YLECTRAZE

SPECTRUM 2022

INSPIRE
INTERACT
INNOVATE

DEPARTMENT ASSOCIATION OF

ELECTRONICS AND COMMUNICATION ENGINEERING

LIFE AT MCET

MCET

Dr. Mahalingam College of Engineering and Technology (MCET) is a self – financing educational institution situated in Pollachi, Coimbatore District. MCET is the vision of Arutchelvar Dr. N. Mahalingam, whose determination towards ,and dynamism made possible the realization of this institution of excellence. MCET was established in the year 1998 to commemorate the 75th Birthday of this great visionary.

VISION

We develop a globally competitive workforce and entrepreneurs.

MISSION

Dr. Mahalingam College of Engineering and Technology, Pollachi endeavors to impart high quality, competency based on technical education in Engineering and Technology to the younger generation with the vast skills and the needed abilities to face the challenging needs of the industry around the globe. This institution is striving hard to attain a unique level in the international level by means of infrastructure, state-of-the-art computer facilities, techniques and more.

ETHIC VALUES

The Institution is driven by its core values such as

- Equity
- Clarity
- Creativity
- Team Work
- Environment Sustainability
- Staff Development
- Women in Development

SUPERINTENDENCE AND ADMINISTRATION

- It's said loud that " Smart work is better than hardwork" is the best adage that suits the life of Thiru. P. Nachimuthu Gounder who opted for the best solution for people problem Thiru. P. Nachimuthu Gounder implemented an ultimate idea to use bullock carts to help people. The limitations of bullock cart transportation prompted him to modernize and Anamalais Transport came into existence which is now known as ABT limited exploring every nook and corner of the state. The modernization of the transport fueled a thought on the importance of technical education. A vision was born. The dream was made into reality by Arutchelvar Dr. N. Mahalingam – a name that is synonymous with Pollachi. Motivated by his father's vision Nachimuthu Industrial Association Trust was been established in the year 1956.
- The dream was cherished with the incorporation of Nachimuthu Polytechnic College in 1957 through which 120 rural students were made competent enough to work with modern technology.
- As he had a better understanding of the need of the hour,Arutchelvar Dr. N. Mahalingam was prompted to pioneer with technical education rather than beginning a school.
- The society's solicitation made him the Chairman of NIA to expand education right from primary to technical education. Within a short span of 50 years the NIA has ventured into many avenues and has established its roots in industrialization, education, finance, transportation, synthetic gems, textiles, agriculture and automobiles. Nachimuthu Industrial Association not only offers jobs but also provides opportunities for rural students to gain knowledge and explore the fast-paced world. For his achievement in education and welfare of the society, the industrial genius has been recognized by Government of India and was conferred with Padma Bhusan in 2007.

NIA INTITUTIONS

· The society's solicitation had made him the Chairman of NIA to expand education right from schooling to engineering. Within a very short period of 50 years the little bud- NIA- has blossomed in lot many avenues and has spread its awesome fragrance in industrialization, education, finance, transportation, synthetic gems, textiles, agriculture and automobiles.

· Nachimuthu Industrial Association not only shelters the society by offering jobs in which it flourishes but also been a preamble for rural students to gain abundance knowledge and explore the fast-paced world. Having made the institution a banyan tree in which entire society can shelter. The Chairman after rendering his tireless work, he has become the Emeritus.

POSITIONING

As part of MCET's dedication to provide its students the best of best in life, a full- fledged placement centre functions in the campus under the able administration with the assistance of an experienced faculty in each discipline. The very active placement centre serves as a foundation for many careers by guiding students in right direction through continuous counselling and arranging for campus recruitment's .This centre creates a meticulous database and assists the students in getting placed in national and multinational companies through campus recruitment. Till date, several hundreds of our students have been placed in rewarding jobs through MCET.It brings a massive happiness in all our hearts.

PREREQUISITES

· Auditorium.
· Reprographic facilities.
· Bank.
· Seminar Halls.
· Yoga & Meditation Center.
· Canteen & Cafeteria.
· Student Service Center.
· Driving School.
· NIA Book depot.
· Computerized Library.
· Hostel.
· Temple.

- Communication Lab.
- Guest House.
- Multi Gym.
- Recreation facilities.
- Transport facilities.
- Computing Facilities.
- Internet Browsing Center.
- Post office.
- NIA Travel Desk.
- Swami Vivekanandar Mahatma Gandhi Study Centre.

ITeS - Hardware Maintenance Team

A separate team has been established for maintaining the systems and peripherals in our campus. With this team, any problem relating computers in our campus is being resolved in a short span of time. Also preventive maintenance schedule is being taken up by this team which avoids future problems.

Stock Maintenance

In an institution like Dr.MCET with nearly a 1800 system at present in various labs, it is a must to maintain and verify the tractability of each computer in the campus. A team of 5 persons who periodically take physical stock and condition of each computer which enables the whole system to move smoothly.

Software Maintenance Team

This team involves about 6 persons who are efficient software engineers who are in responsible for developing websites, creating new software maintaining databases etc.

Hostel

· A well furnished hostel is available for men and women separately. It can accommodate 1410 men and 714 women students. Single, double and multi member rooms are available in the hostel. The rooms are well furnished and facilities such as fan, tube light, cupboard etc., are provided for the comfortable living to the residents. Vegetarian food, on dividing basis is made available in the mess with modern kitchen and furnished dining hall.

· Facilities like Internet browsing, Library and Reading room, Medical Facilities, Laundry, Hair Dressing facilities, Inbuilt Canteen, Xerox Centre and so more are available for the convenience of the students staying in the hostel. The Hostel administration is carried out by the Warden with the assistance of a Deputy Warden. Resident proctors are available for guidance and counselling to the students.

ECE

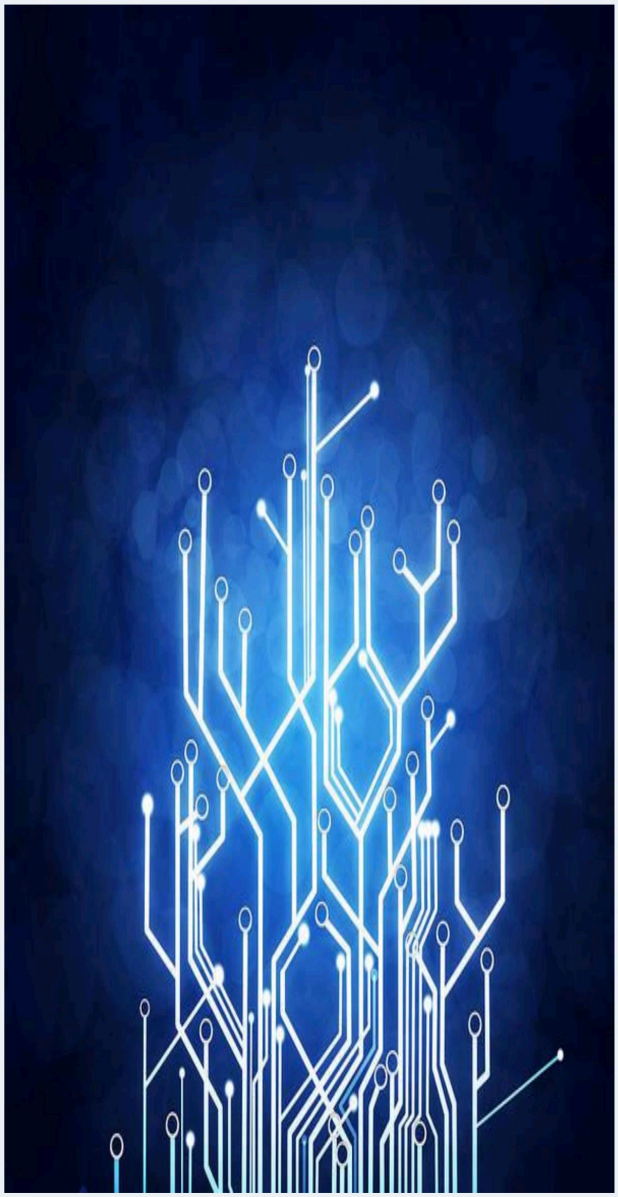
DEPATMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ECE- Antiquity

The Department of Electronics & Communication Engineering (ECE) was established in the year 1998 with intake of 40 students. The Department of Electronics and Communication Engineering offers premier professional training with an eye on the modern developments in Electronics and Information technology. The department is affiliated to Anna University and accredited by National Board of Accreditation, AICTE, and New Delhi & ISO Certified.

The department is teamed with an Excellent Infrastructure, Competitive Faculty and an Active Student association. It offers an outstanding opportunity for budding professional to polish their skills and outperform their competitors. Also, our department is affiliated by Anna University, Chennai as research Centre to pursue Ph.D.

The department offers value added courses apart from the regular subjects which enable the students acquire marketable skills. Many passed out students of the department are placed in companies like Robert Bosch, Soliton Technologies ltd, VVDN technologies, Infosys Technology ltd, TCS,VIRTUSA,NTT DATA,CTS, Tech Mahindra, UST, Sutherland Global, NetO2, Patni Computers, Cyber slash support, Sensiple, Impiger,Servion global solutions, Face Training institute, Accenture, IBM, Burning glass, Polaris INFOTECH, CMS IT services, HP and jasmine InfoTech, etc.,



VISION & MISSION

Vision:

To strive for excellence in Electronics and Communication Engineering education, research and technological services imparting quality training to students, to make them competent and motivated Engineers.

MISSION :

Department is committed to

service_right_icon2 Impart high quality technical education in Electronics and Communication Engineering through effective teaching- learning process and updated curriculum.

service_right_icon2 Equip the students with professionalism and technical expertise to provide appropriate solutions to societal and industrial needs.

service_right_icon2 Provide stimulating environment for continuously updated facilities to pursue research through creative thinking and team work.

Programme Educational Objectives (PEOs)

The graduates will:

PEO1. Actively apply knowledge and technical skills in engineering practices towards the progress of the organization in competitive and dynamic environment.

PEO2. Own their professional and personal development by continuous learning and apply the learning at work to create new knowledge.

PEO3. Conduct themselves in a responsible and ethical manner supporting sustainable economic development which enhances the quality of life

Programme Outcomes (POs)

Graduates of Electronics and Communication Engineering Programme will be able to:

PO 1. Engineering Knowledge: Apply the knowledge of Mathematics, Science and engineering to solve problems in the field of Electronics& Communication Engineering.

PO 2. Problem Analysis: Identify, formulate/model, analyze and solve complex problems in the field of Electronics & Communication Engineering.

PO 3. Design and Development: Design an electronic system/component, or process to meet specific purpose with due consideration for economic, environmental, social, political, ethical, health and safety issues.

PO 4. Conduct Investigations: Design and conduct experiment, analyze and interpret data to provide valid conclusions in the field of Electronics and Communication Engineering.

PO 5. Modern Tool Usage: Apply appropriate techniques and modern software tools for design and analysis of electronic systems with specified constraints.

PO 6. Engineer and Society: Apply contextual knowledge to provide engineering solutions with societal, professional & environmental responsibilities.

PO 7. Environment and Sustainability: Provide sustainable solutions within societal and environmental contexts for problems related to Electronics & Communication Engineering.

PO 8. Ethics: Comply with code of conduct and professional ethics in engineering practices.

PO 9. Individual and Team work: Perform effectively as a member/leader in multidisciplinary teams.

PO 10. Communication: Communicate effectively to engineering community and society with proper aids and documents.

PO 11. Project Management & Finance: Demonstrate knowledge and understanding of the engineering and management principles to manage projects in multidisciplinary environment.

PO 12. Lifelong Learning: Recognize the need for, and have the ability to engage in independent and lifelong learning.

PSOs: Programme Specific Outcomes (PSOs)

PSO1 : Technology Deployment: Apply technologies of electronics, embedded systems, signal processing, communication and networking in the field of industrial automotive, consumer, medical and defense electronics industries.

PSO2: IC Design: Apply the design flow of Very Large-Scale Integrated circuits to design and test Integrated Circuits in Semiconductor industries.

DEAR
STUDENTS

I, Dr. R. Sudhakar, HOD of ECE, take great honor in congratulating the students who have contributed to the current year's magazine—acknowledging that the magazine is ultimately created and designed by the students. It is an occasion of great pride and satisfaction for the department of ECE. SPECTRUM is the association of the department of Electronics and Communication Engineering. The department association aims to foster technical skills in Electronics and Communication. Spectrum association members are scarcely active in helping students better understand the requisites for competing with Quality Technocrats in the Young rural Minds. In addition to classroom teaching, the students are guided and motivated to practically implement technical and non-technical activities. Spectrum association provides a healthy environment for students to carry out inter and intra-department collaborative activities. The department association conducts workshops, expert talks, and additional training programs on recent trends in Electronics and Communication Engineering in collaboration with industries that benefit students. Students can undergo such robust technical learning under the supervision of spectrum association. Because of this, all passing out students of the department are capable of visualizing, planning, and developing big projects of commercial and research interests in their respective fields of expertise. It is also expected that our students will continue to pass on the skills they have developed during their stay at this department association program to the whole world for a better society. The center of our department creates a meticulous database and assists the students in getting placed in national & multinational companies through campus recruitment. Hundreds of our department students have been placed in rewarding jobs through MCET. Spectrum association provides a collaborative environment open to the free exchange of ideas, where research, creativity, innovation, and entrepreneurship can flourish and ensure students achieve their full potential. As this initiative progresses, I hope this will kindle a spark in the minds of students who have yet to contribute to its success.

All the best, students!

