

JULY-SEPTEMBER 2023



CHRIST

(DEEMED TO BE UNIVERSITY)

BANGALORE · INDIA

“Those who can imagine anything, can create the impossible.”

-Alan Turing

“Scientists have become the bearers of the torch of discovery in our quest for knowledge.”

-Stephen Hawking

“We have always been shameless about stealing great ideas.”

-Steve Jobs

THE PULSE

DECODING BRILLIANCE WITH US
UNLEASH POTENTIAL WITH PULSE

“The important thing is not to stop questioning. Curiosity has its own reason for existing...”

-Albert Einstein

“Don't find fault, find a remedy; anybody can complain.”

-Henry Ford

“Instinct is something which transcends knowledge”

-Nikola Tesla

DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING

VISION & MISSION

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

VISION

To emerge as a centre of academic excellence in the field of Electronics & Communication Engineering to address the dynamic needs of the industry upholding moral values.

MISSION

- Impart in-depth knowledge in Electronics & Communication Engineering to achieve academic excellence.
- Develop an environment of research to meet the demands of evolving technology.
- Inculcate ethical values to promote team work and leadership qualities befitting societal requirements.
- Provide adaptability skills for sustaining in the dynamic environment.

IN THIS Issue

1

STUDENT CONNECT

Sword of Damocles: A
Look into the
Development of
Immersive Technology

2

FACULTY CONNECT

Unlock Your Potential:
Embrace the
Hackathon Journey

3

ACHIVEMENTS

Student achievement

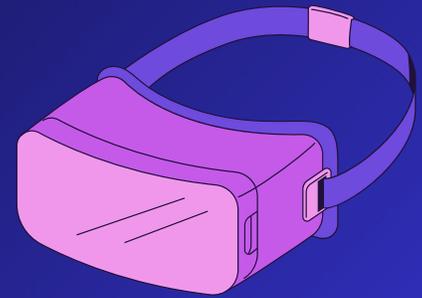
4

ACTIVITIES

Monthly department
activities/news

Sword of Damocles

A Look into the Development of Immersive Technology



By Student
Jerin Joseph Alour

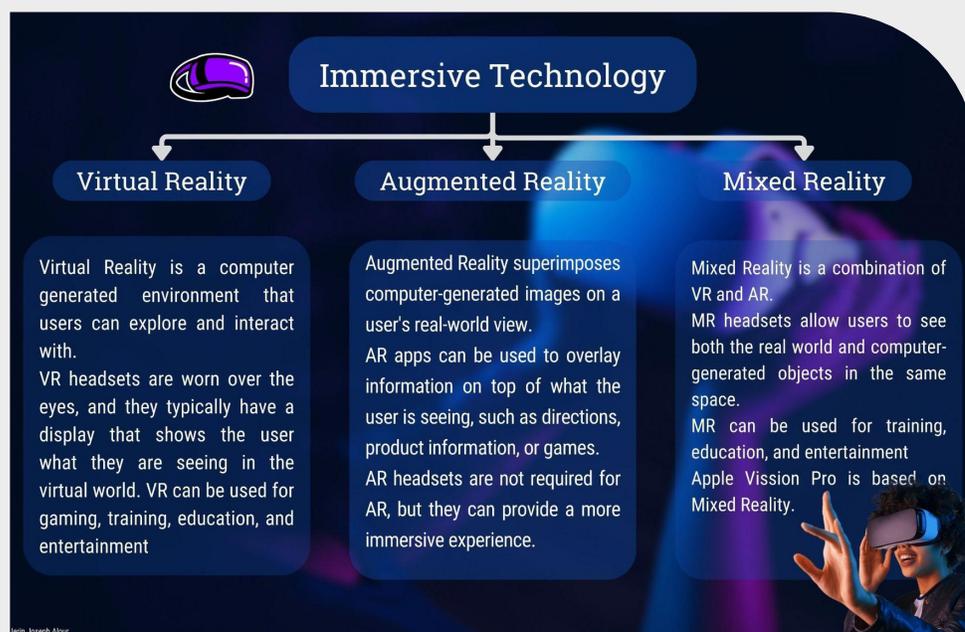
From
6BTELCS

Wondering what the Sword of Damocles is? An interesting title comes with an exciting story. The sword of Damocles was crafted by Ivan Sutherland in the year 1968. It took almost a century to complete this creation, opening a whole new world for the person who yields the sword.

