



C.H. MOHAMMED KOYA
KMEA ENGINEERING COLLEGE
Approved by AICTE
Affiliated to MG University & KTU



"Science may set limits to knowledge, but should not set limits to imagination"
- Bertrand Russell



TECHNO-VIBES: THE TECHNICAL ARTICLES

Volume 2
Issue 1
October 2022



Kerala Muslim Educational Association

College Management Committee

Members



Mr. Riaz Ahmed Sait
Chairman



Adu. K. A. Jaleel
Secretary

Syed Bashir Ali Shihab Thangal
Mr. H. E. Mohammed Babu Sait
Adu. T. H. Abdul Azeez
Adu. P. A. Abdul Majeed Parakkadan
Mr. N. K. Nassar
Mr. V. S. Abdul Rahiman
Mr. N. M. Sharafudheen
Mr. M. P. Abdul Kader
Mr. P. K. Jaleel
Mr. A. Basheer
Adu. P. K. Aboobacker

Message from Director



It is a matter of great pride and utmost satisfaction for our college to bring out the online technical magazine: Techno-vibes under KMEA Research and Consultancy Council (KRCC). The college has crossed many milestones, targeting to become a centre of excellence in the field of technical education. Very recently, the college has been accredited by the National Assessment and Accreditation Council (NAAC).

I am confident that this technical magazine will provide a platform for both the staff and students of the college to showcase their academic and research activities and help them to develop and enrich the writing skills of students in particular and teaching faculty in general.

I express my sincere gratitude to Dr Sangeetha C P, Coordinator-KRCC for her sincere effort to take the lead role and accomplish the task of releasing the first issue of this biannual technical magazine within the stipulated time. I appreciate the efforts put in by the editorial board to bring out this technical magazine in record time. Also, I render my heartfelt congratulations to the faculty members for their contribution to the first issue of the magazine.

Best wishes!

Dr Amar Nishad T M
Principal & Director

Message from Vice Principal



It is a pleasure for me to see the initiative taken by KRCC to present the first issue of the online technical magazine, "Techno-vibes". This magazine will definitely provide a platform for staff to share their technical knowledge, thereby creating a technically trained community. The college has been simply unstoppable in its progress as it has been actively involved in providing quality education.

My appreciation to the team who took the responsibility for the arduous task most effectively. Reading this magazine would definitely be an inspiration and motivation for all students and staff to contribute even more to the forthcoming issues. I hope that everyone will continue to work hard to keep the momentum going and to raise the magazine's standards.

Dr. Rekha Lakshmanan
Vice Principal

CONTENTS

Artificial Intelligence in Robotics	5
<i><u>Aadhil Ibn Ashraf, Student, KMEA Engineering College</u></i>	
Navigating the World of Augmented Reality.....	6
<i><u>Muhammed Aneez M. A, Student, KMEA Engineering College</u></i>	
Unleashing the potential of Virtual Reality	7
<i><u>Ansha Fathima B, Student, KMEA Engineering College</u></i>	
How will Artificial Intelligence Revolutionize Web Design and Development in 2023	9
<i><u>Fazna P F, Student, KMEA Engineering College</u></i>	
Cyber Security for our Digital Life	10
<i><u>Suhana K. N, Student, KMEA Engineering College</u></i>	
Deep faking Using AI	11
<i><u>Anfal Hisham Thangal P, Student, KMEA Engineering College</u></i>	
Unlocking the Power of DevOps... ..	12
<i><u>Irfan S, Student, KMEA Engineering College</u></i>	
Alter-ego the Mind Reader.....	13
<i><u>Joel Michael, Student, KMEA Engineering College</u></i>	
Polymer Composite Materials for Structural and Functional Applications	15
<i><u>Ajay Vasudeo Rane, Department of Mechanical Engineering</u></i>	
Medical and Health Care Robotics.....	17
<i><u>Adithdev K R, Student KMEA Engineering College</u></i>	

Artificial Intelligence in Robotics

Aadhil Ibn Ashraf

Student, KMEA Engineering College



Artificial intelligence is a branch of computer science dedicated to creating computers and programs that can replicate human thinking. Some AI programs can learn from their past by analysing complex sets of data and improving their performance without the help of humans. Robotics is the study of the design and construction of these mechanical and electronic fields.