DR. R.SUDHAKAR

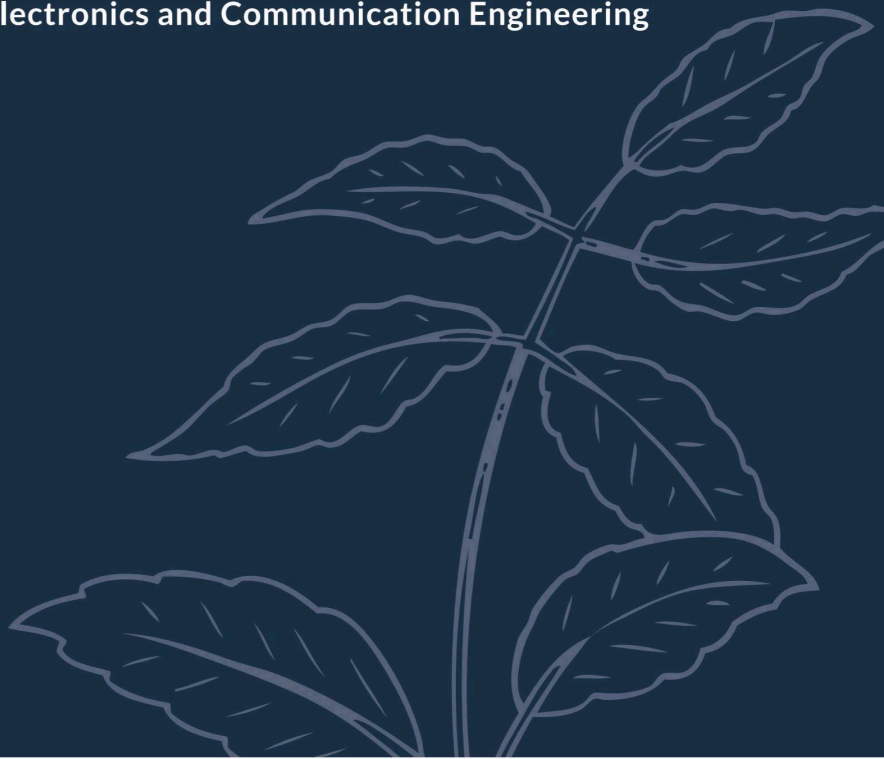
HOD,Department of Electronics and Communication Engineering

DEAR STUDENTS

I feel extremely privileged to read the 10th edition of our department magazine. I congratulate the editorial board members for bringing the magazine to this occasion. I felt content with a glimpse of the meticulous work of our department's students. This gets an incredible platform for the students to enhance their soft skills, creativity, and logical thinking. After the new normal, our department association soon turned into a student forum, where all the students of our association began to take up the responsibility of organizing the events. Here students are enriched with technical skills and leadership quality among ones. Through various distinguished events, including guest lectures, alumni interactions, and technical and non-technical presentations, students were helped to develop successful career paths. We encourage students to continue to pass on the skills they have developed during their stay at the department association program to the world for a better tomorrow. I felt delighted to see that the department is doing its best to carry out the mission of grooming the students.

DR. V.K.SUDHA

Program Coordinator,Department of Electronics and Communication Engineering



ABOUT

SPECTRUM ASSOCIATION

THE FOLLOWING MEMBERS HAVE BEEN NOMINATED FOR THE ACADEMIC YEAR

2022-2023

PRIYANK SIDDARTH. M J (PRESIDENT)	-IV ECE A
SANDHIYA.S (VICE PRESIDENT)	-IV ECE B
NAVEEN CHANDRA.V (SECRETARY)	-III ECE B
SURESHKUMAR.M (JOINT SECRETARY)	-III ECE A
HARISUTHA.A S (TREASURER)	-III ECE B
SRIVISHNU.R (MAGAZINE EDITOR)	-III ECEA
KEERTHIKA.M (REPORT EDITOR)	-III ECE B
KRISHA. S (EXECUTIVE MEMBER)	-IV ECE A
SURENDRAKUMAR. B (EXECUTIVE MEMBER)	-IV ECE A
DIVYA.B (EXECUTIVE MEMBER)	-III ECE B

OFFICE BEARERS:

PRAVEEN.V	-IV ECE A
PRANOOVE.K	-IV ECE A
HARINI.M	-III ECE B
SUBAASH.S	-III ECE A
RAM PRASHANTH.R V	- II ECE B
PREETH.R K	- II ECE A
KARTHIK.T	- II ECE B
SANDHYA.P	- II ECE B
KONEESHWARAN.N	- II ECE A
PRIYADHARSHINI.M	- II ECE A
ETHEGASWARAN.T	- II ECE A
MONISHA.S	- II ECE A
JAI AKKAYARAJKUMAR.V J	- II ECE A
AATHITAYAH.U R	- II ECE B
SELVAPRIYA.P	- II ECE A
SRINESH.K	- II ECE A
HEMALATHA.A E	- II ECE B
POOJAA.T G	- II ECE A
KAVIYA DHARSINI.S	- II ECE A
DINESH KUMAR.M	- II ECE A
PRIYA DHARSHINI.T	- II ECE A
MUGESH.G	- II ECE A
MONIKA.T	- II ECE B
HIRUTHIKA.M J	- II ECE B
PRADEEPA.S	- II ECE B

Magazine Team

spectrum 2022

EDITING TEAM:

FACULTY MEMBERS :

MR. V.GURUNATHAN	ASSISTANT PROFESSOR M.E
MR. A.SHAFEEK	ASSISTANT PROFESSOR M.E

STUDENT MEMBERS :

PRAVEEN.V	IV ECE A
SRIVISHNU.R	III ECE A
HARISHUTHA.AS	III ECE B

ARTICLE TEAM:

SURESHKUMAR.M	III ECE A
KEERTHIKA.M	III ECE B
MONISHA.S	II ECE A
PRADEEPA.S	II ECE B
POOJAA.T G	II ECE A
KAVIYA DHARSINI.S	II ECE A
ETHEGASWARAN.T	II ECE. A
SRINESH.K	II ECE A

PHOTOGRAPHY TEAM:

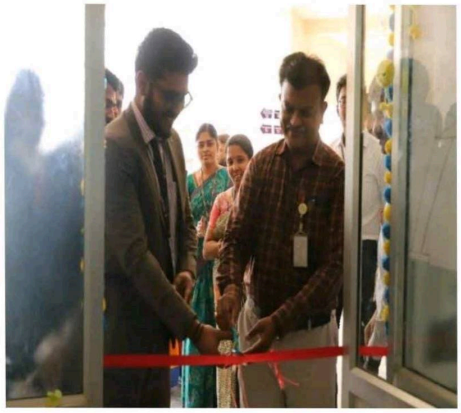
HARINI.M	III ECE B
KONEESHWARAN.N	II ECE A
AATHITAYAH.U R	II ECE B
KARTHIK.T	II ECE B
PREETH.R K	II ECE A
MUGESH.G	II ECE A

SPECTRUM INAUGURATION
2022-23

INSPIRE
INNOVATE
INTERACT

WE MADE A GOOD START OF YEAR 2022-23!!

A fresh start isn't a new Place, it's a new mindset. We had a grand Inauguration Function for the academic year 2022-23 with lots of joy and excitement. The cabin allotted to our department Association was decorated by our Spectrum members. The grand opening was held on ***Sept 15****, 9.30 AM at C327B by our chief guest* ***Mr. Sankarraj Subramanian*** *and* ***Head of the Department Dr. R. Sudhakar*** *along with all the faculties of the ECE department.*



Picture caption : INAUGURATION DAY

WE

A Group of many hands
And one

MIND !!!

The inauguration was pleasantly initiated with a Prayer song by ***Yalini Shree****,* ***Hemalatha*** *and* ***Srinithi*** *at 10.00 AM. To enlite , this special occasion* ***Harini. M*** *delivered a speech about the Evolution of Engineering. With great pleasure* ***Dr. R. Sudhakar****, Professor and Head, ECE delivered a welcome address for our chief guest. For the academic year 2022-23 Mr. A. Shafeek AP/ECE shared about 9 events conducted by Spectrum Association. Introducing Spectrum members by presenting posting badges .Our Newly inducted spectrum president* ***Priyank Siddharth. M.J*** *shared his motives and ideas about enhancing this association and expressed his gratitude towards our association members. Our honourable chief guest is* ***Mr. Sankarraj Subramanian****, Founder & CEO of Prompt Inftech, Coimbatore .*

He shared some interesting information about Ethical hacking & Cybercrime and his experience of how he has solved cybercrime cases for the Tamil Nadu government and he also spoke about his area of interest in networking. Technical talk by our Alumni (2002-2006), ***Vikram Krishna. P****; Sr. Manager (HOD Engineering Team), Engineering Manufacturing (EMS), Flextronics (Penang), Malaysia.* ***Naveen Chandra. V*** *delivered an informative speech about our alumni chief guest. Alumni Co-ordinator Thilagavathy. S AP/ECE presented momento to Alumni guest. Spectrum president Priyank Siddharth. M.J presented momento to Spectrum Association Co-ordinator Mr. A. Safeek AP/ECE.* ***Harisutha. A.S*** *concluded the event with a vote of thanks. It was a great beginning of our department Association for the year 2022-23.*

THE BIGGEST ! THE LAST! THE BEST EVER !
A UNIQUE EVENT YOU WON'T FORGET !

GRADUATION CEREMONY

BATCH

2018 & 2019

Conducted By
Department Association
on **07/10/2022 &**
08/10.2022

Memories Of Super Seniors

In this delighted occasion with immense pleasure ***Dr . R. Sudhakar*** *, Head of the Department given a warm welcome to the Alumni's and had a talk with our Super Seniors. With great insights Alumni's had an interaction with our students and shared valuable words on their career and work experience.*

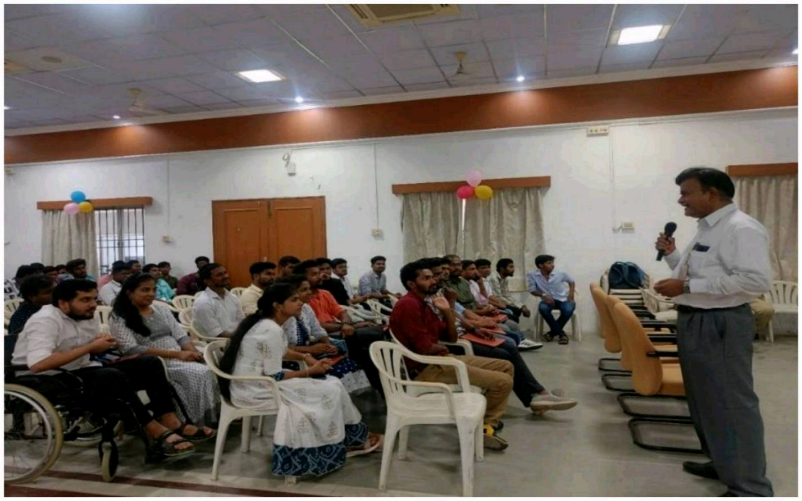
Our Students also actively participated and asked various questions on cracking the interview. Few games were planned for the alumni' s to have some valuable memories. With an Overwhelming joy of our Alumni's a video has been shared of representing the college memories . It was a great and memorable day for our super seniors

In this auspicious occasion with great pleasure ***Mr. U.R. Aathitayah*** *, Office Bearer, Spectrum given a heartly welcome to the Alumni's and followed by him our Head of Department,* ***Dr. R. Sudhakar*** *had a talk with our Super Seniors. To begin with lots of excitements, Alumni's had an interaction with our cheerful students and shared their unforgettable memories in our college and their work experience.*

Hence, they gave some suggestions for juniors regarding placements.

Department Association "SPECTRUM" , came with some Non Technical games to make their day more festive.


MOET
DR. MAHALINGAM
COLLEGE OF ENGINEERING AND TECHNOLOGY
An Autonomous Institution
ECE DEPARTMENT ASSOCIATION
ECE
SPECTRUM



NOVATEUR'22

NOVATEUR'22 *was an technical inter department event specially conducted for circuit streams (ECE-Spectrum , EEE-Avera & E&I-Elinsta) in collaboration with IEEE.* ***Technical events*** *like quizzes ,project presentation, ideathon were conducted with the support of our college management and faculty members . The first event conducted by our department association was* ***TECH CONNECT*** *on 03 11/2022 , 2.45 PM to 3.45 PM*

The quiz was conducted on the technical aspects and the participants who had a piece of basic knowledge of the circuit stream has cleared the first round. Clues were given by the organizing team and participants completed the task with the help of the hints that were provided to them. It deait with basic technical connections and the judges evaluated how far we're connected with core domain.

Conducted by ***overall coordinator,*** *Priyank siddharth M J- IV ECE ,****event coordinator*** *Sandhiya S - IV ECE & Naveen chandra V – III ECE with* ***jury members*** *Mr. V. Gurunathan Assistant Professor/ECE MS. T. Sathyapriya Assistant Professor/ECE*

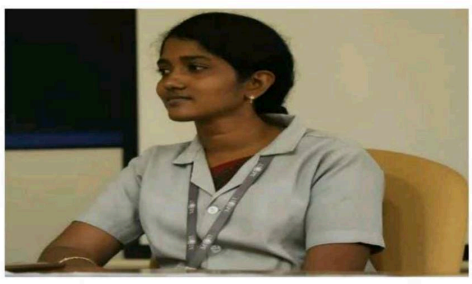
NUMBER OF PARTICIPANTS IN MCET : 29

NUMBER OF PARTICIPANTS IN NPTC : 12

NUMBER OF PARTICIPANTS IN MCET : 27
NUMBER OF PARTICIPANTS IN NPTC : 14

The second event was ***FINDING APPLICATION*** *(NON – TECHNICAL) on 04/11/2022 &, 12.00 PM to 1.00 PM*

Hints were formulated in many forms (audio, video, images, taglines) and displayed to the participants. With the help of the hints provided to them, participants found the application (app) and product(advertisement) as the final result. ***Event coordinator,*** *Harisutha A S - III ECE & Suresh kumar M - III ECE with* ***jury members*** *Ms. K Gayathree, Assistant Professor/ECE*



*EVENT -3 was **MEME CREATION** a NON – TECHNICAL event conducted on 04/11/2022 &, 2.30 PM to 3.30 PM*

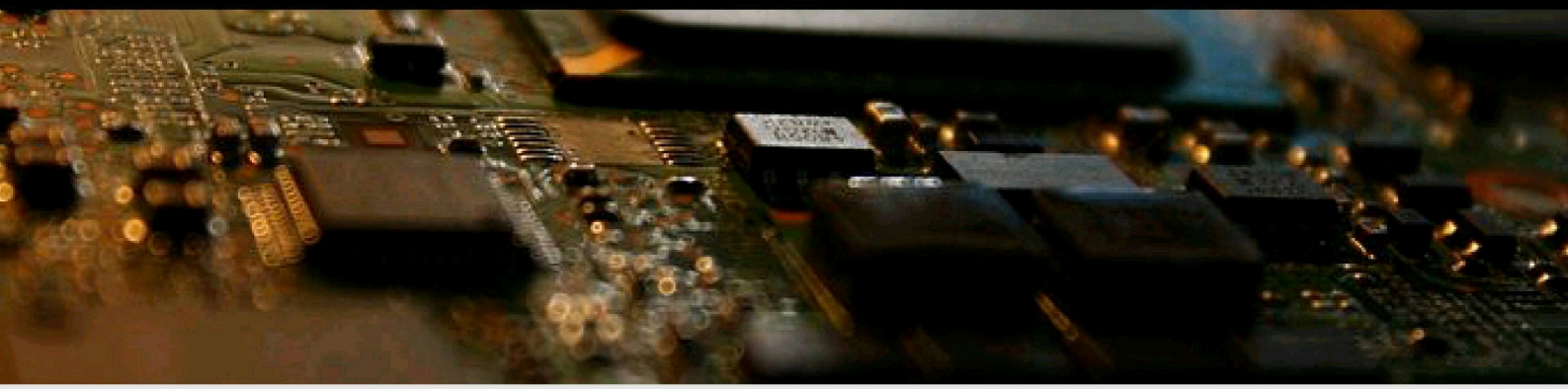
Participants were asked to find the hidden meaning through the conveyed meme. In first round, images are shown and asked to make a meme for the particulars.

