ACE TECHIE TALK

VOL.11 NO.4, 2021

NEURAL ENGINEERING

NEED WEB DEVELOPMENT

5G TECHNOLOGY

BLUE EYES TECHNOLOGY

Changes call for innovation and innovation leads to progress !!!

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MEENAKSHI SUNDARARAJAN ENGINEERING COLLEGE, CHENNAI - 24

FROM THE HOD'S DESK

- Dr. B. MONICA JENEFER, HOD, DEPT. OF CSE

Greetings!

It gives me great pleasure in releasing the December edition (Vol. 11 No. 4) of "Techie Talk" - a newsletter from our department through the ACE - Association of Computer Engineering.

Techie Talk aims to keep students informed of the latest technologies through a variety of articles contributed by the students and faculty members of our department. My heartfelt congratulations to those who have contributed articles and strived to make this newsletter a big success inspite of the busy academic schedule during this pandemic. I would also like to appreciate the Editorial Board for their sincere efforts.

My best wishes to all the students for their upcoming end semester examinations. I specially wish the final year students for achieving a successful career.

FROM THE EDITOR'S DESK

- Dr. M.K. SANDHYA, PROFESSOR, DEPT. OF CSE

Dear Readers,

Greetings!

I'm extremely happy to release the December edition (Vol. 11 No. 4) of Techie Talk. This newsletter presents a wide range of articles on the latest technologies along with snippets of information. This issue highlights the interest, skill and creativity of the students.

It is really heart-warming to see all the contributions from students amidst the pandemic. The Editorial Board appreciates the time and effort that has been devoted by the different contributors. Suggestions to improve the newsletter format and content are always welcome.

CONTENTS

VISION AND MISSION OF THE INSTITUTE

Vision: To impart state-of-the art technical education, including sterling values and shining character, producing engineers who contribute to nation building thereby achieving our ultimate objective of sustained development of an unparalleled society, nation and world at large.

Mission: Meenakshi Sundararajan Engineering College, Chennai constantly strives to be a Centre of Excellence with the singular aim of producing students of outstanding academic excellence and sterling character to benefit the society, our nation and the world at large.

To achieve this, the college ensures

- Continuous upgradation of its teaching faculty to ensure a high standard of quality education and to meet the ever-changing needs of the society.
- Constant interaction with its stakeholders.
- Linkage with other educational institutions and industries at the national and international level for mutual benefit.
- Provision of research facilities and infrastructure in line with global trends.
- Adequate opportunities and exposure to the students through suitable programs, to mould their character and to develop their personality with an emphasis on professional ethics and moral values

VISION OF DEPARTMENT : To achieve academic excellence in Computer Science and Engineering by imparting quality training, encouraging research activities and innovation, inculcating ethical values and preparing the students to face industrial demands, societal needs and technical challenges.

MISSION OF DEPARTMENT :

To provide quality education in theory and application of Computer Science and Engineering.

To inculcate analytical thinking and innovation within students to become technically competent professionals.

To prepare students to excel in competitive and challenging careers.

To generate socially responsible citizens with ethical values for facing industrial and societal challenges.

To promote research in the emerging areas of technology convergence.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs):

- Prepare the graduates for a successful career in industry and motivate them for higher education and research.
- Provide graduates with a firm foundation in the principles and practices of computer science and engineering including mathematics, physical sciences, and basic engineering.
- Impart application skills to cover broad range of industrial demands.
- Prepare graduates with ethical values, leadership qualities and entrepreneur skills to contribute to their profession and society.
- Train graduates to be able to use new techniques and skills for professional excellence

PROGRAM OUTCOMES (POs)

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. . Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

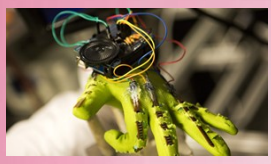
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- Ability to identify, analyse, design and implement computer based system of varying complexities.
- To apply hardware/software methods, open ended programming environments and available tools in emerging technologies for solving real-life and R&D problems
- Employing engineering solution for ground-breaking career paths, to become leading entrepreneur and develop interest for further studies