Robots with artificial intelligence (AI) have computer vision that allows them to navigate, assess their environment, and decide how to react through the process of machine learning, which is also a component of computer programming and AI. Robots learn how to carry out their tasks from humans.

Weak Artificial Intelligence

Artificial intelligence of this kind is used to simulate human thought and behavior. The commands and replies for the Robots to locate the appropriate response when they perform the task of locating the appropriate response when the proper instruction is provided are unable to interpret the commands. The best examples of this are Alexa and Siri. In this device, the AI only completes the duties that the owner requests of it.

Strong Artificial Intelligence

These autonomous Robots use this kind of artificial intelligence to complete their tasks. Once they have been trained to complete the task correctly, they do not require any sort of monitoring. Self-driving cars and internet automobiles are two of the most intriguing instances of this form of AI use today, as many processes are automated by humanoids. Robots that can perceive their environment and interact with it will also be equipped with this kind of AI. As no human interaction is necessary, Robotic surgery is also growing in popularity.

Specialized Artificial Intelligence

When a Robot is required to carry out only particular specialized duties, this type of AI is employed. It is only confined to a few jobs. This primarily consists of industrial Robots that carry out predetermined and repetitive duties such as painting, tightening, etc.

Navigating the World of Augmented Reality

Muhammed Aneez M. A

Student, KMEA Engineering College

Pioneer Ivan Sutherland is the person who found the AR. An interactive technology called augmented reality (AR) superimposes digital content such as pictures, movies and 3D models over the physical world. By fusing the actual and digital worlds, augmented reality (AR) improves the user's experience of reality as opposed to virtual reality, which produces a fully immersive virtual environment. To fully enjoy augmented reality, users often use smartphones, tablets, AR glasses and headsets.

Applications

Education and Training: AR is utilised to provide a visual explanation of difficult ideas during interactive learning events.

Navigation and Wayfinding: AR apps offer real-time navigation cues, including arrows superimposed on the real world to assist users in navigating new locations. **GAMES:** Augment reality games encourage the players to explore and engage with their surroundings by fusing digital and physical aspects.

Marketing and: companies employ augmented reality to develop dynamic, compelling, and user-friendly advertising campaigns.

In the field of view of the surgeon, augmented reality helps with medical procedures by displaying real-time data, such as patient vitals.

New Projects Of AR

Interactive AR Museum Guide: Develop an AR app that provides an interactive museum guide users can point their device at the exhibit to access additional information, 3D models, and audio guides enhancing the museum experience.

AR Fashion Stylist: Build an app that helps users put together outfits by overlaying virtual clothing items onto their real-world image, allowing them to mix and match without physically trying on clothes.

Interior Design Visualization: Develop an app that lets users virtually arrange furniture and decor items in their real homes, helping them visualize potential changes before making decisions.

A future where our surroundings come to life with education and entertaining digital aspects is being shaped by AR's broad uses across sectors like education, health care, gaming, and design.

Unleashing the potential of Virtual Reality

Ansha Fathima B

Student, KMEA Engineering College



Introduction

Virtual reality is a three-dimensional image or environment that is computer generated and may be manipulated by a person to appear real or tangible. Virtual Reality (VR) has transformed our interactions with digital surroundings, which has emerged as a transformational technology. This article offers a thorough technical introduction to VR, covering its fundamental concepts, supporting technologies, applications, difficulties, and hopes for the future. Understanding VR's technical components will help us realize its enormous potential and explore the options it offers.