*In second round, for the participants, the meme template had been shared and are asked to prepare a meme for an imposed outline. **Event coordinators** are Keerthika M - II ECE and Sri vishnu R – III ECE with **jury members** Mrs.. Rajarajeshwari Assistant Professor/ECE and Mr. Gokul anand Assistant professor/ECE.*

NUMBER OF PARTICIPANTS IN MCET : 17

NUMBER OF PARTICIPANTS IN NPTC : 06

ARTICLES



VLSI Technology

VLSI is the process of integrating or embedding hundreds of thousands of transistors on a single silicon semiconductor microchip.

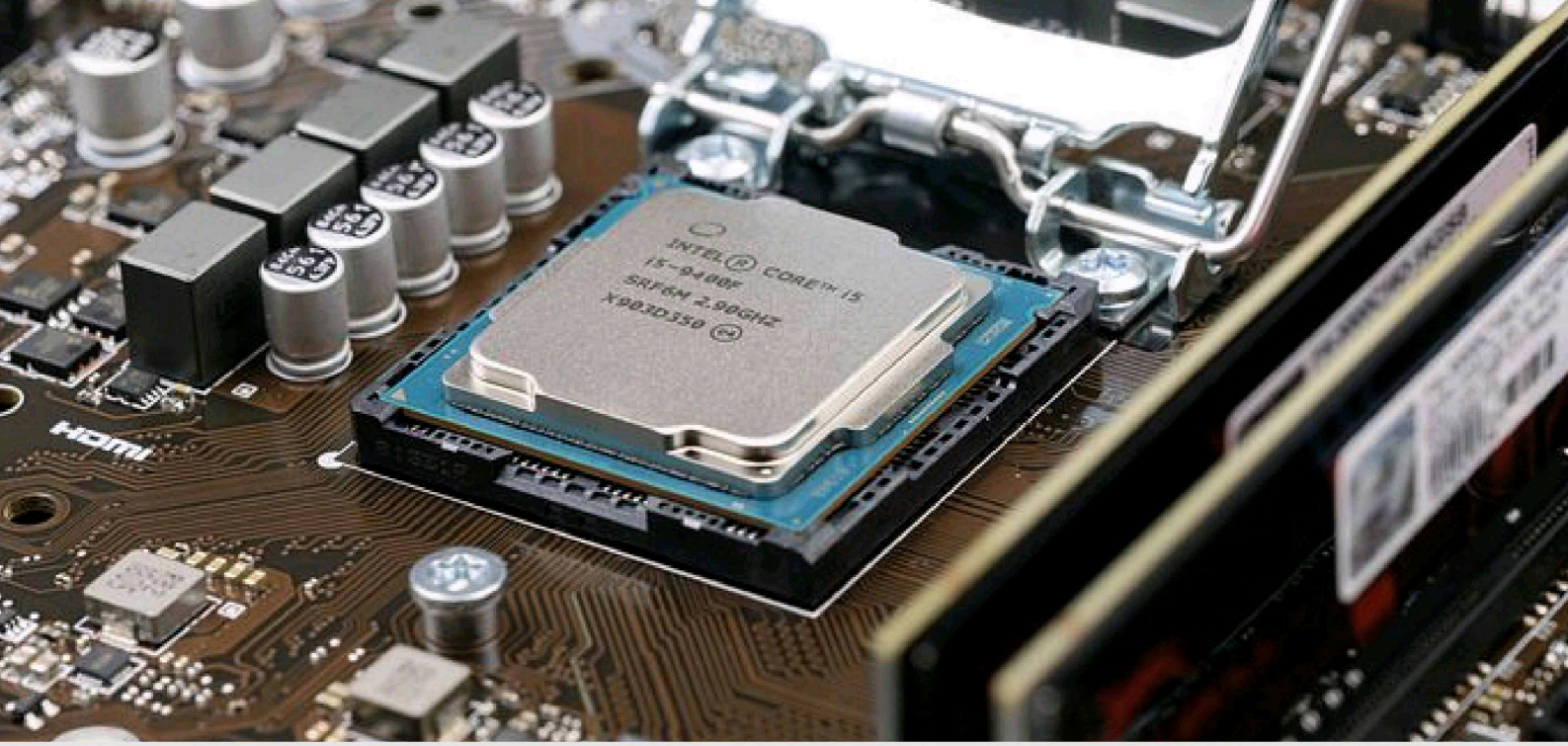
VLSI is a very large-scale integration. Nowadays, it is booming and has a variety of job opportunities. Before this technology, most circuits had a limited range of functions. VLSI manufactures integrated circuits (ICs) by combining thousands of transistors onto a single chip.

VLSI was introduced in the 1970s when MOSFETs (Metal oxide semiconductor field effect transistors) were widely used. It allows designers to combine many components into a single chip.

Those integrated circuits are further used for different purposes. Transistors were found in the 1920s, but their success was seen only after World War II. To improve its fabrication, germanium and silicon crystals were used. In the 1950s, electrical engineering started to build advanced circuits using tiny transistors.

But the components were arranged in a complicated way making the computer slow as the signal took time to go through the circuit. Jack kilby and Robert Noyce invented integrated circuits, which solved this problem. The circuits became smaller, and the manufacturing became automated. So, this idea led to small-scale integration in the 1960s and medium-scale integration in the 1970s. In this process, the components are integrated into a single-crystal silicon wafer.

During those times, people made city and town gate as the early vehicle storage spaces. Later, in the 18th and 19th centuries, carriage houses also started to serve as storage. a carriage house was usually separated from the house, therefore the homeowners had to walk under several conditions to get to their carriages.



Cadence, is one such software that has all the features and analysis tools you need for everything from basic to elaborate circuit designs.

VLSI is mainly used to design electronic components like microprocessors and memory chips.

This includes the use of millions of transistors. The process of designing is analogous. VLSI helps IC designers to design utilizing less space. Typically, electronic circuits incorporate a CPU, RAM, ROM, and other peripherals on a single PCBA.It's used in mobile phones, computers, automobiles, and much more. Its design algorithm includes partition, communication, agglomeration, and mapping.

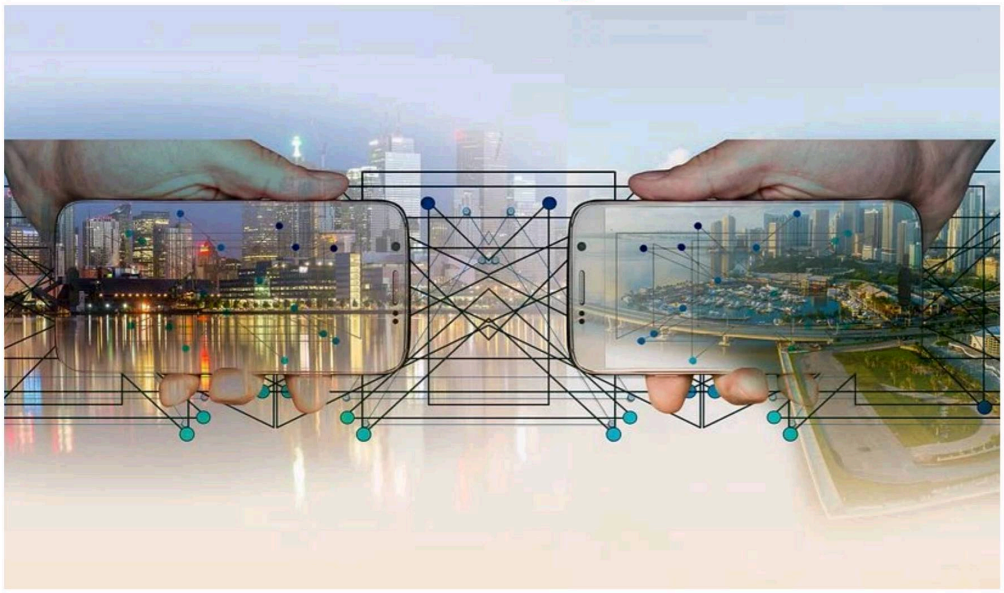
There are three major types of GaAs devices:

· MESFET (metal-semiconductor field-effect transistor),
· HEMT (high electron mobility transistor), also called MODFET (modulation-doped FET)
· HBT (Heterojunction Bipolar Transistor). GaAs is a NOR gate technology. Buffered Direct-Coupled FET logic; (BDCFL) is the dominant logic family.

Scripting languages like python, c are used for VLSI front-end and back-end design automation and related applications. It is used to develop Verilog technology. Advancements in the semiconductor industry will boom this technology, and we can see many more future features.

-HEMALATHA
II ECE B

Industry 4.0



Industry 4.0 is making a substantial-good impact on the companies manufacturing and distributing their products. The new influential technologies include IoT (internet of things), machine learning, AI, and cloud computing. "Any skilled engineer can control any connected thing. Society has not yet realized the great scenarios this capability creates." The use of industry 4.0 enables massive manufacturing improvements toward the path of flexible production, informed decision-making, and operational excellence. The optimal innovative manufacturing network will make our discrete manufacturing business more competitive and profitable. "For people with a disability, the Fourth Industrial Revolution will give us superpowers." The intelligent manufacturing industry 4.0 will helps to Boost efficiency

- Become agile and flexible
- Improve safety and security
- There will be greater efficiency if we move towards the booming Industry 4.0
- We are applying industry 4.0 technologies throughout the product lifecycle, resulting in a smaller eco-footprint, less harmful energy sources, materials, and chemicals, optimized energy efficiency, and decreased costs in manufacturing.

DO YOU KNOW?

The Industrial Revolution is commonly seen as starting in Britain before spreading to other parts of the world. Already the world's leading commercial nation at the time, Britain's head start in the Industrial Revolution further fuelled its imperialist ambitions and led to it becoming the most powerful country in the world. By the 20th century, the British Empire was the biggest in history.

"The Fourth Industrial Revolution is still in its nascent state" Cyber-physical systems form the basis of Industry 4.0 (e.g., 'smart machines'). Which uses modern control systems, has embedded software systems, and disposes of an Internet address to connect and be addressed by the Internet of Things (IoT). This way, products and means of production get networked. They can 'communicate,' enabling new production methods, value creation, promising innovation, and real-time optimization. "Industry 4.0 is not a revolution; it's more of an evolution" Industry 4.0 is a vision, goal policy, and concept in motion, with reference architectures, standardization, digitalization, and even definitions in flux. The mission of industry 4.0 is to make every dot connect and move everything in an innovative view. "The only success of Industry 4.0 is that it's on everyone's lips" It makes a tremendous amount of profit, decreasing the cost to enhance customer experience, makes customer reliability, optimizing customer lifetime value, and, where possible, customer loyalty, selling more, and innovate to grow and remain relevant, and makes the product sustain more "Industry 4.0 is more than just a flashy catchphrase.

A confluence of trends and technologies promises to reshape the way things are made" Many countries have set up industry 4.0 and had good outcomes.
The countries are
•Australia
•Germany
•South Africa
•South Korea
•Indonesia
•Spain

Numerous countries are actively implementing industry 4.0 and making it a global phenomenon. "We may not have known it was called Industry 4.0, but we've been doing it for years" The fourth industrial revolution fostered what has been called a "smart factory" Over the internet of things, the cyber-physical system creates a virtual mode, and making every decision They are communicating with humans in synchronic time both internally and across administrative services offered, which participants had used.

BY
PRADEEPA
II ECE B

CURRENCY MANAGMENT

Management of currency is one of the core central banking functions of the Reserve Bank. The primary job of the Reserve Bank with the Central Government is to design, produce, and manage the nation's currency. In modern economies, the currency is a form of legal tender and debt contrivance. It is an answerability to the issuing central bank and an asset to the holding public.

Central Bank Money is a medium of payment, a unit of account, and a store of value for a dominion. Digital payments are shaping the e-commerce industry in multiple aspects. Online payments make managing and storing money and other financial data easier. For both vendors and customers, there are a lot of tools available on the internet for much easier transactions.

While looking at the online payments provided by third-party apps like Gpay, Phonepe, and Paytm the main drawback is the service fee and other costs. Online payment works in such a way that: Authentication is sent to the issuer bank when a payment is requested from a merchant bank using the POS devices.Then the authorization process, such as the correctness of the pin, validity of the card, card credibility, and available balance, is further validated.

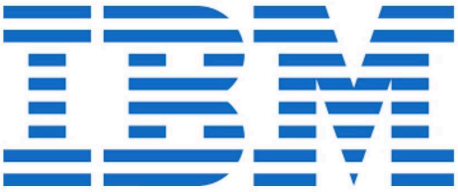
A patch file will be created using the customer's account balance. Later the amount is settled, and all the debts and credits are cleared. Some private firms such as RuPay, MasterCard, and Visa exist to accomplish this backend action. As a result of these transactions, the merchant and the customer are charged a sum of the amount. To replace this edict with a more significant advantage government has launched the Central Bank Digital Currency.With this, India has rolled out the first pilot of its digital currency. It will be released in two forms wholesale for interbank settlements and retail for the public and enlisted state-owned banks. Nine private banks are State Bank of India, Union Bank of India, Bank of Baroda, ICIC Bank, Kotak Mahindra Bank, IDFC First Bank, Yes Bank, HSBC, and HDFC bank for e-rupee transactions. Missing out on the physical form, the e-rupee holds the same significance and permissibility, which makes the transfers and settlements structured and easier way. The testing is available now only for the wholesale segment. Eventually, the digital rupee will be piloted in retail banking for major cities. This e-rupee detains the worth of the actual rupee in the wallet. It may look like cryptocurrency, but it differs significantly from their existence. Only the idea of blockchain technology has been cloned and enacted. Governing commodities cannot control decentralized cryptocurrencies.

In contrast, the digital rupee is centralized and will be issued and controlled by the RBI. According to the Atlantic Council, countries are slowly considering this digital currency. And also, the European Council and G2 countries are forethought to employ this currency.

China is likely to launch its digital yuan by 2023. The US government and Federal Reserve Bank are still researching their digital currency.

The advantages of using this currency are that it enables us to settle foreign bank transactions without the intermediate charges for foreign exchange, and it's been done at a low cost. Reserve Bank can save more than 5000 crores where they are investing in printing the money. One of the ways to control black money and inflation in the market can be reduced.