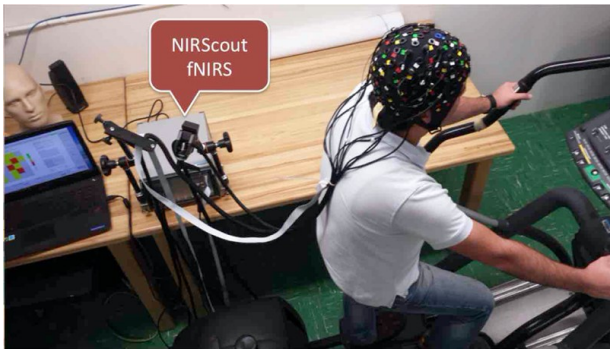
NEURAL ENGINEERING

- RAMYA RAJENDRAN II CSE

Neural engineering, a pioneer for rehabilitation engineering helps design solutions to problems associated with neurological limitations and dysfunction. It acts as a common ground for neural scientists and engineers to create technologies that help patients regain cognitive abilities.

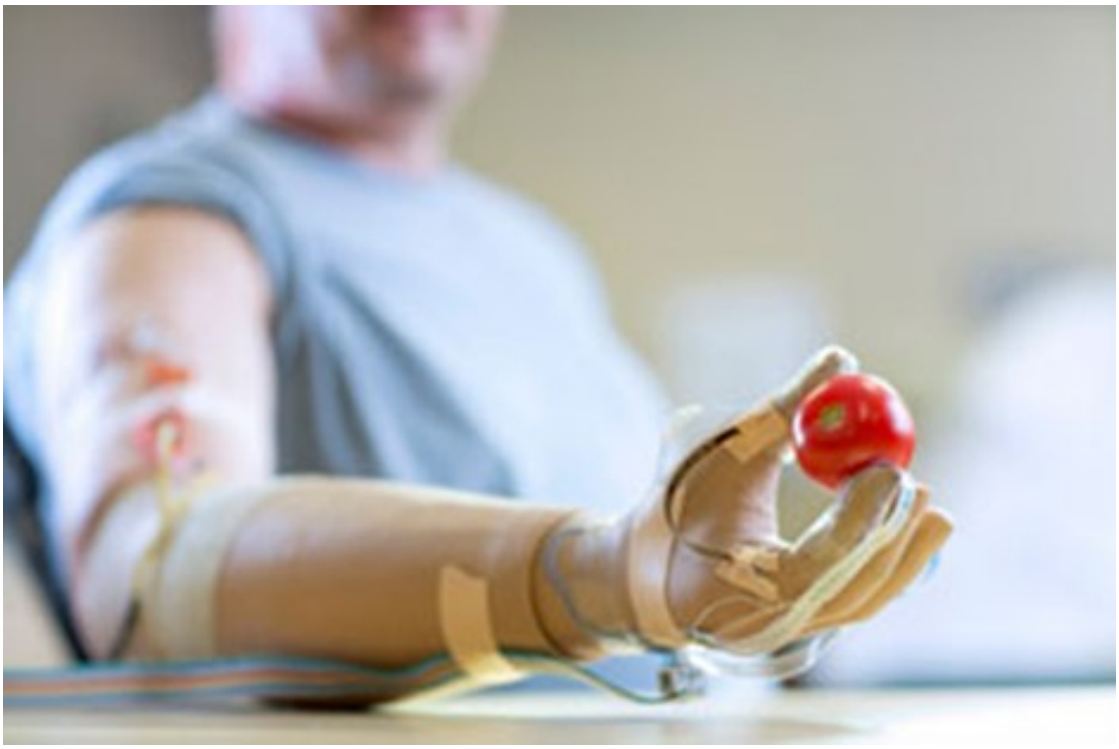
Neurons are the fundamental units of the nervous system. They act as a relay and transformation mechanism across the human body. They receive sensory input and send motor commands to muscles. These fundamental units communicate with each other through electric signals. The difference in the surrounding electric potential triggers the synapses to release neurotransmitters.

Neural engineering helps simulate the above structure. It considers neurons as low precision electrical devices that transmit electric signals and act as information processing units. Certain electrical activity leading to seizures can be disrupted and controlled by selectively blocking and providing external electrical stimulation to localised parts of the neurons.



Some neural prostheses and applications of neural rehabilitation are Deep brain simulation (DBS) and the artificial retina. Deep Brain Simulation (DBS) is a device that consists of 4-8 electrodes which helps to treat neurological disorders like the Parkinson's disease. It detects and disrupts seizures. They are similar to pacemakers in their function and deliver constant electrical simulation through the DBS electrodes to specific regions of the brain that are malfunctioning. They are being developed further to treat neurological disorders like depression and obsessive-compulsive disorder (OCD).