Understanding Virtual Reality

The term "virtual reality" (VR) describes an immersive, computer-generated experience that simulates a three-dimensional environment and allows users to interact with and explore it in real time. To produce a flawless virtual experience, VR makes use of specialized technology, including head-mounted displays (HMDs), motion tracking sensors, and input devices. Virtual reality (VR) can provide immersive or non-immersive experiences; the former uses head-mounted displays to create a 360-degree virtual space.

Application of Virtual Reality:

Virtual reality (VR) is used in a variety of industries, changing how people interact with digital content. VR has completely changed how players interact with virtual worlds in games. VR training simulators are used in the military, medical, and aviation fields to improve learning results and cut expenses. VR is used by medical experts for therapy, rehabilitation, and pain management. Additionally, VR offers distinctive and captivating experiences and has potential uses in education, architecture, tourism, and social interactions.

Strengths of Virtual Reality

Virtual reality technology is excellent at making users feel physically present in their virtual surroundings. As a result, engagement is increased, and training and learning results are improved. Another advantage is interaction, which lets users explore and interact with virtual items to develop deeper knowledge. By presenting various viewpoints, VR has the potential to promote empathy and great understanding.

Challenges and Limitations

VR still has issues that need to be resolved in order for it to be more widely used. Due to the contrast between physical and virtual movements, some users may feel queasy or uncomfortable; therefore, design and implementation must be carefully thought out. Realistic and aesthetically pleasing virtual environments demand powerful computers and high-resolution monitors, which calls for continual technological developments.

Future Prospectus and Emerging Technologies

The potential for VR is enormous. Artificial Intelligence (AI) and Machine Learning (ML) integration can improve realism and interactivity, making virtual worlds more intelligent and responsive. VR headsets that are untethered and wireless will give users more mobility, improving their comfort. Real-time interactions will be made easier by the smooth streaming of high-quality VR content made possible by the launch of 5G networks. OLED panels and foveated rendering are two display technologies that can improve visual immersion even more. Virtual experiences can benefit from haptic feedback devices that provide a tactile element, making the world more realistic and interesting.

Conclusion

There is no denying the development and innovation potential of virtual reality. VR can revolutionize businesses and change how people engage with digital material thanks to its immersive experiences and wide range of uses. Even if there are issues with cost, comfort, and accessibility, continual technological improvements and the incorporation of new technologies offer promising potential. Virtual reality (VR) will become more and more important as it develops, paving the way for a time when physical and virtual realities coexist while providing immersive and interactive experiences that improve a variety of elements of our lives.

How will Artificial Intelligence Revolutionize Web Design and Development in 2023

Fazna P F

Student, KMEA Engineering College



We at website designing business in Delhi think it is critical to first understand artificial intelligence (AI) before exploring how it has affected web design and development.

What is AI, exactly?

A computer system called AI is dedicated to building intelligent machines that think and behave like people. It can evaluate facts, draw conclusions, and identify trends. AI is much more capable than this, and it can also communicate and solve problems. AI is now advancing and becoming stronger, playing a critical part in every business. AI was created to improve the efficiency, speed, and productivity of our daily lives.

How AI influences web development and design:

Chat bots:

The usage of chatbots powered by AI is improving user experience. With the help of the online chatbot, you can give visitors a more personalised and interactive experience. It's possible that the chatbot was present on eCommerce and popular company websites. Regardless of the industry you are in or the size of your business, using a chatbot to enhance the customer experience is a terrific idea. Chatbots do a wide range of tasks, many of which are quite well done. Although chatbots can be utilized for a variety of tasks, routine issues are where they are most often deployed.

Cyber Security for our Digital Life

Suhana K. N

Student, KMEA Engineering College



As the risk of a cyberattack rises, cyber security is the practise of defending information and computer systems. It involves guarding against unauthorised access, theft, and damage to computer networks and sensitive data.

A cyberattack can jeopardise national security and cause financial losses, reputational harm, and legal consequences. Malware, phishing, denial-of-service attacks, and ransomware are a few examples of the different forms of cyberattacks. Organisations must employ reliable software upgrades, firewalls, and antivirus software to protect against these risks. Additionally crucial are employing cutting-edge methods like artificial intelligence and machine learning and educating staff about online dangers.