-SRINESH
II ECE A



The International Business Machines Corporation (IBM) is an American multinational generation enterprise centered in Armonk, New York, with operations in over 171 countries. The employer started in 1911, based in Endicott, New York, by considering businessperson Charles Ranlett Flint because of the Computing-Tabulating-Recording Company. (CTR) and became renamed "International Business Machines" in 1924.

IBM is integrated into New York. IBM produces and sells pc hardware, middleware, and software and affords web website hosting and consulting offerings in regions starting from mainframe computer systems to nanotechnology.

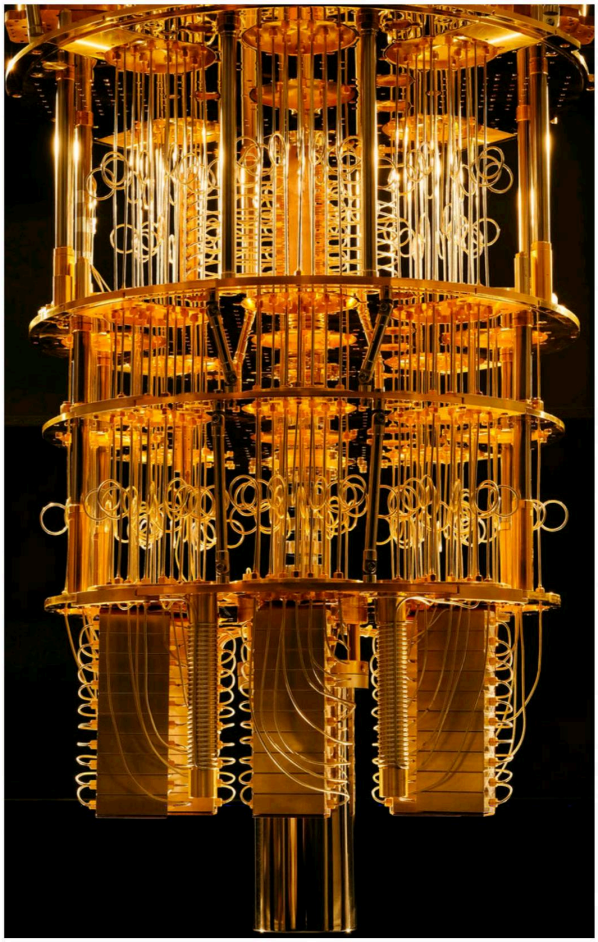
IBM is likewise a primary studies organization, conserving the report for maximum annual U.S. Patents generated via way of means of a business for 29 consecutive years Half a decade from now, quantum computing may be a vital detail of any pc engineering degree, IBM researchers are these days predicting. it'll be essentially understood and a realistic device to fix issues in many disciplines and industries. ight now, we use incredibly massive high-overall performance computing structures.

Let's move beyond simulating some molecules or atoms. It will become extremely difficult because there are too many variables, no matter the model. And, of course, as we're operating on the sub-atomic stage, the ones are quantum variables. They may be simulated very at once with a quantum pc. So, IBM desires to scale up its quantum computer systems to over 4,000 qubits via way of means of 2025 — however we aren't pretty yet. For now, we ought to make do with appreciably smaller structures. IBM introduced the release of its Osprey quantum processor, which capabilities 433 qubits, up from the 127 qubits of its 2021 Eagle processor. And with that, the sluggish, however regular, march closer toss a quantum processor with real-global packages continues. As a result of the introduction of IBM's new 433 qubit Osprey processor, formerly unsolvable problems can now be addressed using quantum computer systems, according to IBM's Daro Gil, Senior Vice President and Director of Research.We are constantly scaling up and advancing our quantum generation through hardware, software, and classical integration to fulfill the most significant demanding situations of our time at the side of our companions and customers worldwide.

These paintings will show foundational for the approaching generation of quantum-centric supercomputing. IBM's quantum roadmap consists of different stages — the 1,121-qubit Condor and 1,386-qubit Flamingo processors in 2023 and 2024 — earlier than it plans to hit the 4,000-qubit degree with its Kookaburra processor in 2025. So far, the employer has been capable of making this roadmap painting.

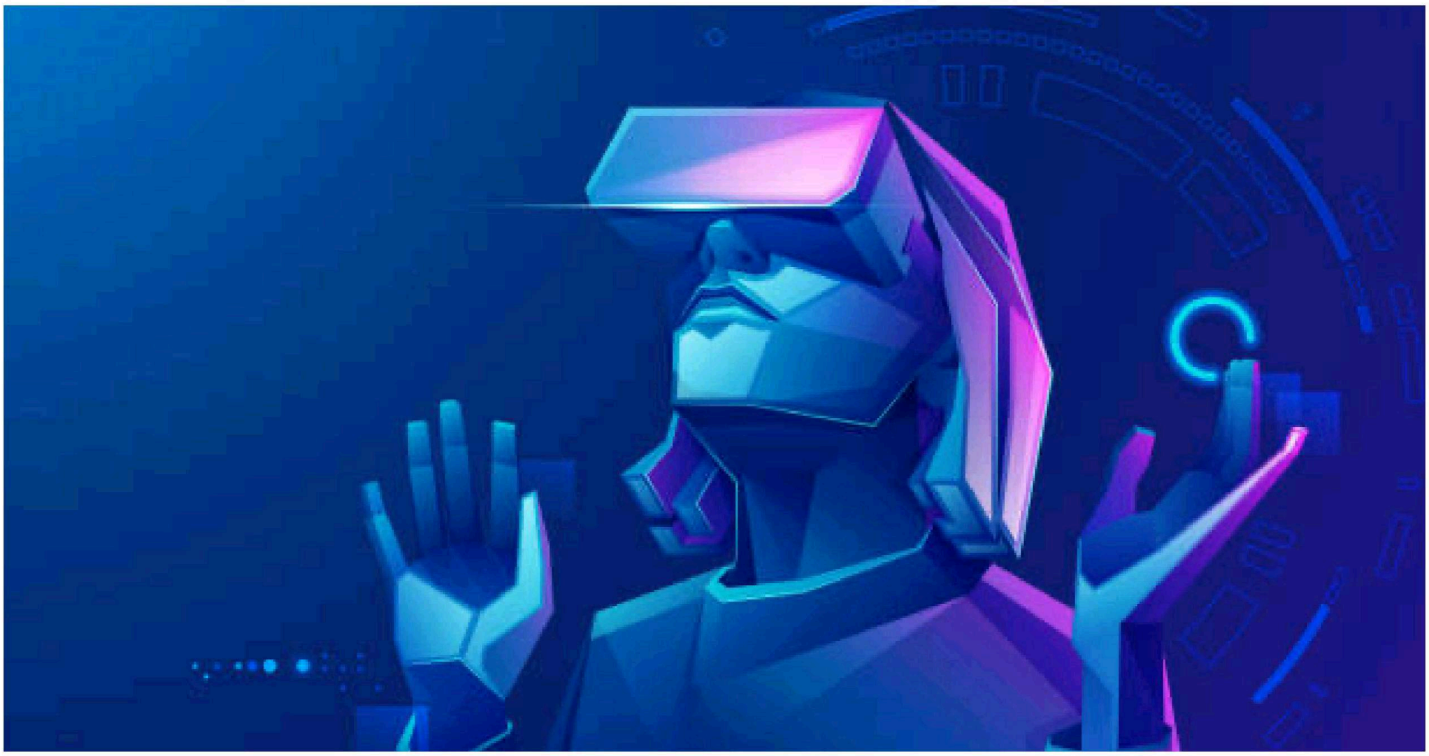
However, the quantity of qubits in a quantum processor is manifestly handiest, a part of an incredibly massive and complicated puzzle, with longer coherence instances and decreased noise simply being as important. Ideally, this is something builders who need to paint with those machines could no longer need to fear, so increasingly, the gear they use is abstracting the hardware away for them. For example, builders can now change pace for decreased blunders count with the modern-day model of its Qi skit Runtime.

IBM also offers Quantum System Two - its quantum mainframe - if you want to combine multiple quantum processors into one device with high-speed communication capabilities.



The concept right here is to release this gadget via means by 2023. IBM Quantum System Two would serve as a modular, extensible building block for the quantum-centric supercomputer. System Two is the result of our advances into iconic architecture, a consultant of the route we are taking in the quantum age.

-ETHEGASWARAN
II ECE A



VIRTUAL REALITY

IN 1956, Cinematographer Morton Heilig created Sensorama, the first VR machine. It was a large booth that could fit up to four people at a time. After decades, in 2007-Google introduced Street View, which provides panoramic views of locations using VR. In 2010 -The prototype of the Oculus Rift headset was designed. Virtual reality is the environment created by the software. This technology is used to make a person experience any virtual environment from anywhere.

A person can enjoy a virtual environment created by software by sitting in the real world. There are various types of VR experiences: DoF-supported, PC requirement, Tracking, and Interaction.

In a VR headset using 3Dof (Degrees of freedom), a person can only rotate their head up and down, but 6Dof (Degree of freedom) comes with more advanced head-mounted displays and three different movements (forward and backward). The VR developers provide a controller to teleport from one position to another. VR experiences change depending on PC requirements; Standalone VR doesn't require a PC because all the necessary computation is inside the headset. On the other hand, in PC-based headsets, all the calculations are happened externally through gaming PCVr (powerful computers) to view the virtual world, either wired or wireless. In gaming PCs, we have a dedicated graphics card it is used for computing graphics and calculation more efficiently to set up virtual objects.

Nowadays, the adoption of virtual reality is increasing, and the recent launches of VR headsets are Vive pro-2, Vive focus 3, and Oculus Quest 2, used for business purposes. Another way of classification is Tracking.

It happens in different ways, that is, OUTSIDE-IN. VR device uses external sensors to detect motion and track the positioning of headset and controllers. Every movement is tracked and sent to Pc. It sounds interesting to view the VR world. It uses infrared LEDs. In INSIDE-OUT, cameras and other sensors are placed on the device itself. Here, advanced computer vision techniques (SLAM) are used to determine the exact position and movement of the headset and controllers. This headset captures the entire surrounding. Finally, interacting with virtual objects can be done.

For example, in a cricket stadium, using a Vr headset, a person can play and hit the ball appropriately is called ACTIVE VR. Game Engine for Vr: The Game engines are an integrated development environment to enable simplified, the rapid development of games and XR experiences. It provides a suite of visual development tools and reusable software components like a Physical engine, Rendering engine, Animation, sound, and AI-based components. The physics engine takes care of all physics-related calculations. It allows one to find collisions between two bodies: elasticity, friction, and gravity. In every aspect, many calculations are handled by users rather than by themselves.

This is the beauty of these game engines. The users can have an excellent immersive experience in less time. The rendering engine is a significant part of game engines. This engine happens because of all graphical calculations, lighting, shadows of each picture, Reflections, Materials, and Cameras. It plays a significant role in animated movies. Example: In the real world, while entering a massive room or particular place, we can hear an echo back based on the crowd or furniture items placed in that area. This is called “Acoustics.” These acoustics can be replicated in a virtual world using reverberation and the doppler effect. Along with these, to make sounds more realistic, spatial audio is used.AI- based components provide navigation pathfinding.

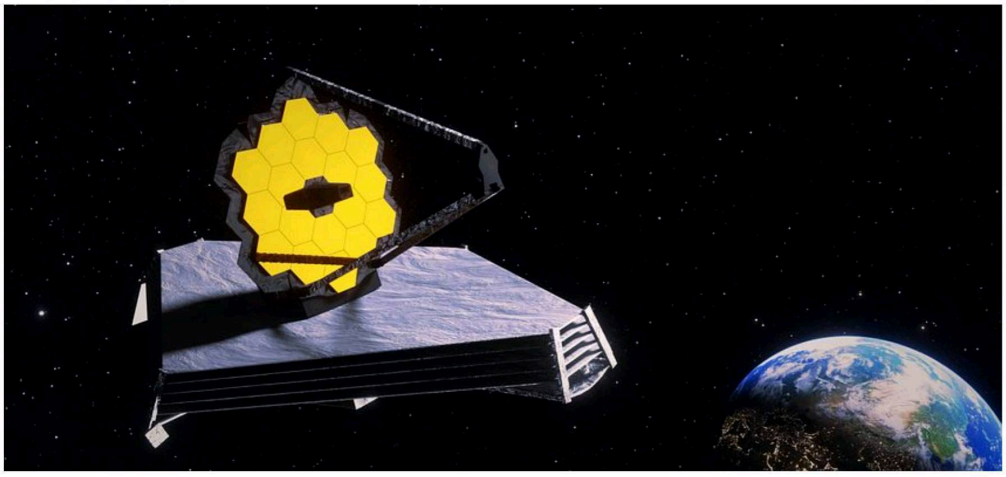
Unity is one of the popular cross-platform game engines for creating interactive content (2D,3D, VR, AR). In addition, simulations can be created and used in various genres like platformers, Multiplayer games, and RPGs. Some of the other game engines are Cryengine, Godot, and Lumberyard. “Virtual Reality is a new communication platform. By feeling truly present, you can share unbounded spaces and experiences with people in your life.”

-Mark Zuckerberg

As Mark said, it has plenty of opportunities and applications not only in Entertainment but also in Education, Health care, manufacturing units, and more.

-POOJA
II ECE A

JAMES WEBB SPACE TELESCOPE



DETAIL >

Nasa, the European and Canadian space agency, successfully launched a rocket on December 25th, 2021.The total budget for this mission was about 75croces, and more than 10,000 scientists worked on it for almost 20 years. Though we had many rocket launches from different countries, this launch came to the notice of the worldwide audience because of the incredible things that it had inside it," James Webb space telescope," Which made them spend 75croces and use of 10,000scientist knowledge to construct such a device over 20 years? In the 17th century, Lippershey, a glassmaker, invented a telescope using the lens. It was the first-ever telescope that came into the picture. It can be handled using our hands to visualize the distant object.

One such drawback of using this telescope was that the earth's atmosphere is made up of gas and various dust particles, making the image blur when viewed through this telescope. Hence to overcome the drawbacks, the scientist decided to place the telescope in space.One such famous telescope placed in space was the Hubble telescope

DO YOU KNOW ?

The telescope is named after James E. Webb, who was the administrator of NASA from 1961 to 1968 during the Mercury, Gemini, and Apollo programs

The telescope was named in 2002, when it was still in its planning stages, by former NASA administrator Sean O'Keefe. The name is meant to recognize Webb's contributions to government service,

The Hubble telescope mostly captured photos related to space and made us detect the universe's age, roughly 13.8 million years. The drawback of this Hubble telescope is that it can only capture a maximum of the visible region and little of the ultraviolet and infrared region. It is essential to know that after bigband theory, the galaxies are moving away from each other, and" the universe is expanding." Since the galaxies move, they get out of the visible range and enter the infrared region.