The brain computer interface has also brought about remarkable progress in the field of ophthalmology. An artificial retina helps restore sight to people whose light sensing component in the eye has been affected but the visual processing ability and optical nerves are still intact. The artificial retina employs a camera connected to a pair of spectacles through which signals are transmitted to a microchip implanted in the retina. The microchip sends electrical currents to the intact neurons. The resolution is lowered and rudimentary images are hence produced.

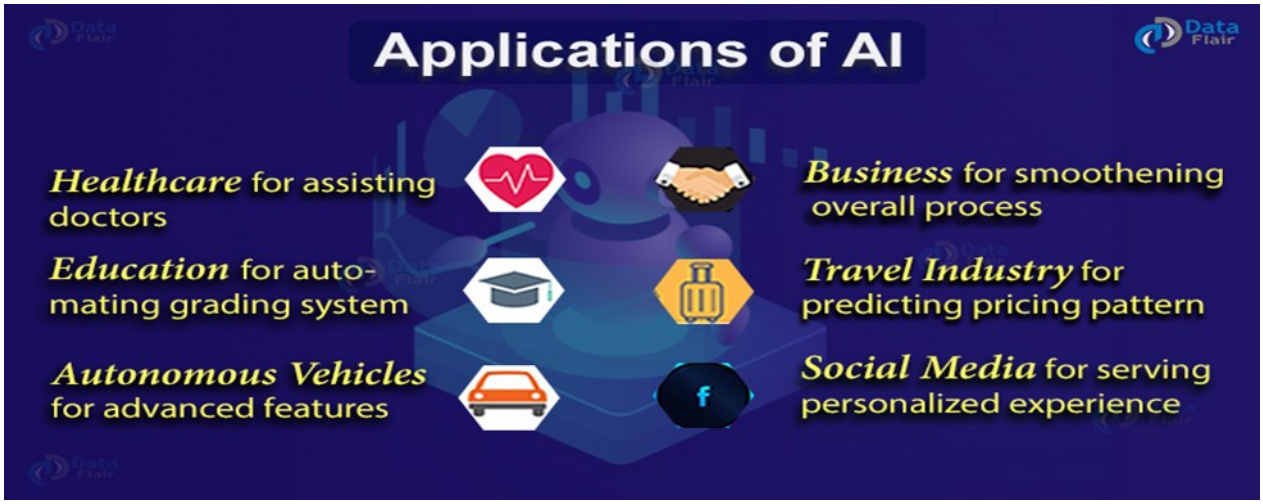


Thus, through the above examples it is evident that Neural engineering holds immense promise for the betterment of human life by helping regain, restore and enhance the nervous system.

ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS

Mrs.M.Sumithra, AP, CSE

Artificial intelligence (AI) is the term used to describe the use of computers and technology to simulate intelligent behavior and critical thinking comparable to a human being. According to Elaine Rich and Kevin Knight, AI is the study of how to make computers do things at which, at the moment, people are better. The ideal characteristic of artificial intelligence is its ability to rationalize and take actions that have the best chance of achieving a specific goal or defined operations.



AI in Healthcare - AI is being tested and used in the healthcare industry for dosing drugs and different treatment in patients, and for surgical procedures in the operating rooms etc.,

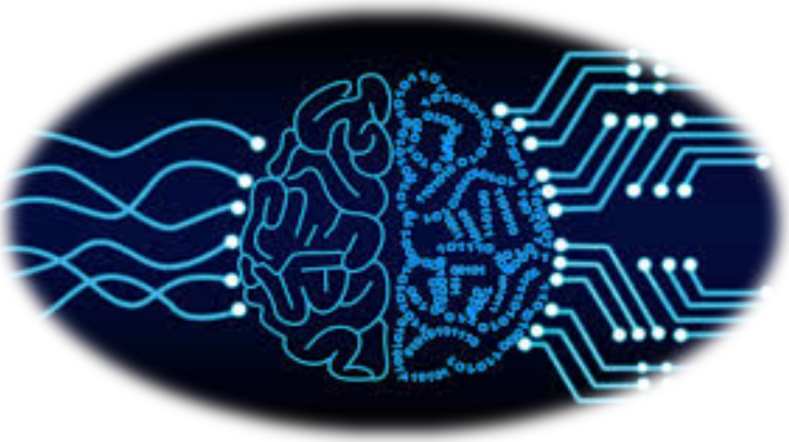
AI in Business - A business heavily relies on real-time reporting, accuracy, and processing of large volumes of quantitative data to make crucial decisions. AI is used in online help centers, the adaptive intelligence, chatbots, automation helps to smoothen out the business process

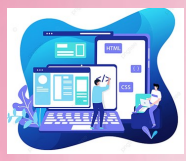
AI in Education - It must be very tedious for a teacher to grade homework and tests for large lecture courses. With AI, the system alerts the teacher and tell what is wrong. It gives students a customized message which offers hints to the correct answer.