“Sword of Damocles” is not a fancy Samurai blade or a Barbarian weapon. Instead, it is a device that can take you to any corner of the world within a blink. It was the first Leap toward Virtual Reality! Which we today call VR headsets. The first VR headset developed by Harvard professor Ivan Sutherland was called “Sword of Damocles” because it had to be suspended from the ceiling using mechanical supports due to its heavy weight, thus the name. It was the first head-mounted device to track the head’s motion and imitate the perspective coined as immersive Technology.



Fig 1. (1968) Ivan Sutherland's first VR Head Mounted Display, The Sword of Damocles



Because someone, someday years back felt the urge to do something about flying around the world sitting in their bedroom, today Immersive Technology exists. Do you want to go to your neighborhood, the next state, or a different country, do you want to travel to space? Mars, Past? Future? What about your fiction land? You name it. It's all possible with AR and VR. With the continued development of hardware and software, immersive experiences will become more realistic, engaging, and accessible. This will have a major impact on many industries, including entertainment, education, healthcare, and business.

Uses of Immersive Technology

What's in Immersive Technology?



- **Display:** The display is the most important component of both AR and VR systems. It must be able to display high-quality images that are in sync with the user's movements.
- **Motion tracking:** This uses sensors to track the user's head and body movements
- **Eye tracking:** This tracks the user's eye movements to determine where they are looking.
- **Positional tracking:** This tracks the user's position in space.
- **Networking:** AR and VR systems often require a high-speed internet connection to download and stream digital content. This is especially important for AR systems, as they need to be able to update the digital content in real-time as the user moves around.
- **Input devices:** Input devices are used to control AR and VR systems. The most common input devices for AR are touch screens and gesture controls. The most common input devices for VR are controllers that allow the user to interact with the digital content.
- **Computer:** The computer is responsible for processing the data and rendering the images for the display. The computer must be powerful enough to handle the demands of AR and VR, especially for high-end applications.
- **Interaction design:** This is the process of designing how the user interacts with AR and VR experiences.

These are just some of the technical details about AR and VR. As technology continues to develop, we can expect to see even more sophisticated and immersive experiences.

Poster by ~Jerin Joseph Alour

Entertainment: The way we consume entertainment will be completely transformed by immersive technology. Through the use of VR and AR, we will be able to see movies, TV shows, and video games in whole new ways.

Education: Technology that immerses us in a subject will change how we learn. Interactive learning experiences may be produced using VR and AR that are more interesting and successful than conventional approaches. and explore virtual worlds.

Military Training: The American armed forces have employed virtual reality headgear. Educating military people without placing them in danger. Military soldiers may engage with virtual reality characters using a virtual reality headset to make it feel genuine. To create the illusion that they are truly in the real world, they may converse with one another and engage in a variety of activities.

Healthcare: The future of healthcare might be revolutionized by immersive technology. Medical professionals may train for new treatments and hone their abilities using VR-created, realistic simulations of medical operations.

Business: The corporate sector will be significantly impacted by immersive technologies. Employee training, the creation of virtual showrooms, and remote meetings may all be done using VR and AR. Businesses will find it simpler to run more effectively and efficiently as a result.

Today Apple Vision Pro (Displayed in "Journey of VR") seamlessly blends digital content with your physical space. What's the new hype about the Rs2,88,700 (\$3,499) Headband!?

We used to get headbands for Rs100. Apple Vision Pro is one of its kind, where the virtual world is infused with Reality. Today VR doesn't weigh in tons and is not only fiction; technological advancements in VR headsets today

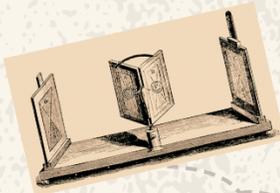
can be used for several real-life applications. It's not just for gaming; it is also used for Military training, Medical Treatment & Diagnosis, Educational purposes, and Simulation Training. The development of VR started with an Article.

Do you want to fly around the world and have immersive experiences of the activity while enjoying cheesy nachos? Today, it is possible, not because of 'one' scientist or 'one' company. It's possible with the cumulative efforts of all the Professors, students, researcher scholars, institutions, and collaboration of various cooperates and educational sectors. Together venturing on tiny steps toward something which was not considered likely. Today we have fastened our seat belts towards Metaverse. (Meta, initially known as Facebook being the major contributor) The existence of something which could take us to a different world by enjoying the comfort of our home was near impossible. An impossible is made possible by taking microscopic steps toward the terminus. The creation of the Metaverse (an idea of a universe meant to be only in fiction, is now in the making). With Metaverse & immersive technology (AR, VR & MR), World will not be the same as we have known it, from teaching kindergarten students to space missions. Things will Change.