Hence, the need for a telescope that captures the infrared region can capture the farthest galaxies. It is essential to know that even the most remarkable object emits infrared radiation, which can be captured using these telescopes. The dust particle in space forms a cloud through which regular lights cannot be passed, but it doesn't set with infrared, which quickly passes through it. James Webb's space telescope should not have been placed near the earth! This is because the earth absorbs heat energy from the sun and emits infrared radiation.Hence, the need for a telescope that captures the infrared region can capture the farthest galaxies.

When a telescope is set near the earth, infrared radiation signals from both earth and other sources have a high chance of collapsing. Hence, the telescope is placed 15lakh kilometers away from earth to avoid chaos and It is more or less like a solar energy concentrator, consisting of a substantial hexagonal mirror made out of 18 smaller hexagons to collect the starlight or the galaxy light, which bounces off the light the convex mirror out over its structure. confusion. This region is called a Lagrange point or L2, where the sun and earth's gravity are balanced, and the temperature is about -230*c. Besides these, it can get heat from the earth or the sun. Hence their base is made up of 5 layers of Kapton. It is unlike the little tube Galileo looked through or the Hubble space telescope.

It is more or less like a solar energy concentrator, consisting of a substantial hexagonal mirror made out of 18 smaller hexagons to collect the starlight or the galaxy light, which bounces off the light the convex mirror out over its structure. These mirrors are made out of beryllium. The glasses are coated gold which reflects more infrared radiation.

It is made out of the three mirror anastigmat, which gives a much clearer image of the large piece of the sky. (Three mirror anastigmat-the light gets bounced off the mirror three times before it gets to the instrument.

Behind the telescope, the mirror is the instrument package with cameras, spectrometers, and detectors. Detectors are made of two flavors, one is called the mercury cadmium telluride, and another is called the arsenic-doped silicon, which gives us the sensitivity of the wavelength. The bottom consists of the sun shield, made of five layers of thin plastic coated with metal, which maintains the telescope's temperature range. The bottom also consists of the spacecraft box consisting of the spacecraft electronic power supply, the rocket engine, fuel tank transmitters, receivers, and computers.

There are reaction wheels that maintain the angular momentum of this structure. To be more precise, they have little electric flywheels that always spin, accelerating or decelerating. The angular momentum is transferred to the telescope and makes them spin according.

These telescopes experience solar radiation pressure, which accounts for the telescope's movement in a different direction. The spectrometer behind the mirror range is from 0.6 to 28 microns. It is the measure of the wavelength of the light that they will be able to detect. If we look into the infrared range, we can't see the light that started as visible light, called redshift. The ever-expanding universe has objects that keep moving away from us, so looking at that lower infrared spectrum is very important.Since the telescope is launched into space, we don't want the telescope to see the vaccum for the first time or near absolute zero on the sensor side. Hence, they set an exact environment on the earth to test the telescope tolerances.

The incredibly physically challenging things like a vast thermal vaccum were built at Goddard in the 1960s. These huge vaccums get pumped with liquid nitrogen to make it cold, simulating the space's environment. To experience the g-force that the telescope experienced during launch, Goddard had a gigantic centrifuge where the instruments were placed.

-MONISHA

II ECE A

WEARABLE DEVICES

Is it not difficult for us to track our walking record of the day with our mobiles, carrying it wherever we go? Can you imagine developing a device that would allow us to track our fitness records, remind us of the plans for the day and notify emergency contacts without interfering with our routine tasks? Mainly, assist visually impaired/challenged individuals in any way they need.

Wearable devices have been brought up to ease our lives. In the last decade, wearable technology has surged popularity, including activity trackers, smartwatches, and bright clothing. Different devices are being used for various purposes by both consumers and companies. With no sign of slowing down, society's impact is continuously growing and will multiply in the future.

Ultramodern wearable technology falls under a broad diapason of usability, including smartwatches, fitness trackers similar to the Fitbit Charge, VR headsets, smart jewelry, web-enabled spectacles, and Bluetooth headsets. Wearables function in different modes and aspects, depending on their tasks, such as medical, fitness, or entertainment. Generally, wearable technology incorporates microprocessors, batteries, and connectivity to the internet so the collected data can be synced with other electronics, like mobile devices or laptops.

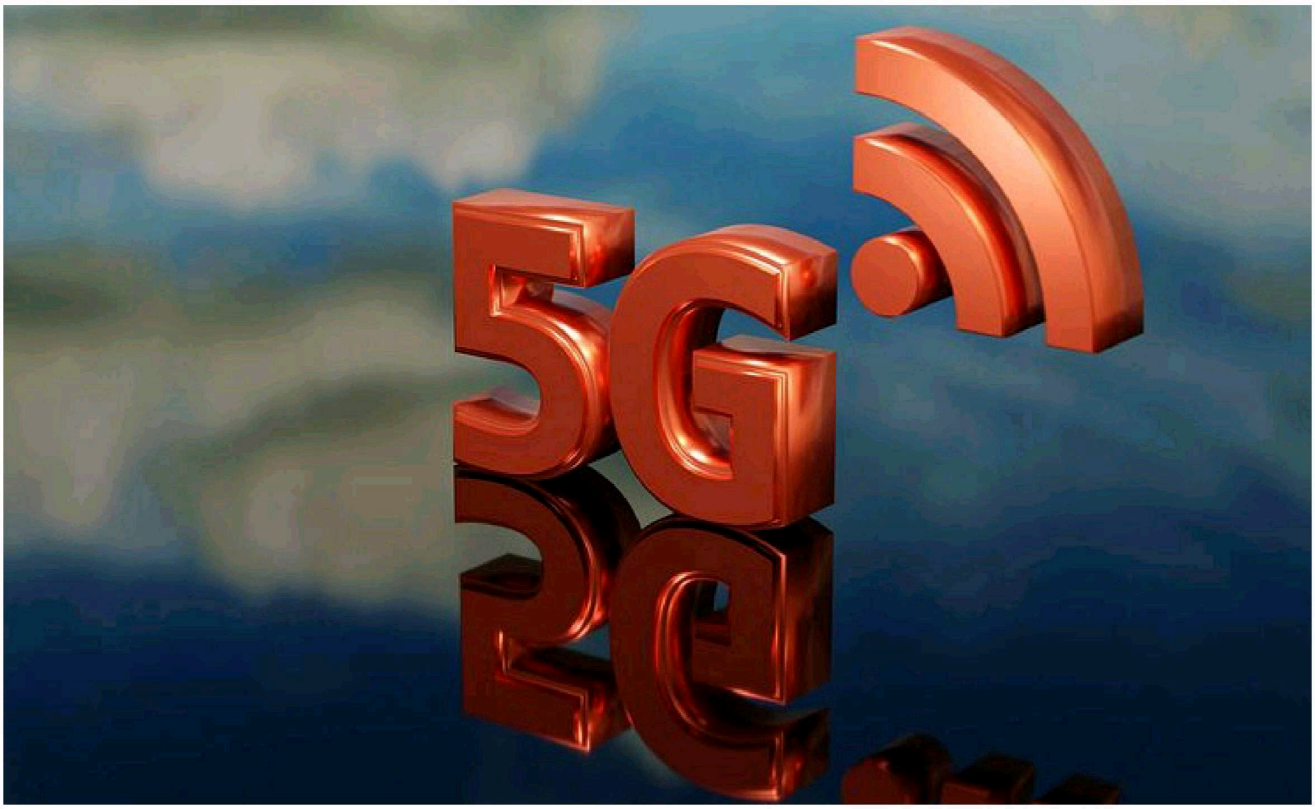
Wearables are incorporated with advanced sensors that keep track of body movements, give biometric identification, or help with location tracking. For illustration, exertion trackers or smartwatches- the most common wearables- come with a strip that wraps around the wrist to check their physical activities or vitals throughout the day. While utmost wearables are worn on the body or attached to clothes, some function without any physical contact. Wearables use remote smart detectors and accelerometers to track movements and speed; some use optical sensors to measure heart rate or glucose levels. A common factor among these technology wearables is that they all monitor, track, and play with data in real time. Our fitness levels can be monitored, our locations can be tracked, and text messages can be viewed more quickly thanks to wearable technology. Additionally, most hands-free and portable devices enable us to do this, so we don't need to remove these devices from our pockets. The information listed above could be obtained before wearables.

However, it was sometimes a hassle and required devices that were only occasionally convenient. Connecting our intelligent devices to wearables allows us to access this information later, even now, as the information is transmitted to our smart devices. This can help you with setting goals and track your progress toward them.

Many wearables can track your physical activity and store it for viewing later. The inbuilt features allow the users to set their long-term and short-term goals and track their progress toward achieving them. To encourage and motivate us, customized messages, reminders, and rewards are tagged to our activity records. Some wearables have been found to mismeasure data at times.

The danger is particularly pronounced when measuring data such as heart rate. Individuals with heart conditions might overexert themselves and suffer further health problems due to this false reading. Ultimately, it's up to you to decide whether a wearable device would benefit you. With increased popularity, weighing the pros and cons before committing to one is essential.It can be implemented by proper authentication protocols, which control biometric technology or passwords to protect from transgression and phishing attacks. Wearables are all set to revolutionize and reform the future. It has instilled a craze for technology among the younger generation, who are the future. The current advancements are just the tip of the iceberg; still, many more concepts, products, and technologies are loading.

-KAVIYA DHARSHINI
II ECE A



5G technology

Introduction of 5G technology:

Based on telecommunications, 5G is the fifth-generation technology that gets the standard for broadband cellular networks. Companies are beginning to deploy 5G networks worldwide in 2019. A 4G network provides connectivity for most current cell phones. It is intended to be the successor to the existing 4G networks. Currently, 5G is having a massive impact on network platforms.

Device using 5G:

According to the estimation, in 2019, the Global Mobile Suppliers Association released the industry's first database - tracking worldwide 5G device launches. On March 6, 2020, the first-ever 5G smartphone Samsung Galaxy S20 was released. Many upcoming phone manufacturers support the 5G model. Apple iPhone 12 and later versions support 5G. Google Pixel phones also keep a 5G network. Automated machine learning enhances digital experiences through 5G networks. Artificial intelligence and deep learning are essential components of 5G networks for developing response times of fractions of a second (like those for self-driving cars). By automating the provisioning of infrastructure and services and managing them proactively, infrastructure costs can be reduced, and connected experiences can be enhanced. The massive- peak Connected vehicle technology is accelerating by 5G. It offers Faster, safer, more accessible, and more secure. IoT in logistics brings end-to-end, uninterrupted visibility of goods; it is becoming easy due to advanced technologies and the global partnership ecosystem. This can be only supervised by the vision of the 5G network.

The live use cases:

•V2X(Vehicle-to-Everything) communication)
•V2V (Vehicle-to-Vehicle), •V2I(Vehicle-to-Infrastructure), autonomous, connected cars
•Immersive Virtual Reality Gaming (5G will bring VR to the masses.)
•Remote surgical operations (aka tele surgery)
Simultaneous translating.
It is said loud that 5G and IOT create the perfect match.

Countries using 5G technology:

* Australia
*United states
* China
* South Korea
*Canada
*India
*Finland
*Spain
As many countries are making their specification by using incredible 5G technology

Capability:

5G is used on three main types of connected services, including enhanced mobile broadband, mission-critical communications, and the massive IoT. A massive capability of 5G is that it is designed for forward compatibiliy which means the ability to flexibly support future services that are unknown now days

Enhanced mobile broadband:

In addition to making our smartphones better, 5G mobile technology can use this wide application in new immersive experiences such as VR and AR with faster, more uniform data rates, lower latency, and lower cost-per-bit.

Mission-critical communications:

5G can enable new services that can transform industries with ultra-reliable, available, low-latency links like remote control of critical infrastructure, vehicles, and medical procedures.

Massive IoT:

5G is meant to seamlessly connect a massive number of embedded sensors in virtually everything through the ability to scale down in data rates, power, and mobility providing extremely lean and low-cost connectivity solutions.

5G Architecture:

· 5G utilizes a more intelligent architecture that is no longer constrained by base station proximity or complex infrastructures.
· The primary goal of previous mobile network generations was to offer fast, reliable mobile data services to network users. Here 5G has broadened this scope to offer a wide range of wireless services delivered to the end user across multiple access platforms and multi-layer networks.
· 5G creates a dynamic, coherent, and flexible framework of advanced technologies to support a variety of applications. 5G utilizes a more intelligent architecture, with Radio Access Networks (RANs) no longer constrained by base station proximity or complex infrastructure. 5G leads the way towards disaggregated, flexible, and virtual RAN with new interfaces creating additional data access points.

5G Architecture 3GPP :

· The 3rd Generation Partnership Project (3GPP) covers telecommunication technologies including RAN, core transport networks and service capabilities. The 3GPP has provided complete system specifications for 5G network architecture which is much more service oriented than previous generations. 3GPP
· Services are provided by a common framework to network functions that are allows to make use of them. Modularity, reusability, and self-containment of these network functions are additional design considerations for the 5G network architecture described by the 3GPP specifications.

5G Spectrum and Frequency:

· Multiple frequency ranges are now being dedicated to 5G new radio (NR). The portion of the radio spectrum with frequencies between 30 GHz and 300 GHz is known as the millimetre wave, since wavelengths range from 1–10 mm. Frequencies between 24 GHz and 100 GHz have been allocated to 5G in multiple regions worldwide.
· In addition to the millimeter wave, underutilized UHF frequencies between 300 MHz and 3 GHz and C-band frequencies between 3.7 and 3.98 GHz have also been repurposed for 5G.
· The diversity of frequencies employed can be tailored to the unique application. Higher frequencies are characterized by higher bandwidth and shorter range.
· Millimeter wave frequencies are ideal for densely populated areas, but ineffective for long distance communication.
· Within the various frequency bands dedicated to 5G, each carrier has begun to carve out their own individual portions of the 5G spectrum.

-KIRUTHIKA
II ECE B

WEB 3.0

Introduction to web 3.0

Once the webs are read-only internet and popularly known as Web 1.0. The contents are made by webmasters and lasted from 1991 to 2004. Users could not interact with the page. Here the innovation started by taking a convenient form, allowing the users to interact with themselves through the internet. Considering centralized companies they collect and keep information to provide relevant content to the user.

This brought a drastic change in the modernization of the users. Though we are growing with this web 2.0 the major challenges are our data privacy and security. Centralized companies put up for sale of our valuable pieces of information.

To overcome this situation we are into web 3.0. In contrast to Web 2.0, where most of the data is stored in corporations, such as Google, Amazon, Facebook, and Apple Web 3.0 data will be decentralized and distributed.