Beyond these fundamental safeguards, more sophisticated cyber security knows to avoid downloading attachments or accessing links from sources it is unfamiliar with. This can lessen the chance of our gadget becoming infected by malware and other online dangers.

To sum up, cyber security is a crucial component of our digital lives in the modern era. We can help safeguard our personal information and stop identity theft, financial fraud, and other cybercrimes by taking precautions to protect ourselves from online risks.

Deep faking Using AI

Anfal Hisham Thangal P
Student, KMEA Engineering College



What is deep-faking?

Has Narendra Modi, the prime minister, ever been seen working at a tea shop? You just saw a convincing phony video. In the process of creating and improving fake content, deep generative algorithms are used to change a person's voice or appearance. Deepfakes use a generator and a discriminator as their algorithms. The generator generates the initial fake output by building a training data set based on the anticipated outcome. Repeating this process numerous times. The discriminator and the generator can both identify the defects that the generator has to fix.

What are the disadvantages of deep-faking?

Deep-faking has gained popularity and become more accessible because of the quick development of artificial intelligence. Even though deep faking is mostly used for entertainment and education, it has the potential to be abused. Making child sex abuse materials, celebrity pornography, revenge porn, falsifying news, fraud, bullying, and financial fraud are only a few examples. The largest cause for concern is deep-fakes' ability to disseminate false material that appears to come from reliable sources. One such case is a fake video pretending to show Ukrainian President Volodymyr Zelenskyy asking with his troops for surrender.

Is deep fake legal in India?

However, deep-fake technology is not prohibited by law in India. However, when technology is utilized illegally, some legal concerns, such as copyright infringement, defamation, and cybercrimes, can be handled. Due to deep-faking's widespread availability and ease of use, everyone may be vulnerable to deep-faking assaults. Many recommended practices exist for analysing deep-fake assaults. Deeply fabricated contents might display the following signs: Unnatural body or facial movement, artificial coloration, an unnatural appearance when the video is enlarged or zoomed, and unreliable audio are just a few of the notifying signs.

Unlocking the Power of DevOps...

Irfan S

Student, KMEA Engineering College

DevOps is a software development methodology that combines software development (Dev) and information technology (Ops) to create a more efficient and streamlined approach to software development. The goal of DevOps is to shorten the development life cycle while ensuring high-quality software is delivered quickly and efficiently.

Uses and how it works

DevOps is a cultural shift in the way the software development team works. It emphasizes collaboration, communication, and automation between developers and IT operations teams. By working together, DevOps teams can reduce the time it takes to develop, test, and deploy software. The DevOps process begins with planning and coding, followed by continuous integration, testing, and deployment. It reduces the risk of errors and increases efficiency. It also promotes collaboration between teams. Helps to break down the gap between developers and IT operators. DevOps can also lead to significant cost savings over time.

Opportunities

DevOps engineers, Blockchain engineers, Security engineers, etc. are the ones managing the entire DevOps process. DevOps presents exciting job opportunities for those with the necessary skills and expertise.

Benefits

One of the key benefits of DevOps is faster time-to-market. By automating the development process, teams can quickly deploy new features and updates. This allows companies to respond to market changes and customer needs more quickly, giving them a competitive advantage. Reduces the risk of bugs and ensures that software is delivered with fewer defects. As the software development industry continues to evolve, DevOps is likely to become even more important in the years to come

Alter-ego the Mind Reader

Joel Michael

Student, KMEA Engineering College

Alter Ego is a wearable, silent speech simulator. Silent and seamless natural language communication with computing devices and other people. The wearable system reads the electrical impulses from the skin in the lower face and neck that occur when a user is internally vocalizing words or phrases—without actual speech, voice, or discernible movements.