Everything and any experience can be more immersive. Did you ever wish you could see and practically witness the interior cell structure, electronic components, chemicals, or physical experiments while you were learning for the first time about them? Imagine the practical knowledge you could gain through this hands-on approach. Well, Dear Reader, this dream is in the making. This dream is called Metaverse. Today immersive technology has caused a paradigm shift in the world in multiple domains, be it Entertainment, Education, or the Military; "when will we reach Mars?" is the question of the century.

Nonetheless, we have started creating a whole new universe inside the internet, a Virtual World called The Metaverse. Metaverse is not a far future anymore. It's coming. Are you ready for it?

The Journey of VR



1838 - EVENT

THE WHEATSTONE MIRROR STEREOSCOPE.

Stereopsis was coined by Sir Charles Wheatstone. Research has shown that the brain integrates two images of the same object—one from each eye—taken from various angles to provide the impression that the scene is three-dimensional and has depth. Wheatstone employed two mirrors placed at 45-degree angles to the user's eyes, each of which reflected an image that was off to the side.

1935 - EVENT

PYGMALION'S SPECTACLES SHORT STORY

Novel Pygmalion's Spectacles from 1935, Author Stanley Weinbaum offered a fictionalized version of VR. A professor who created a set of goggles that allowed for "a movie that gives one sight and sound [...] taste, smell, and touch" is introduced to the main character in the novel. [...] The tale is about you, and you are a part of it. You speak to the characters in the shadows, and they respond.



1956 - EVENT

THE SENSORAMA VR MACHINE

The first VR device, Sensorama, was developed by filmmaker Morton Heilig and patented in 1962. It included several technologies to trigger each sense: full-color 3D video, music, vibrations, scent, and atmospheric elements like wind. Scent generators, a vibrating chair, stereo speakers, and a stereoscopic 3D screen were used for this.

1968 - EVENT

PYGMALION'S SPECTACLES SHORT STORY

Sutherland and his student Bob Sproull developed the first virtual reality head-mounted display. The display had basic virtual wire-frame forms and was connected to a computer rather than a camera. Due to the tracking mechanism, these 3D representations shifted viewpoint as the user turned their head. It was hanging from the ceiling, they had to be strapped in. Hence it was never developed beyond a lab project.



1979 - EVENT

MCDONNELL DOUGLAS VITAL HMD

The military began experimenting with HMDs in 1979. They intended to make it easier for fighter pilots to handle the evolving fighter aircraft technology. They were attempting to find solutions to several odd issues, such as how to utilize the head to aim when shooting, how to display data from image sensors on virtual displays, and how to make the systems simpler to comprehend and operate.



1991 - EVENT

THE PARADIGM SHIFT IN IN EVOLUTION

A VR system was created by NASA scientist Antonio Medina to control Mars rovers from Earth in supposedly real-time despite communication delays between the planets.



2023 - EVENT

APPLE ANNOUNCES MIXED-REALITY HEADSET

A new mixed-reality headset called Apple Vision Pro was created by Apple Inc. It was unveiled on June 5, 2023, at Apple's Worldwide Developers Conference. The United States and a number of other nations, including Japan, India, Brazil, Canada, and Australia, will be able to purchase it in early 2024.



Unlock Your Potential

Embrace the hackathon Journey

By Faculty

Dr. Jesuwanth R Sugesh

Hackathons, the adrenaline-packed gatherings of brilliant minds, offer an incredible platform to collaborate, create, and conquer challenges like never before. These high-energy, fast paced challenges bring together various skills, including programmers, designers, engineers, and entrepreneurs, all driven by a shared desire to create and make a difference.

Learn Beyond the Classroom

While formal education provides essential knowledge, hackathons provide opportunities for hands-on learning that cannot be reproduced in regular classrooms. You will see firsthand the value of collaboration, communication, and efficient time management. These skills are invaluable not only in the tech industry but in any sphere of life. The challenges presented during hackathons demand creative solutions, pushing you to think outside the box and find ingenious ways to solve problems.

Networking Opportunities

Hackathons are not just about coding and building projects but also vibrant networking centres. Connecting with other students, mentors, and industry experts will introduce you to a huge network of contacts. Such networking may lead to internships, employment possibilities, and prospective partnerships that can unexpectedly change your career. Forming a team and working together to achieve a shared objective improves your interpersonal skills. You learn how to successfully convey your views, how to listen to and respect opposing viewpoints, and how to contribute to a cohesive unit. These experiences are extremely beneficial in any professional setting.