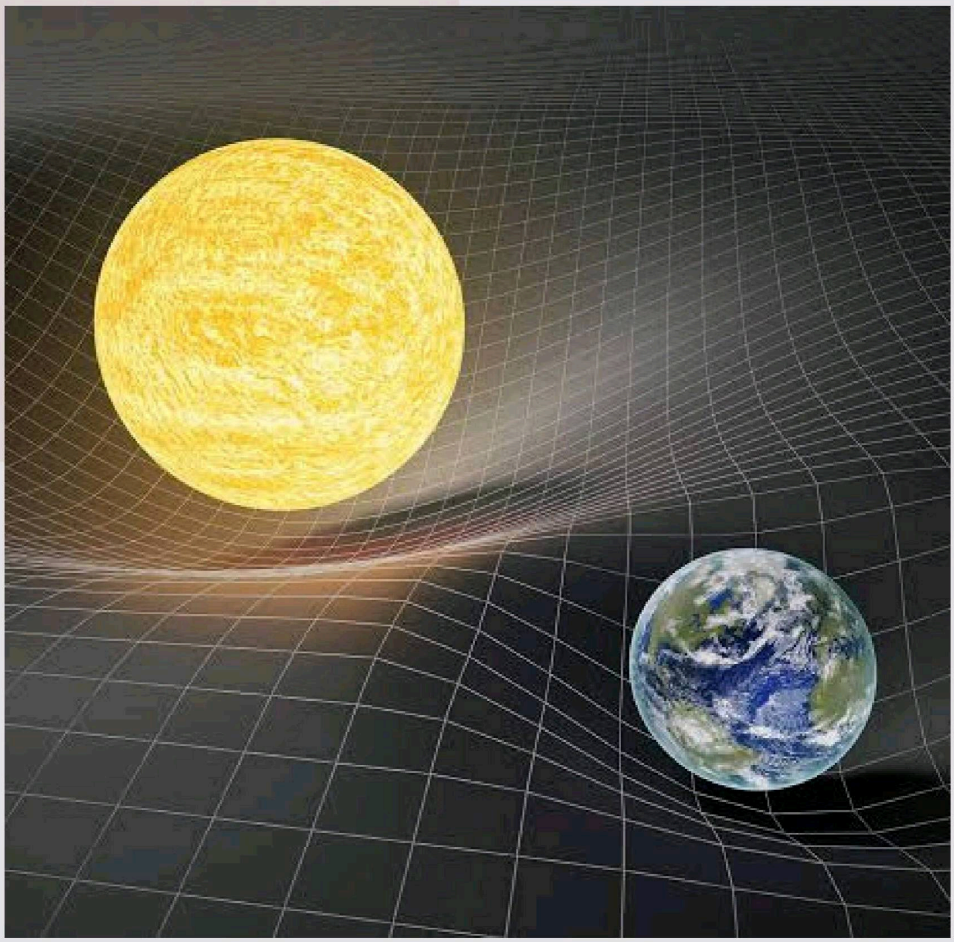
It won't be controlling the data actually but everyone can verify the content blog of ourselves. The major advantage of this web is decentralization, native payments are more valued and addressed uniquely from the traditional banks as ledgers will be maintained in most of the common servers around the globe, and also the virtual-augmented reality grows in the metaverse field which setups a different culture.

The requirement for privacy entrusted third-party apps can be avoided and no need to pay interest to a third party for transactions. With the continuous development of Artificial intelligence and Machine learning paired with natural language processing the data are searched smarter and more receptive to the demands along with the data security, end-users will benefit the most from data encryption.

This will enable the intelligent creation and distribution of highly tailored content to every internet user. There is no denying the ease of being able to quickly click through to a particular offer for something that we actually need or desire and that you would have missed otherwise, regardless of how intrusive those advertisements may occasionally feel. In every aspect, the development is found about the technologies that are anticipated to advance and change in the upcoming years.

-JAI AKKAYAS RAJKUMAR
II ECE A

The General Theory of Relativity on a millimeter scale



Even a millimeter seems insignificant, and such a small distance can drastically affect time. In Einstein's general relativity theory of gravity, clocks tick faster as they are distanced from Earth or another massive object (SN:10/4/15). Even for minimal variations in clock heights, that should be true. In a millimeter-sized sample of atoms, an incredibly sensitive atomic clock has detected this speedup, showing that it extends over a more negligible height difference than ever before. Researchers reported on September 24 at arXiv.org that time moved slightly faster at the top of the sample than at the bottom.

A theoretical physicist at the University of Delaware in Newark, Marianna Safronova, says the research is fantastic. As a result of the extreme precision of the atomic clock's measurements, it is possible to test other fundamental concepts in physics using these sensitive timepieces.

A THEORETICAL PHYSICIST'S OPINION

Scientists use atoms as timepieces due to their inherent properties. Different atoms exist at different energy levels; a specific light frequency causes them to jump from one station. The frequency – the rate at which light waves wiggle – serves the same purpose as a regular second hand on a clock. A higher frequency of light would be needed at atoms farther from the ground since time moves faster to make an energy jump. Researchers have previously measured gravitational redshift across a height difference of 33 centimeters (SN: 9/23/10).

THE RESEARCHERS AT JILA

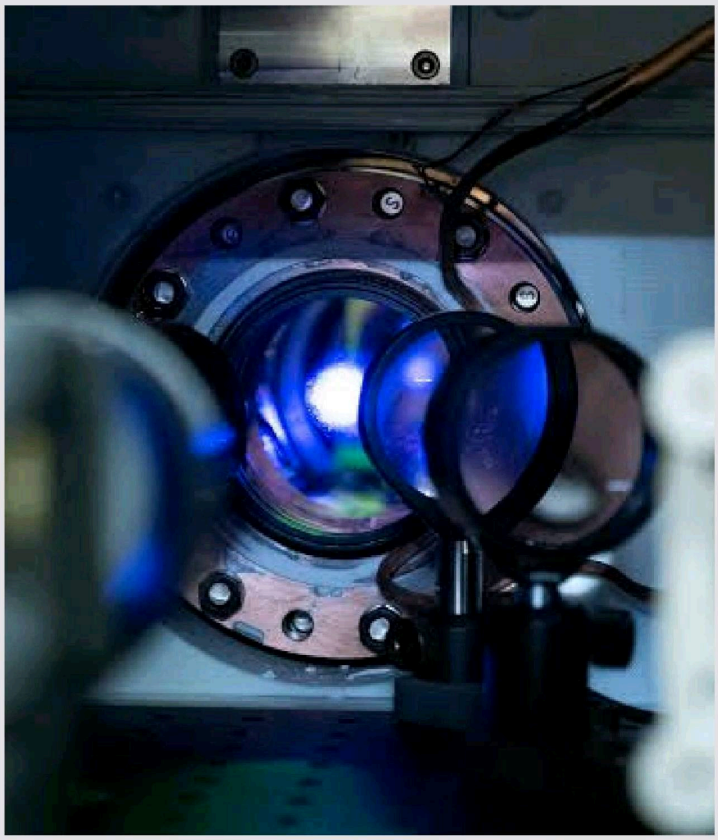
Researchers at JILA in Boulder, Colorado, have developed a clock consisting of roughly 100,000 ultracold strontium atoms. The atoms were organized in a lattice, so they sat at varying heights as if climbing a ladder. We found a shift when we mapped out the frequency changes over those heights. Considering the presence of non-gravitational effects that could affect the frequency, we found that the clock's frequency changed by about a tenth of a quadrillionth of a percentage over a millimeter, in line with general relativity.

Researchers determined their technique's accuracy by comparing the ticking in upper and lower clock sections over about 90 hours. The relative ticking rates are measured to 0.76 millionths of a trillionth of a percentage—quite an improvement over the previous attempt.

STUDIES BY ANOTHER TEAM

According to a separate study, which the submission provided to arXiv.org on September 24, another team of researchers created six clocks in one by positioning strontium atoms at specific points in a lattice. Safronova says she is thrilled by what they achieved as well. Using that sensitivity, scientists could detect one second of difference between two clocks ticking at a slightly different rate after approximately 300 billion years. A discrepancy of one second displayed by Ye's clock over roughly four trillion years is even more minor than its predecessors. Kolkowitz's team did not yet measure gravitational redshift with the setup but used to do so in the future. The authors of both studies declined to comment, as the documents have not yet undergone peer review.

Physicist Victor Flambaum from the University of New South Wales in Sydney says the precision of the measurements suggests future possibilities. Using atomic clocks as an example, he thinks they may use to identify dark matter. An unidentified substance lurks invisibly in the cosmos; it could affect the tick-tock of clocks. Additionally, scientists can compare atomic clocks with differing isotopes – nuclei of atoms with differing nuclei – which might shed light on undiscovered particles. Atomic clocks can also verify whether fundamental constants of nature change (SN: 11/2/16).



A second primary goal of timekeeping is to update the definition of a second with the ability to compare various clocks precisely (SN: 3/24/21). Current atomic clocks that measure the length of a second are not as accurate as newer ones, such as those used in the two recent studies (SN: 5/20/19). According to Safronova, clocks have a bright future.

-SURESHKUMAR.M
III ECE A

SHE WHO IS BRAVE IS FREE!

Slacked back to your chair and contemplating how your future is going to be? ...wake up girls!! History was never made by laggards. History made needn't always be massive, anything that breaks your usual cycle makes history. Women not knowing her worth is treacherous not only to herself but also to the society. Being not able to do anything is different from doing nothing. The latter always brings guilt that stabs like a dagger as we will be the ones who are solely responsible for our losses. Never spending time on trivial things and ensuring to invest them on crucial things will make history that goes down in books.

Sounds boring? Yes, it does, before I explain you what those crucial things are. Important things in one's life needn't always be related to scholastics. They can be anything that makes you feel happy and keeps you lively, and they should be considered 'the' important even if it is as simple as vibing solitarily. Very basic happiness are denied to girls in the name of tradition and culture. These basic needs ensures to build a stronger individual with a sound mind.

Basic needs for stronger minds begin from simple things like choosing what to wear by herself instead of keeping this stereotypical society in mind. The society which is the third form of our relationship level needn't play such a vital role in our lives. You just thought me to be a FEMINIST. Didn't you? To begin with, there is no wrong in being a feminist but that's such a strong term to be used for a novice like me. Our generation lost the real meaning of 'what feminism is'. Feminism means all genders have equal rights and opportunities, in political terms, in short, it is 'equality irrespective of gender'.

This has led to many misconceptions in younger adults and made late teen girls think that anything a guy does is licit for them too, forgetting the laws of nature and basic etiquette. Instead using equality as a term, EQUITY might suit the best. Equity means being impartial and fair considering the difference between the two individuals. Gone are those days when only men were allowed to get educated and days that men were alone allowed to step out of house and earn whereas women were meant for household tasks.

Westernisation has made a very large impact on our Asian countries, on bane aspect, we are losing our originality of who we truly are. Knowing the difference between what all is legal and what all is right might be the very first step of stronger individualism. We women are far more than what the society thinks us to be. We are given comfort as bait to give up the dreams of who we really want to become. Women who gave up their consolation during hardships paved a way to greatness. Today we can see women working not only by stepping out of their home, their comfort zones but also getting away to new cities, countries and also stepping out of the world.

Years elapsed and today no preference of job is denied to women, it is solely us, who decides who we want to be. Economic independency is a vital aspect of women equality that prevents her from being confined to limited opportunities. Equality will not always be offered, once lost in the hands of other it takes courage to bring back the needful. Use it well!

Kind heart, fierce mind and brave spirit is a robust combination, with this we will be the ones in supremacy in our lives. From time to time we are tested, not to show our weakness but to know our strengths. We become so stronger from limitless defiance that when challenges cross our way we can look into its eye and give it a WINK! Fortune favours the BRAVE.

Get up girl… roll up your sleeves and get into work, you will be unstoppable. Let us all catch up in future, in ‘The Books of Success’! Fly until you touch the sky.

NO GUTS, NO STORY!

-B.VAIDESHWARI
IV ECE B

Dear Dad,

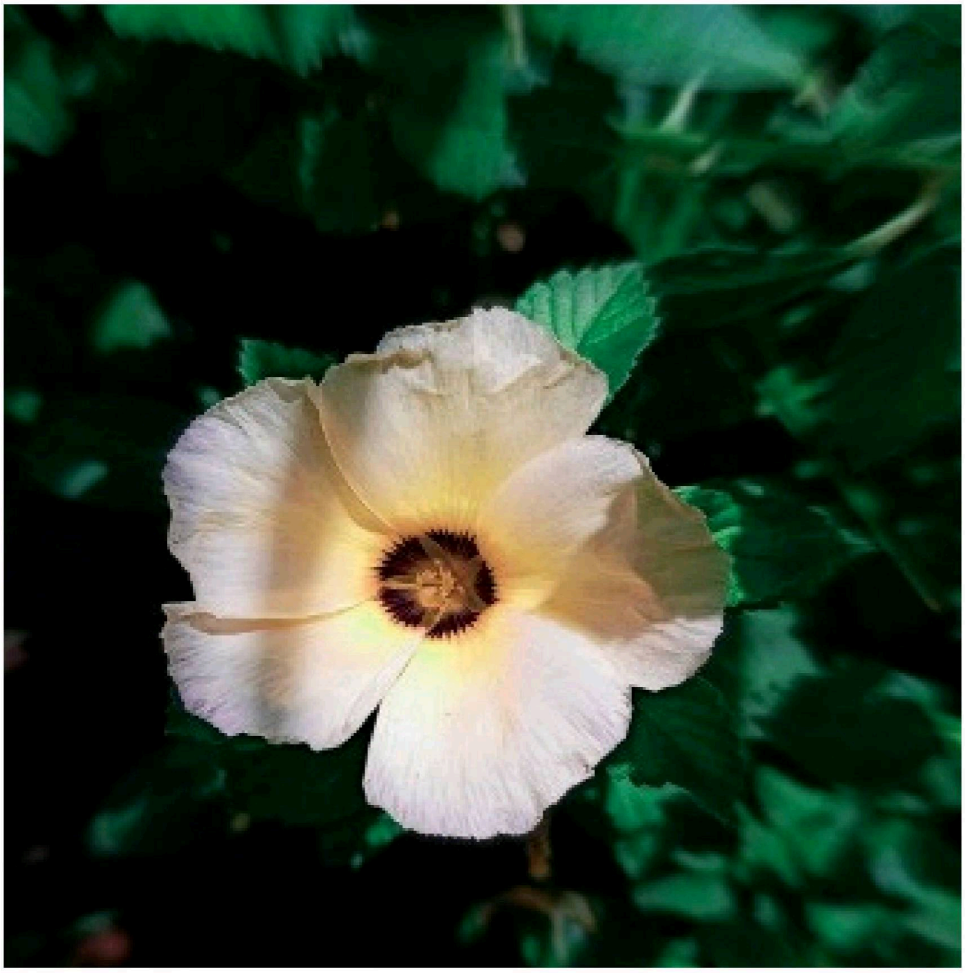
He carries me in his heart all his life
He supported me on my cradle
He was holding me on my first step
He gives me his shoulder to lean on
He advises me when I am not ok
He supports me
He makes me explore things
He takes me to walk around places
He is my first teacher,
A great singer, music director,
My music teacher
My financer
The person who teaches me life lessons in his own way
He brought me up
What I am today is because of him
Nothing can be possible without him
Of course, there are some days when we used to fight
But at the end of the day
He is irreplaceable in my life. - DAD