AI in Travel Industry - With predictive analytics driven by artificial intelligence, the price can be predicted. The application is able to predict price patterns and alert travelers when to buy the tickets. So, the cheapest rate can be known before you book the flights to your destination.

AI in Autonomous - AI usage in autonomous vehicles are, Directing the car to the gas station or recharge station when it is running low on fuel, Adjust the trip's directions based on known traffic conditions to find the quickest route, Incorporate speech recognition for advanced communication with passengers, Natural language interfaces and virtual assistance technologies.

AI in Social Media - Instagram, Snapchat, Facebook, Twitter, the world today is changing and everyone is using these social media apps to stay connected with the virtual world. In social media majority of your decisions are being influenced by artificial intelligence. Starting from notifications, to upgradations, everything is curated by AI.





NEED FOR WEB DEVELOPMENT

-ADITYA.R III CSE

Websites are one of the things we encounter every day in our lives. Web development is one of the most demanded skill of the 2021.People are shifting from interpersonal connections to internet connections, so is the business industry. People are using websites for shopping, online booking of tickets and many more real-world applications.

In this digitally driven world, it's imperative for businesses to stay online in order to stay connected to their modern audience. This has made web development a new phenomenon in the market. As the world becomes digital today, it is imperative that every business be on the list. Therefore, to pursue a career in web development, you need to learn HTML CSS, Java script, this will give you a solid understanding of the basics. You can then jump directly to one of the major technologies such as React js, Angular, Vue.js and Amber.

Vue.js React

Learning these technologies will help you navigate the industry and stand out from the crowd. It doesn't matter what kind of background you have; anyone can learn these skills and get started with Web development. With these skills you can start a freelance job and earn part -time from a freelance website. Therefore, the demand in this industry will not decline and will continue to grow rapidly. Web development is a constant field, and if you pursue a career in this field, you will not regret it.

THE FUTURE OF SCIENCE – BLUE EYES TECHNOLOGY

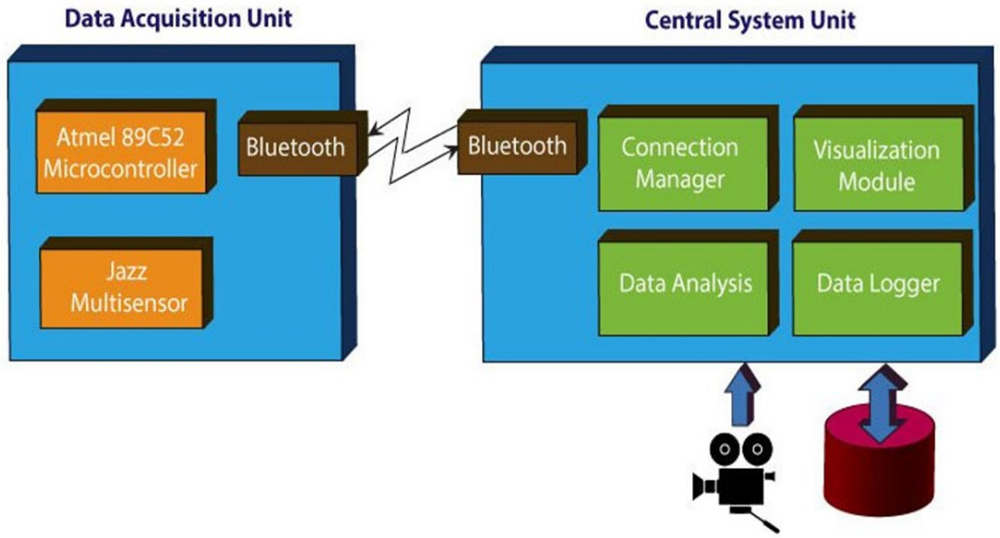
-DIKSHA KRISHNAN III CSE

Have you ever thought about what will happen if our smartphones, tablets, and computers acquired the ability to sense our emotions? Imagine a world where machines can identify us, feel our presence, and interact with us the way we interact with each other. A world where machines can judge what we are feeling based on our facial expressions, hand gestures, eye movement, and our voice tone while speaking. All these things will soon be a part of the world we are living in and will be achieved with the help of Blue Eyes technology.