Make an Impact

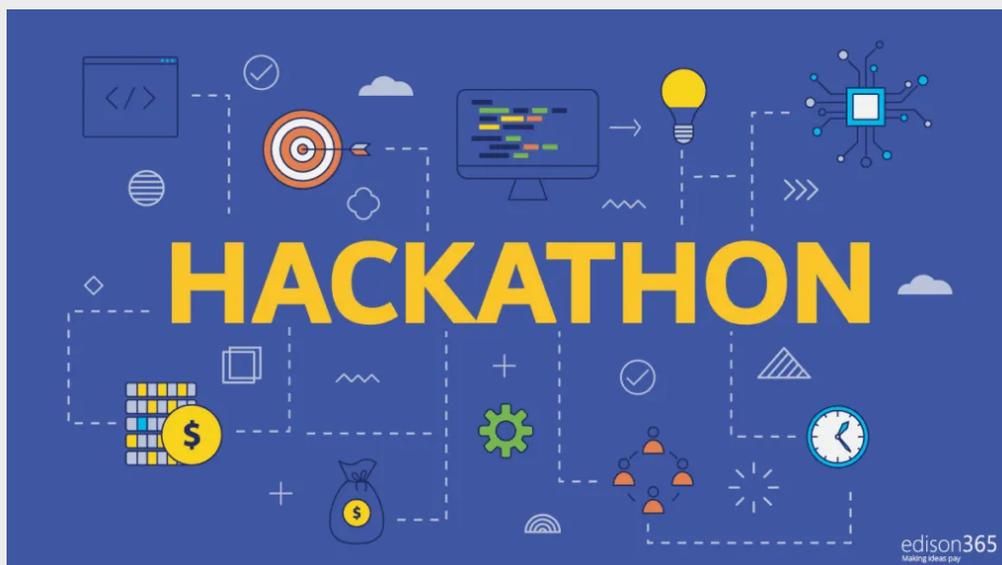
Consider the possibility of developing a product or service that has the potential to improve lives, disrupt industries, or solve serious global issues. Hackathons offer precisely that opportunity. Whether you're building an app to aid education, finding innovative ways to tackle climate change, or developing software to assist healthcare professionals, you can positively impact the world. Aside from the thrill of competition and the chance to win rewards, the gratification of knowing your innovation may aid others is unparalleled. The knowledge that you helped to solve real-world problems feeds your love for technology and keeps you driven to keep making a difference.

Build Your Portfolio

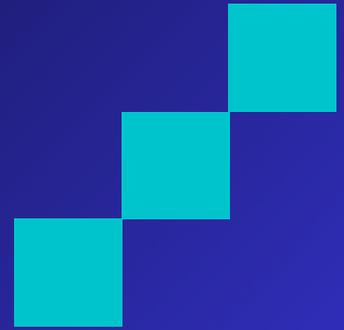
As you participate in more hackathons and take on different challenges, you accumulate a portfolio of projects that showcase your skills and achievements. This portfolio becomes valuable, giving you a competitive edge when applying for jobs or further studies. Employers and educational institutions are constantly looking for people who have proved their ability to apply their knowledge in real-world situations, and hackathon projects perfectly fit the bill.

Embrace the Journey

Finally, hackathons give an excellent opportunity to unleash your potential, learn by doing, form strong networks, and make a positive impact. Participating in hackathon events is about embracing the journey of growth, discovery, and innovation, not simply winning or losing. Remember, it is not about being the best coder but being part of a community that values collaboration, creativity, and the relentless pursuit of knowledge. Hackathon allows you to let the world witness the brilliance you have to offer!



Achievements



Student Achievement

Team **Perpetual Motion** has secured a prestigious position in the Final Round of PSGiTech Hackfest 2023, India, showcasing their innovative prowess and collaborative spirit. Spearheaded by Annmon James, the team's mobile app idea revolutionizes promises and agreements by leveraging proximity technologies like Bluetooth or Wi-Fi for simultaneous real-time recording. Annmon James not only founded and proposed the groundbreaking concept but also took charge of developing a prototype using Web technology. Kamalesh Kumar's dedicated research on the novelty of the idea and his adeptness in Machine Learning resulted in a comprehensive prototype. Renil Reji and Karwa Ganesh Nandkishor, crucial contributors to the project, tackled the problem statement with precision. Their collective efforts and efficient time management propelled Team **Perpetual Motion** into the final round, where they engaged in vibrant discussions, explored diverse ideas, and ultimately selected the winning concept. This achievement reflects the team's commitment, innovative thinking, and ability to collaborate effectively in a competitive hackathon environment.