-Subiksha
II ECE A

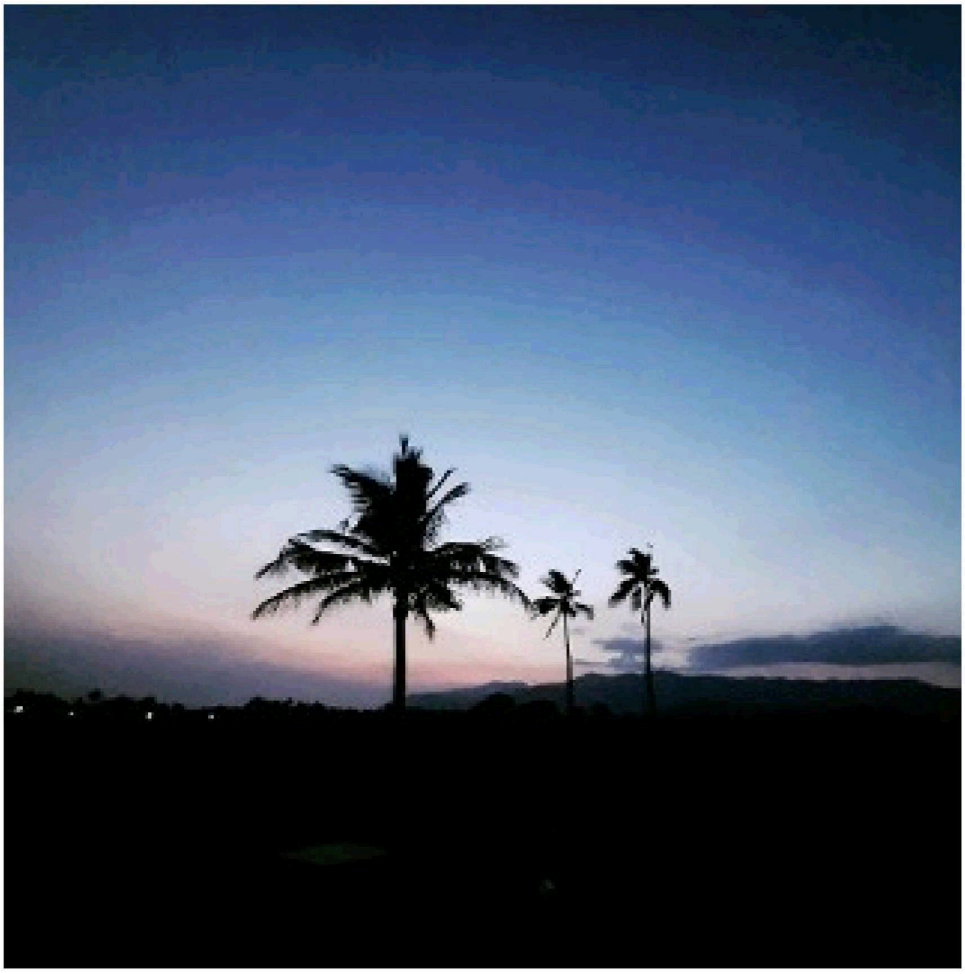

PHOTOGRAPHY

-JAI AKKAYARAJKUMAR V J
II ECE B

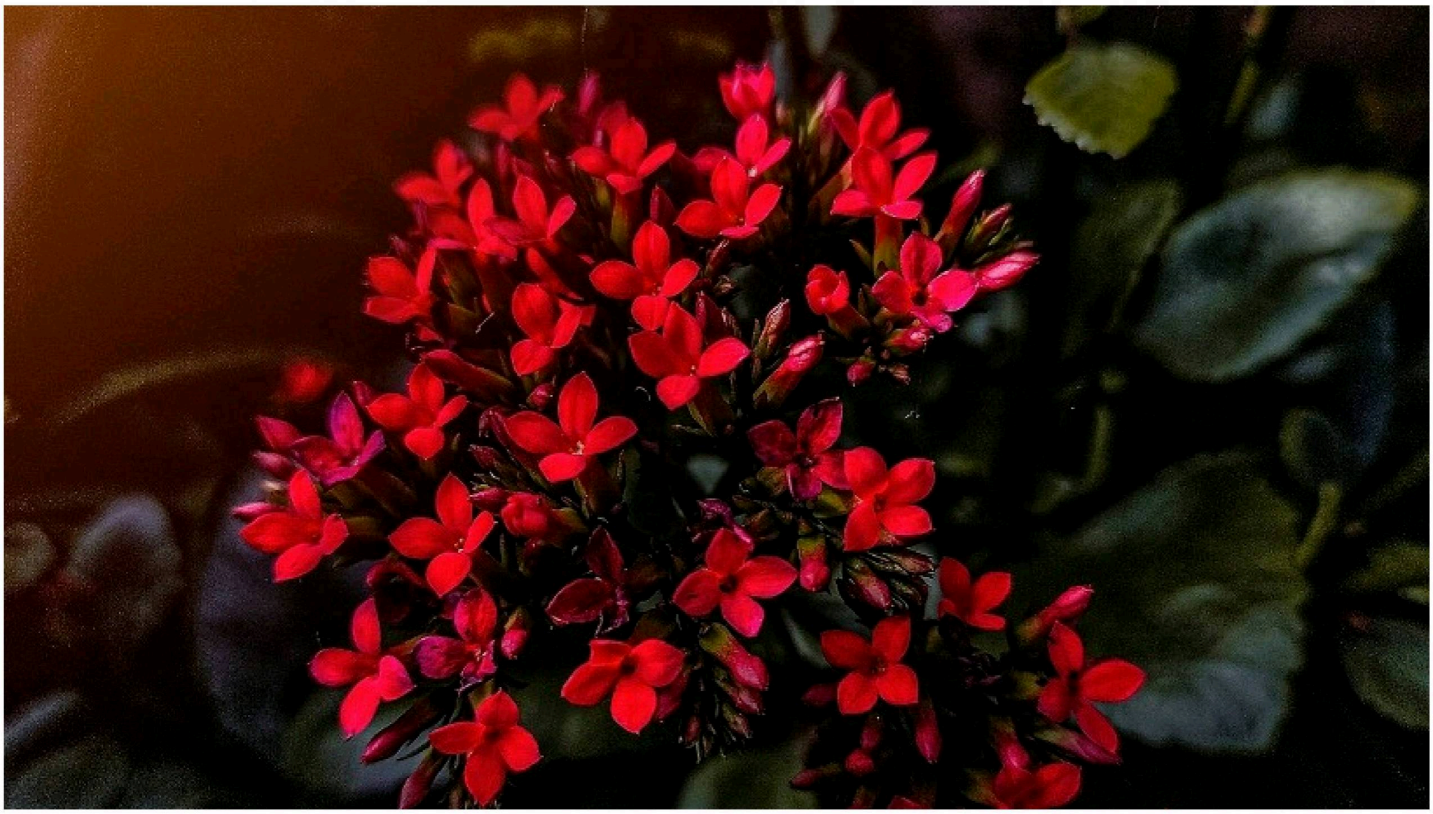
-Arunsek S
II ECE A



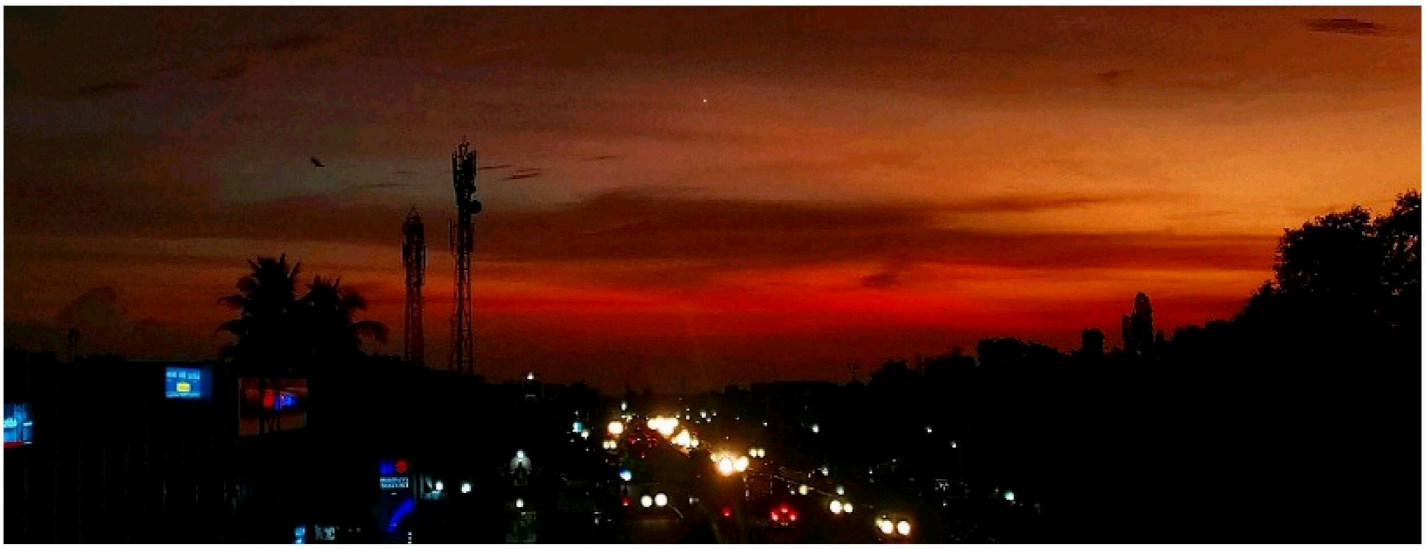
-Hiruthika.M.J
II ECE B



-Veeraelakya.S
II ECE B



-NIKILESH S
III ECE A



-Surya.R
II ECE B

-Boopathi. M
III ECE A

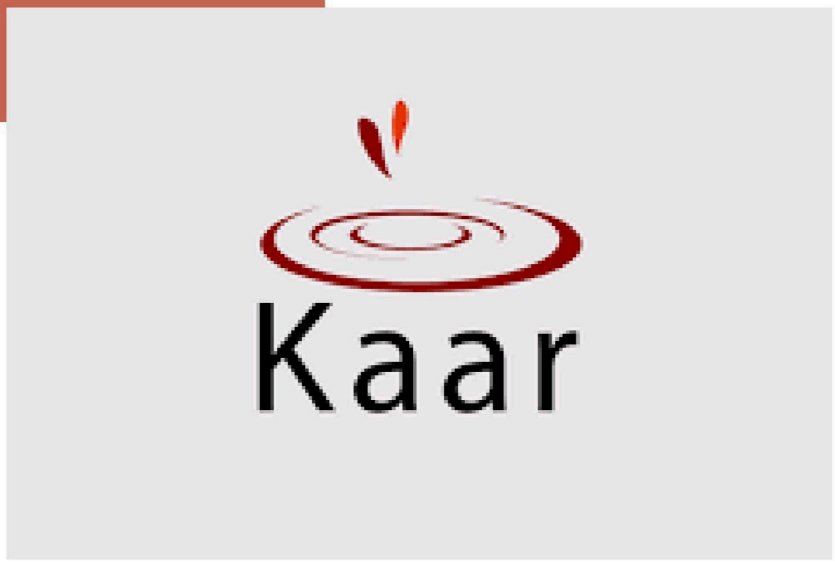
-PRAVEEN V.M
II ECE A

PLACEMENT EXPERIENCE

Start by doing what's necessary

Welcome To

KAAR TECHNOLOGIES



Tips

Learn & update your knowledge in

- java
- java script
- OOPS concept
- HTML(Basic)
- CSS(Basic)
- Data structures
- SAP Tool(Basics)

My Experience

Hello guys, I hope you all good and preparing well for your upcoming placements.I am here to explain about my interview process and Important ideas for placement.

Resume is foremost when ever we will attend any interview. In Kaar we have submitted Resume with details one time and another time we have sent CV. Then they asked us to fill one long form which contain ur basic to all information about you.

First round will be aptitude and programming.Aptitude will contain logical,numerical and reasoning. Programming for us was java(basic to advance level qns) with 10 MCQ.

Second round will be Group discussion. This is where half of the students will be eliminated. Students selected from first round will split into group of 8 Students. For us two topics given and one topic needed to chosen by us(majority will be followed).From this 3 to 4 selected in my batch.

Points to noted:

- Never be silent in GD, speak at least what u think
- Stick to the heading given to you
- Maintain good communication and gesture
- Don't wait for ur chance , instead create ur chance and speak
- Starting and Ending of GD is very important, so I give some important to initiative and conclusion.

Third round will programming HR. AS Kaar technology was SAP based company you can expect basic question like what is sap? Products of sap, What is ERP.
For me , programming alone asked. First interviewer asked you say "about yourself",clearly state what u know and don't deviate from what u mentioned in Resume. They will cross verify resume and ask you questions too. Based on your round performance also questions will be asked, so be prepared with that. For me none of the above was happened,but my colleagues experienced this.

For me , interviewer automatically jump into questions by seeing my resume. He asked me to choose a language. I choosed python. Series of question asked for me are,

1.Reverse the words
2.Reverse words in sentence but not words alignment
3.Reverse words in sentence but not words alignment, and print each word one by one line.

Fourth and final round will be General HR. For this series of questions asked and it will be same for all persons.

1.About yourself
2.Life cycle of Business process
3.About SAP and ERP
4.Expectations in KAAR.

-MICHKEL ANGLO
IV ECE A

WELCOME TO HEXAWARE

MY EXPERIENCE

Hello Everyone, I am here to give you guys a walkthrough in my interview experience and possibly give you guys some ideas about what could be done better.

Resume is most important thing in any interview, So put the skills that you are most confident at the start, Which will be helpful because most interviewer's will ask questions based on what's in your resume.

First round was Aptitude with some basic programming questions. Aptitude questions were from basic topics from quants and for programming basic questions from C programming were asked.

Second round was communication round, In this round they will test our communication skills as to see how our pronunciation in English. In overall this round was pretty easy than the others.