Blue eyes technology has been conducted by the research team of IBM at Almaden Research Center (ARC) in San Jose, California since 1997. It is an amalgamation of both hardware and software technologies with the help of which we can build machines having human-like sensory and perceptual abilities. In Blue eyes technology, Blue stands for Bluetooth which depicts a wireless and reliable mode of communication and helps in creating a PAN (Personal Area Network) for linking various components of the Blue Eyes devices, and Eyes that help us perceive the world and obtain interesting information.

The idea of Blue Eyes technology is similar to Affective Computing. Affective Computing was coined in 1995 in a research paper by Rosalind Picard. It can be described as a modern branch of computer science with a combination of psychology and cognitive science.

The Blue Eyes technology has two main hardware components - Data Acquisition Unit (DAU) and Central System Unit (CSU). Data Acquisition Unit's main objective is to acquire data with the aid of numerous sensors such as beepers, LCD screens, LED indicators, etc., and to transfer all that data to CSU with the help of Bluetooth. It uses Atmel 89C52 as its principal component. The Central System Unit's task is to analyse and process the data sent by DAU. It also performs access verification and system maintenance. The interaction between DAU and CSU is depicted in the diagram below :



The software present in a Blue-Eyes device continuously monitors the conditions of the surroundings. When the conditions change, the software performs real-time analysis of the incoming data and triggers several operations based on the captured data. The connection manager manages wireless communication between Data Acquisition Unit and Central System Unit. The physiological conditions of the user received by the sensors are analysed by the Data Analysis module. The Visualization module acts as a UI for the superiors and helps them to watch the physiological condition of the user with a preview of the audio and video streams.

The devices used for collecting the information in this technology are as unique as the technology itself. These are specially designed to obtain a plethora of data through touch, perception, hearing, etc. Some of the devices used in this technology are:

Emotion Mouse (For Hand):
Emotion mouse is an input device that looks like a conventional mouse but it serves the purpose of evaluating the emotions of the user. It has pressure, photo, temperature, and GSR sensors that can classify a user's emotions into different categories like - fear, surprise, anger, sadness, happiness, disgust, etc. while the user is interacting with the computer.

Expression glass (For Eyes):
Expression glasses are wearable devices that help in determining what the user is interested in at a particular time by analyzing the interaction between user and computer. These glasses remember what the user is watching and also catch the facial expressions of the user at that time. Combining that visualization with the emotion of the user gives the level of interest a user has for that thing. One of its prototypes used piezoelectric sensors.

There is an enormous scope of Blue Eyes Technology in the imminent future and the possibilities are endless. Some popular applications include Magic Pointing that deals with accessing the mouse pointer with the help of the gaze of the eyes by tracking the movement of the user's eye using an Infrared light source and SUITOR (Simple User Interest Tracker) which involves the use of the Expression Glasses. Various devices are being made using this technology and some are in the phase of being a topic of research. In the forthcoming future, the idea of machines understanding emotions might be extended to machines having emotions and we can just assume where it will lead us to?

GOOGLE IS TESTING A DESIGN CHANGE- FOR ITS SEARCH

-ANCHANA P III CSE

Google has been introducing new options and designs for its apps to match its feel and look with the Android 12 person interface. Now, the corporate is reportedly engaged on a brand new design for the Google app, in accordance with a 9to5Google report. In accordance with the report, the corporate is testing a brand new placement for the search bar within the app. As part of the brand new placement, the search bar has been repositioned on the prime of Google's emblem within the app.

The brand new change is part of the corporate's A/B testing program the place the pill-shaped search discipline is positioned above the Google emblem. The change additionally features a totally different location for the climate and temperature info, which has been moved to the highest left and the profile image is now part of the highest discipline.

