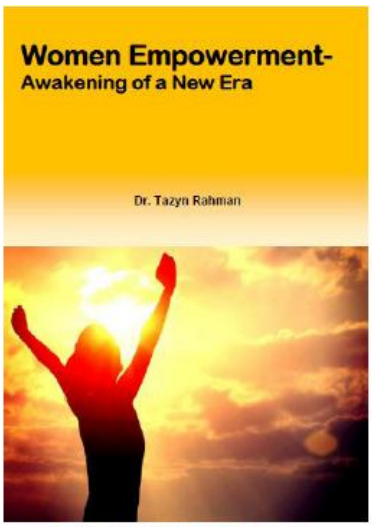

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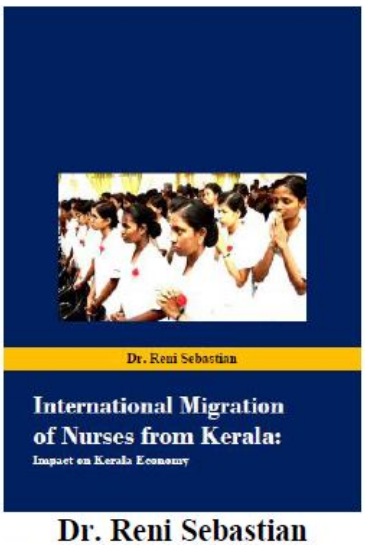

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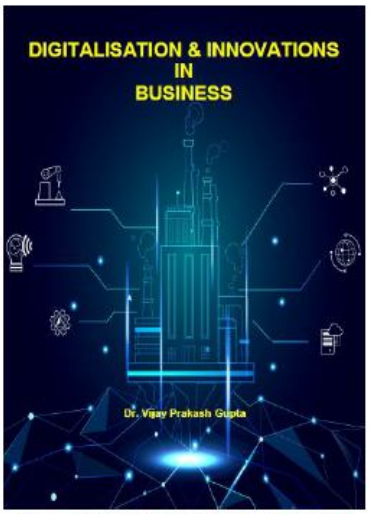

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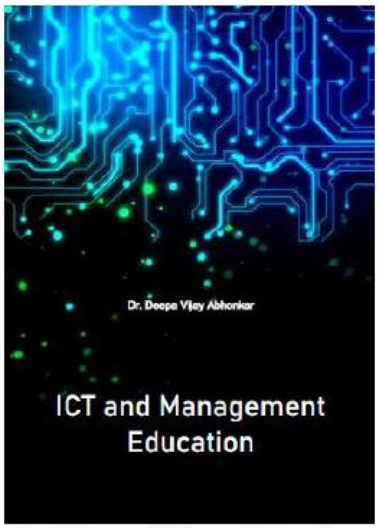

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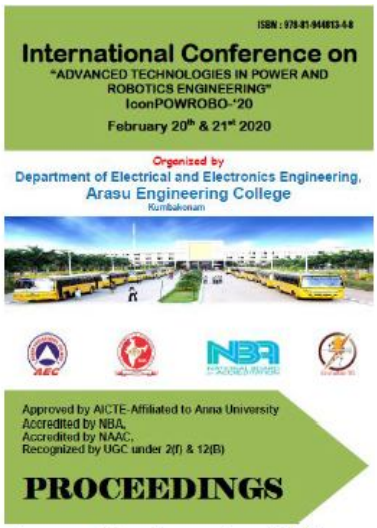

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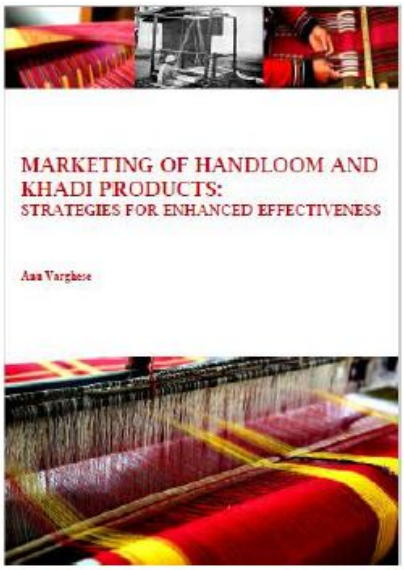

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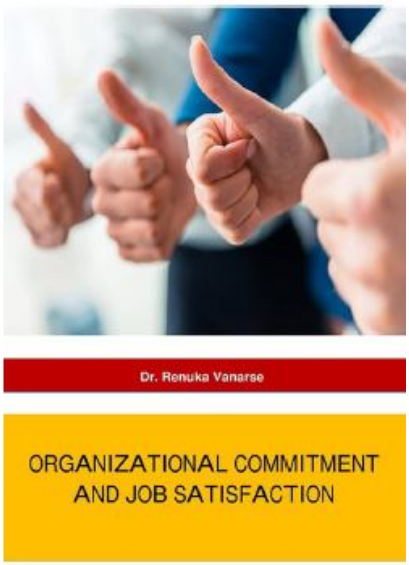

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