And after this round I got a confirmation e-mail that I have been selected for the third round which is the technical round.

Technical round, This was a face-to-face round with the interviewer, I introduced myself and clearly stated my objective behind attending the interview and so the interviewer was surprised with my answer (note : this may work with some interviewers and not with all of them, so only answer about yourself only when you are asked).

For the technical part, The interviewer asked questions from my projects which I did well. And for the programming part she asked me chose a language with which I am comfortable with, I chose python and the series of questions asked to me were

1. What are sets, dictionaries and tuples

2. Reverse a number

3. Reverse the string

And after this she asked me some questions about OOPS concepts in C++, Which I had enlisted in my resume.

Tips: If you don't know an answer to the question they ask, Don't just simply say no, just say that you are a beginner in that subject and trying to learn more in it. This way you wont be getting into a negative position in point of interviewer.

Final round was the general HR, This round they simply asked about my future goals and If I am okay with bond of the company to which I replied yes, And after two days I got my confirmation result through mail that I have been selected.

So be confident in your skills and prepare for your upcoming placements, All the best.

-SURENDARAKUMAR.B
IV ECE A

WELCOME TO VURAM TECHNOLOGIES

MY EXPERIENCE

Let me start with a note, ‘Do things at your own pace, life's not a race'.

Hey guys, this is DiviyyaShree and I have got placed in Vuram Technologies. I was a student aimless of what I am to become in the future.
I think this article would be helpful to all those who are not sure whether to choose core or IT industry.My advice is that to start learning and practising something in either of the fields and somewhere at some point in your exploration journey you will come to know what your good at.

When the college announced the pipeline of companies that were to come for placement, the first thing I did was to research about the companies. And by doing so it was helpful since the interviewer(Vuram) tested me how far I knew about the company.

Next important thing is resume. Even though resume is important in college, its far even important if you go for off -campus placements. Keep on building your resume but do not fill the resume with irrelevant things that are not related to your skills.

The first round was an online aptitude /technical round. Questions on basic aptitude and programming were asked. Then began a series of interviews. There were two technical interviews and one HR interview.

In the technical round which is about 30 mins, there will be asked questions on aptitude and problem solving.

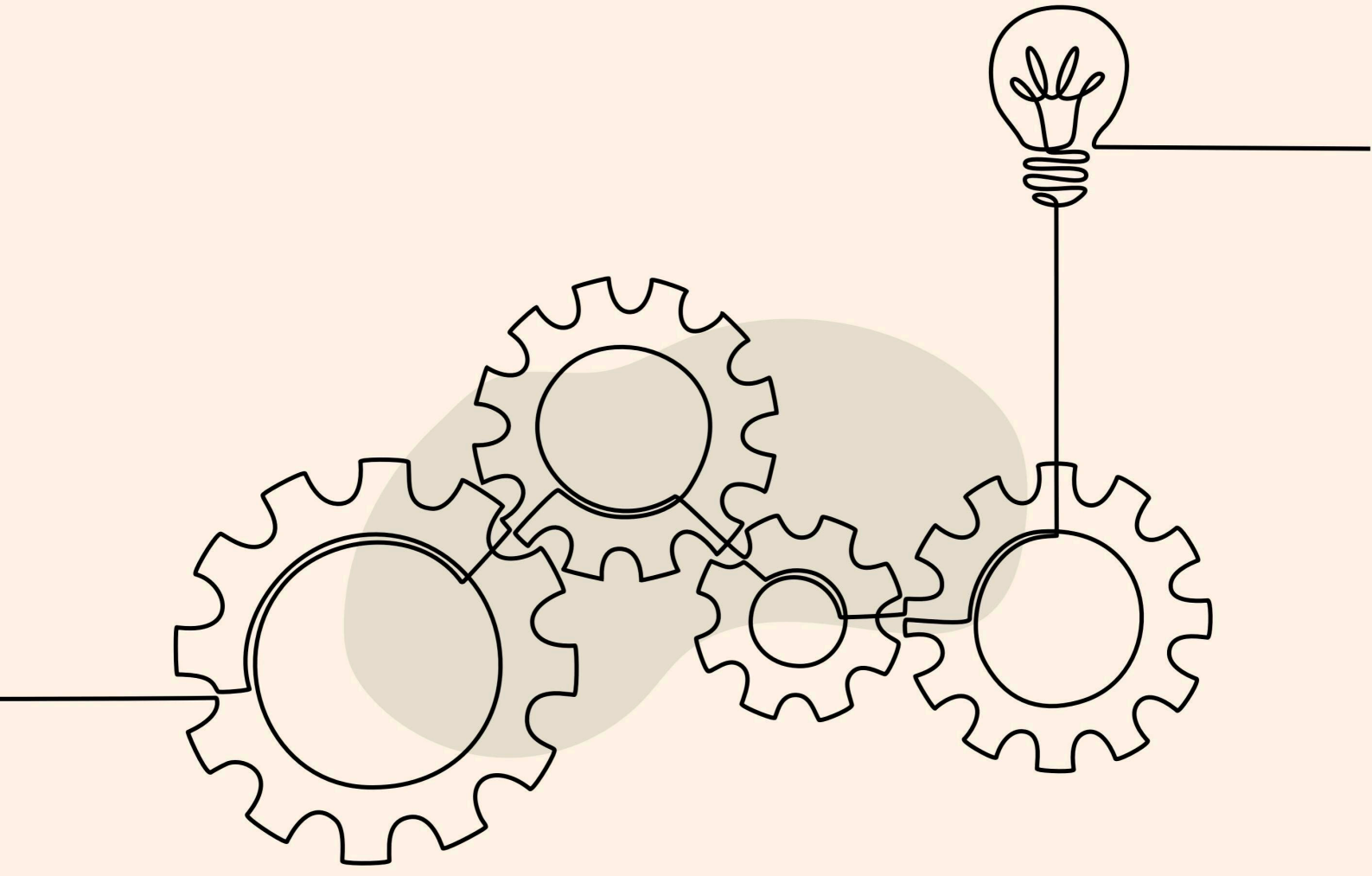
In the next technical round, is an extra round where sometimes you will be bombarded with even more technical questions or simply asked general HR questions. I was asked the latter.

The last and final round is just a formality where your family details and general questions will be asked.

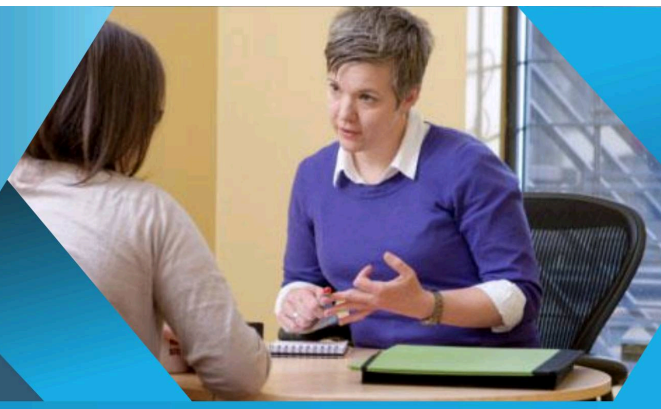
We cannot expect the same trend in the upcoming placements. But if your confident enough about your skills and have lot of practise you will be able to crack any pattern of placement. All the best!

-DIVYA SHREE
IV ECE A

PLACEMENT REPORT



PLACED STUDENTS (2019-23)



PLACEMENT DETAILS

1.	19bec001@mcet.in	HARISH P	19BEC001	A	Zoho, CTS-GenC	5.5 LPA, 4LPA
2.	19bec002@mcet.in	PREETHA R	19bec002	B	NTT Data	3.5 LPA
3.	19bec003@mcet.in	SRI RATHAN VIGNESH S	19BEC003	A	VVDN	4 LPA
4.	19bec004@mcet.in	THANUSHA N R	19BEC004	B	VVDN	4 LPA
5.	19bec005@mcet.in	PONBALAJI S	19BEC005	A	Kaar Technologies	6.5 LPA
6.	19bec007@mcet.in	RAMYA P	19BEC007	A	NTT Data	3.5 LPA
7.	19bec008@mcet.in	DHEVADHARSHNI P	19BEC008	B	Gofrugal, CTS-GenC	4.5 LPA, 4 LPA
8.	19bec009@mcet.in	NITHIN K	19BEC009	A	CTS-GenC	4LPA
9.	19bec010@mcet.in	KANIMOZHI V	19BEC010	B	Virtusa	5.5 LPA
10.	19bec011@mcet.in	THALA MUTHU MANIVEL A	19BEC011	A	VVDN	4 LPA
11.	19bec012@mcet.in	GURUSUDHAN V	19bec012	B	Calibraint Technologies, CTS- GenC, Hexaware	4 LPA
12.	19bec013@mcet.in	AKSHAYA M	19BEC013	A	CTS-GenC	4 LPA
13.	19bec014@mcet.in	VIMALANAND V	19bec014	B	VVDN	4 LPA
14.	19bec015@mcet.in	YASHASWINI C	19BEC015	A	Virtusa	5.5 LPA
15.	19bec016@mcet.in	SELVA THARSHINI V	19BEC016	B	VVDN	4 LPA
16.	19bec017@mcet.in	HAGITH D	19BEC017	A	Virtusa	5.5 LPA
17.	19bec018@mcet.in	KARTHIKEYAN S	19BEC018	B	Kaar Technologies	6.5 LPA
18.	19bec019@mcet.in	ROHITH G	19BEC019	A	NTT Data	3.5 LPA
19.	19bec020@mcet.in	MONASRI A	19BEC020	B	CTS-GenC	4 LPA

20.	19bec021@mcet.in	KRISHA S	19BEC021	A	CTS-GenC	4LPA
21.	19bec023@mcet.in	KIRUTHIKA P	19BEC023	A	Vuram Technologies	4.5 LPA
22.	19bec024@mcet.in	SANDHIYA S	19BEC024	B	CTS-GenC	4LPA
23.	19bec025@mcet.in	MANUNEETHI R	19BEC025	A	VVDN	4 LPA
24.	19bec026@mcet.in	SRIHARAN V	19BEC026	B	Virtusa	5.5 LPA
25.	19bec027@mcet.in	DHINA L	19BEC027	A	NTT Data	3.5 LPA
26.	19bec028@mcet.in	SREEMATHI M	19BEC028	B	NTT Data	3.5 LPA
27.	19bec029@mcet.in	MICHKEL ANGLO J	19BEC029	A	Kaar Technologies	6.5 LPA
28.	19bec030@mcet.in	PUKALMANI K	19BEC030	B	VVDN	4 LPA
29.	19bec031@mcet.in	ABDUL RAHMAN M	19BEC031	A	VVDN	4 LPA
30.	19bec032@mcet.in	SELVA VINAYAGAM M	19bec032	B	CTS-GenC	4 LPA
31.	19bec037@mcet.in	HARIPRASAD M	19bec037	A	NTT Data	3.5 LPA
32.	19bec041@mcet.in	SANTHOSHKUMAR S	19BEC041	A	CTS-GenC	4 LPA
33.	19bec043@mcet.in	ADITYA SAGAR P	19BEC043	A	NTT Data	3.5 LPA
34.	19bec044@mcet.in	AMSU PRIYA B	19BEC044	B	Virtusa	5.5 LPA
35.	19bec046@mcet.in	SATHISH KUMAR S	19BEC046	B	NTT Data	3.5 LPA
36.	19bec048@mcet.in	KANNAN R	19BEC048	B	CTS-GenC, Hexaware	4 LPA
37.	19bec051@mcet.in	SURENDRAKUMAR B	19BEC051	A	Hexaware	4 LPA
38.	19bec055@mcet.in	PRANOOVE K	19BEC055	A	Hexaware	4 LPA
39.	19bec059@mcet.in	VIGNESH A	19BEC059	A	NTT Data	3.5 LPA
40.	19bec062@mcet.in	SWETHA V	19bec062	B	CTS-GenC	4 LPA
41.	19bec065@mcet.in	SABARIVASAN S P	19bec065	A	NTT Data	3.5 LPA
42.	19bec066@mcet.in	LOGITHA R	19BEC066	B	CTS-GenC	4 LPA
43.	19bec068@mcet.in	ARUNA S	19bec068	B	CTS-GenC	4 LPA
44.	19bec070@mcet.in	MALLESHWARAN M	19BEC070	B	Vuram Technologies	4.5 LPA
45.	19bec071@mcet.in	VIVIN ROSAN M	19BEC071	A	CTS-GenC	4 LPA
46.	19bec073@mcet.in	ARUN P K	19BEC073	A	VVDN	4 LPA

47.	19bec074@mcet.in	BLESSING V	19bec074	B	CTS-GenC	4 LPA
48.	19bec078@mcet.in	RUBHAN KIRTHICK P	19BEC078	B	VVDN	4 LPA
49.	19bec079@mcet.in	ARUNKUMAR S	19bec079	A	NTT Data	3.5 LPA
50.	19bec080@mcet.in	GANESH KUMAR A	19BEC080	B	NTT Data	3.5 LPA
51.	19bec084@mcet.in	SUGANTHAN M	19BEC084	B	CTS-GenC	4 LPA
52.	19bec085@mcet.in	SUDEENDRA V	19BEC085	A	NTT Data	3.5 LPA
53.	19bec090@mcet.in	BHAVNA N	19bec090	B	NTT Data	3.5 LPA
54.	19bec091@mcet.in	RAMANATHAN S	19BEC091	A	VVDN	4 LPA
55.	19bec092@mcet.in	NIVYA AVANTHIKA S	19bec092	B	CTS-GenC	4 LPA
56.	19bec095@mcet.in	MONESHWAR V	19BEC095	A	NTT Data	3.5 LPA
57.	19bec096@mcet.in	MANOJ KUMAR S	19BEC096	B	CTS-GenC	4 LPA
58.	19bec097@mcet.in	DIVIYYA SHREE I	19bec097	A	Vuram Technologies	4.5 LPA
59.	19bec104@mcet.in	AJAY DEEPAK B	19BEC104	B	CTS-GenC	4 LPA
60.	20bec302@mcet.in	HARIHARASUDHAN T	20BEC302	B	NTT Data	3.5 LPA
61.	20bec303@mcet.in	PRIYANK SIDDARTH M J	20BEC303	A	NTT Data	3.5 LPA
62.	20bec309@mcet.in	NESAMANI S	20BEC309	A	NTT Data	3.5 LPA
63.	20bec311@mcet.in	SUHITA S	20BEC311	A	NTT Data	3.5 LPA
64.	20bec321@mcet.in	SUREKA N	20bec321	A	NTT Data	3.5 LPA

Last updated on 24th November 2022

Also , many students of batch 2019-23 have placed further.