Major Goals

The goals of this system are to cognitively empower humans and change the way people communicate with one another. This eliminates the need for overt actions or spoken words, allowing private and natural interactions, thus paving the way for an integrated and effortless way of humans and machines. This system consists of components like a new peripheral myoneural interface for silent speech. input, which reads endogenous electrical signals from the face and neck.

It's Features

1) Hardware and software to use electrophysiological signals, including a modular neural network-based pipeline trained to detect and recognize words silently spoken by the user 2) An intelligent system that processes user commands and queries and generates a response. 3) The bone conduction output method is used to give audio information back to the user by giving an answer to a question.

Applications

The possible applications of this system are that users can easily retrieve information, receive real-time answers, and even translate languages. This technology finds application in diverse areas, including telecommunications. With enhanced privacy and fidelity to aid memory, recall discreetly. This platform envisions a future where professionals like doctors can silently consult through AI agents to improve decision-making. This system could help people with speech impairments.

What is key is that the user does not have to disconnect from their surroundings to use computer services. The system can enhance the user's engagement in the present moment or conversation. For example, when someone uses a word in a meeting that you don't know, you can silently ask the system for a definition so as not to be left out of the conversation. When you've met someone previously but have forgotten her name, the system can silently consult your address book to help you out.

The user's ability to remain connected to her environment while using computer services is crucial. The user's participation in the conversation or moment at hand can be improved by the system. For instance, you can silently ask the system for a definition whenever someone mentions a word at a meeting that you are unfamiliar with so that you are not left out of the discourse. The system can secretly scan your address book to help you remember someone's name when you've met her before but can't remember it.

Polymer Composite Materials for Structural and Functional Applications

Ajay Vasudeo Rane

Department of Mechanical Engineering



Polymer composites are materials composed of two or more constituent materials, with the purpose of obtaining unique and enhanced properties that the individual components do not possess. In recent years, polymer composites have become increasingly popular for both structural and functional applications due to their high strength, stiffness, and durability, along with their ability to be tailored for specific applications. Structural applications of polymer composites include the aerospace, automotive, and construction industries. These composites offer several advantages over traditional materials such as metals and ceramics, including their high strength-to-weight ratio, excellent fatigue resistance, and corrosion resistance. Polymer composites can also be designed to be easily moulded into complex shapes, making them ideal for applications such as aircraft wings and automotive body panels. Functional applications of polymer composites include electronic and biomedical devices. In electronic applications, polymer composites can be used as insulators or conductors, while in biomedical applications, they can be used for tissue engineering and drug delivery. Additionally, polymer composites can be engineered to exhibit specific properties such as shape-memory behaviour or self-healing.

Polymer composites are materials composed of two or more constituent materials, where the matrix material is a polymer. These materials can offer superior properties compared to their individual components, making them suitable for a variety of structural and functional applications. Here are some examples of polymer composites used for different applications:

- Carbon fiber reinforced polymer (CFRP) composites: These composites consist of carbon fibers embedded in a polymer matrix, usually epoxy resin. They have high strength and stiffness-to-weight ratios, making them ideal for structural applications in aerospace, automotive, and sporting equipment industries.
- Glass fiber reinforced polymer (GFRP) composites: Similar to CFRP, these composites consist of glass fibers embedded in a polymer matrix. They have high strength and stiffness but are less expensive than CFRP, making them ideal for construction, wind turbine blades, and boat hulls.
- Metal matrix composites (MMC): These composites consist of a metal matrix, such as aluminium, reinforced with ceramic or carbon fibers. They have high strength, stiffness, and wear resistance, making them ideal for aerospace, automotive, and military applications.
- Polymer-ceramic composites: These composites consist of a polymer matrix reinforced with ceramic particles, fibers, or whiskers. They have improved hardness, toughness,

and thermal stability, making them ideal for cutting tools, wear-resistant coatings, and heat exchangers.