Monthly Activity

July 2023



CUESTIC Election 2023-24

The CUESTIC (Christ University Electronics Students Technical Interaction Club) conducted its office bearers' election for the academic year 2023-24, a crucial event aimed at shaping the leadership of the club. The election, held on the 10th of July 2023, witnessed an impressive turnout of 400 participants, reflecting the enthusiasm and engagement of the student community. Sheryas (7BTEC), Malavika (5BTEC), and Rutwik (3BTAIML) emerged as the elected President, Vice-President, and Secretary, respectively. This diverse and dynamic leadership team is poised to lead CUESTIC into a year of growth, innovation, and technical exploration, ensuring the club continues to serve as a vibrant platform for fostering interest and awareness in Electronics and Communication Engineering.

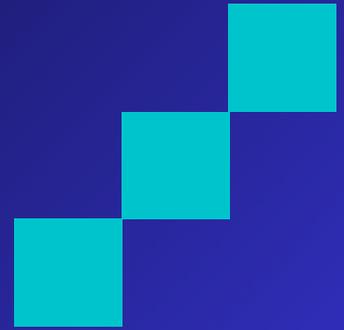
Industrial Visit to U R Rao Satellite Centre, ISRO, Bangalore

On the 21st and 27th of July 2023, 153 enthusiastic 3rd-semester students from AIML, ECE, and ELCS embarked on an industrial visit to the U R Rao Satellite Centre, ISRO, Bangalore. The visit included interactive sessions with experts, a tour of the museum featuring Indian satellite models, and insightful discussions on the opportunities available for ECE engineers at ISRO. This immersive experience not only connected theoretical knowledge with real-world applications but also served as a motivational exploration of the vast opportunities within the field of electronics and communication engineering at ISRO.



Monthly Activity

August 2023



Technical Talk on Emerging Technologies for an Emergent India

On the 4th of August 2023, an enlightening talk titled "Emerging Technologies for an Emergent India" unfolded as a dynamic technical talk. The session was graced by Girin G Pillai, a distinguished figure in the tech industry, serving as the Product Manager at Intel India's Research and Growth Initiative. Participants were privileged to delve into the forefront of technological innovation as Pillai shared profound insights and expertise. This event not only widened the horizons of attendees with the latest trends but also offered a unique perspective on the role of emerging technologies in shaping the future of India. Girin G Pillai's wealth of experience added a practical dimension to the theoretical discourse, making this technical talk a pivotal moment in fostering a tech-savvy community ready to contribute to India's technological advancement.



Workshop on Deep Learning with Active Sensor Satellite Data and Hands-on Training on Smart Farming

On the 18th of August 2023, a transformative workshop unfolded, focusing on the fusion of technology and agriculture titled "Deep Learning with Active Sensor Satellite Data and Hands-on Training on Smart Farming." Conducted by Col. Jai Govind P., an esteemed Associate Professor in the Department of ECE at CHRIST (Deemed to be University), Kengeri Campus, this event aimed to equip participants with cutting-edge insights into the application of deep learning techniques using active sensor satellite data for smart farming practices. The workshop went beyond theoretical discussions, providing a hands-on training session to enhance practical skills. Col. Jai Govind P.'s expertise and academic prowess ensured that participants gained valuable knowledge, making this workshop a crucial step toward the intersection of technology and agriculture for sustainable farming practices.



DEPARTMENT NEWSLETTER TEAM



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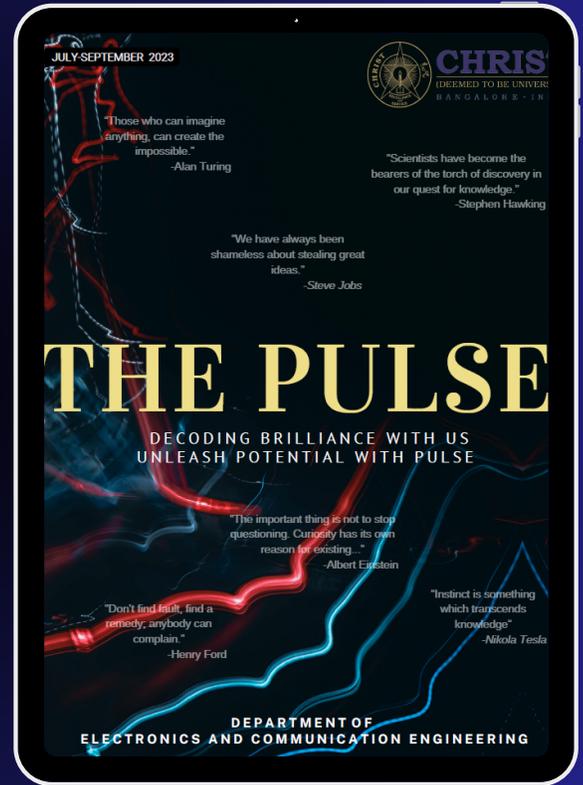


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