The present modifications to the Search app match the remainder of the Google apps as part of Android 12's design. A/B testing and solely a choose Google Accounts will see these modifications. We checked on our Android gadgets and we're at the moment not seeing the modifications. Nonetheless, it makes it look quite a bit totally different from the earlier variations. 9to5Google has additionally reported that the profile image now helps swipe gestures to toggle between totally different Google accounts. Different issues similar to search tab end result pages stay unchanged, aside from a brand new compact emblem and avatar. As talked about, the brand new modifications are part of Google's Google's A/B testing and solely a choose Google Accounts will see these modifications. We checked on our Android gadgets and we're at the moment not seeing the modifications.

For these unaware, this isn't the primary time, Google is A/B testing a brand new design for the Google app. The corporate has examined a design change the place the search bar was repositioned on the backside of the display screen throughout the app.
Now, it would look like misplaced at first, however the backside placement of the search bar was simply accessible.

5G TECHNOLOGY

- SHRAVANI.G III CSE

5G is the fifth generation of cellular networks. Up to 100 times faster than 4G, 5G is creating never-before-seen opportunities for people and businesses. Faster connectivity speeds, ultra-low latency, and greater bandwidth are advancing societies, transforming industries, and dramatically enhancing day-to-day experiences. Services that we used to see as futuristic, such as e-health, connected vehicles, and traffic systems, and advanced mobile cloud gaming have arrived. With 5G technology, we can help create a smarter, safer, and more sustainable future.

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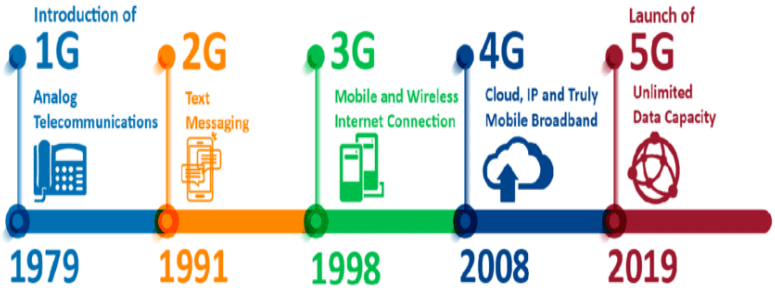

Things have changed a lot since the first generation of mobile technology. The 1G era was defined by briefcase-sized phones and short conversations between a relatively small number of professional people. In the lead up to 2G, the demand for mobile services grew and never slowed down. Phones that could fit in your pocket, SMS, and mobile internet access were hallmarks of the 3G world. Thanks to 4G, we have smartphones, app stores, and YouTube. Now, 5G is completely reshaping both our professional and personal lives by enabling new use

AUGMENTED REALITY:-Augmented reality (AR) is the term that describes a combination of technologies that enable real time mixing of computer-generated content with live video displays. AR is related to all five senses of the human body .AR is a visualization technology that allows the user to experience the virtual experience added over real world in real time.

GESTURE RECOGNITION:-The process of recognizing the gesture is called gesture recognition and the computer interface using this method is called gesture recognition technology. . This technology is a better alternative to the text and graphical user interface since it does not require any mouse, track pad, joysticks or keyboard.

RADIO FREQUENCY IDENTIFICATION:-Radio Frequency Identification (RFID) is a means of identifying objects by interrogation a unique characteristic of the object using radio wave. The main purpose of this technology is to enable the transfer of a data via a portable device. RFID has an ability to identify objects without the requirement of a line of sight meaning that the objects can be identified even when they are tightly packed together or their 22 surface markings are removed, marred, or obscured.

As this sixth sense tech was first invented in 2010 now there are many other devices more advanced than the sixth sense tech invented the gestural recognition was the only concept which was very difficult to incorporate but the in the latest invention many television and gaming pc have incorporated the concept of gesture recognition. The concepts of this technology can be used in more improvised manner by making a compact design and it can also be mainly used in the medical field, to record the health issues and maintain a good health of the user.

PLACEMENT BULLETIN

COMPANY NAME	STUDENT COUNT
Kaar Technologies	01
Sirius	01
Walmart	01
Zoho	04
Accenture	08
Cognizant	27
Flex	01
TCS	09
New Gen	02
N Compas	01
Wipro	21
Hcl	03

DEPARTMENT BULLETIN

Placement Details till November 2021

Total number of students	57
Total number of Offers	79
Total number of students placed	46
Percentage of students placed	80.7%

EDITORIAL BOARD

Your feedback is appreciated !

Mail us at: newsletters.ace.msec@gmail.com