- Conductive polymer composites: These composites consist of a polymer matrix with conductive particles or fibers, such as carbon black or metallic particles. They have electrical conductivity, making them suitable for electromagnetic shielding, sensors, and electronic packaging.
- Shape memory polymer composites: These composites consist of a polymer matrix with embedded shape memory alloys or fibers. They can change their shape in response to temperature or other stimuli, making them ideal for biomedical implants, actuators, and robotics.

These are just a few examples of polymer composites used in various industries for structural and functional applications.

Overall, polymer composites are versatile materials that can be tailored to meet a wide range of performance requirements for structural and functional applications. Their unique properties make them ideal for use in various industries, and continued research and development in this field will likely lead to even more advanced and innovative applications in the future.

References

1. "Polymer Matrix Composites: Materials for Sustainable Infrastructure" by R. Byron Pipes and Allen M. Jones, published in MRS Bulletin (2017).
2. "Polymer Composites for Biomedical Applications" by Saeid Kargozar et al., published in Polymer Reviews (2020).
3. "Polymer Matrix Composites for Aerospace Applications" by J.R. Vinson, published in Materials Science and Engineering: A (2002).
4. "Recent Advances in Polymer Composites for Automotive Applications" by G. Ghosh et al., published in Journal of Reinforced Plastics and Composites (2019).
5. "Functional Polymer Composites for Sensing Applications" by S. K. Tripathy et al., published in Journal of Applied Polymer Science (2021).
6. "Nanocellulose-based polymer composites for structural and functional applications" by M. Sain et al., published in Progress in Materials Science (2017).
7. "Polymer Composites for Energy Storage Applications" by N. Ravindranathan Thampi et al., published in Journal of Materials Chemistry A (2020).

These articles cover a wide range of topics related to polymer composites and their use in various applications. I hope you find them helpful!

Medical and Health Care Robotics

Adithdev K R

Student, KMEA Engineering College



In contrast to the industrial robots first developed 50 years ago. To automate dirty, dull and dangerous task, today's medical and health-care robots are designed for entirely different environment and task those that involve direct interaction with human users in the surgical theatre, the rehabilitation centre and the family room.

The last ten years have witnessed a significant increase in the commercial and scholarly interesting medical and healthcare robots. Telerobotic assistants are frequently used during surgery resulting in faster healing periods and more dependable results in the same procedures. Medical robotics is an exciting field that has the potential to revolutionize the health care domain. Some examples of medical robotics include.

- Surgical robots
- Exoskeletons
- Rehabilitation robots

Benefits Of Medical Robotics

- Improve accuracy
- Reduce risk
- Increase efficiency

Future of Medical Robotics

The future of medical robotics is promising with more advanced technologies and applications being developed. Robot may soon able to conduct lab test without the need for a person, clean artery plaque, obtain tissue samples and even fight dangerous tumours.

Opportunities and Applications

- Telepresence
- Surgical assistant
- Rehabilitation robots
- Medical transportation robots
- Sanitation and disinfection robots

Conclusion

Medical robots offer patients a number of benefits over conventional approaches, including faster diagnosis, smaller incisions, greater accuracy, lower chance of infection, quicker recovery, and longer lifespan. Because firms must be effective to compete in their field, this helps the economy



KMEA ENGINEERING COLLEGE

kuzhivellipady , Edathala P.O . Ernakulam - 683561



ADMISSION
2022
OPEN



B .TECH

Civil Engg
Mechanical Engg
Computer Science and Engg
Electronics & Communication Engg.
Electrical & Electronics Engg.

M.TECH

Computer Aided Structural Engg
Computer Science & Engg
Communication Engg.
Power Electronics

PHD

Computer Science & Engg./
Civil Engg./ Interdisciplinary

B Tech : Honours | Option for Minor
Credentials in Emerging Areas



COLLEGE CODE
KME



www.kmeacollege.ac.in

FOR ADMISSION

+91 790 292929 4/5/6

admission@kmeacollege.ac.in

Student Editor In-charge:

Anfal Hisham Thangal P
KMEA Engineering College