Vision and Mission of the Institute

Vision

To be one of the premier Institutes of Engineering and Management Education in the country.

Mission

- To provide Engineering and Management Education that meets the needs of human resources in the country.
- To develop leadership qualities, team spirit and concern for environment in students.

Objectives

- To achieve educational goals as stated in the vision through the mission statements which depicts the distinctive characteristics of the Institution.
- To make teaching – learning process an enjoyable pursuit for the students and teachers.

Vision and Mission of the Department

Vision

To be a premier department of learning in Information Science and Engineering in the State of Karnataka, moulding students into Professional Engineers.

Mission

- Provide teaching-learning process that develops core competencies in Information Science and Engineering to meet the needs of the industry and higher education.
- Create an environment for innovative thinking and self-learning to address the challenges of changing technology.
- Provide an environment to build team-spirit and leadership qualities to succeed in professional career.
- Empathize with the societal needs and environmental concerns in Information Science and Engineering Practices.

Palmer Luckey

Palmer Freeman Luckey (born September 19, 1992) is an American entrepreneur, founder of Oculus VR and designer of the Oculus Rift, a virtual reality head-mounted display. In 2017, Luckey left the Oculus project and founded Anduril Industries. Luckey ranks number 22 on Forbes' 2016 list of America's richest entrepreneurs under 40.

Luckey developed a series of prototypes exploring features like 3D stereoscopy, wireless, extreme 270-degree field-of-view and has become "the face of virtual reality in gaming".

In 2014, Luckey was the recipient of Smithsonian Magazine's American Ingenuity Award in the Youth category.

Luckey was awarded the Royal Photographic Society Progress medal and Honorary Fellowship, which is awarded in recognition of any invention, research, publication or other contribution which has resulted in an important advance in the scientific or technological development.

Contents

- Virtual Reality and Augmented Reality.
- Augmented Reality on smartphones.
- History and Evolution of Virtual Reality
- Application of AR & VR

And many more….

Message from the Editorial Team

Greetings from the editorial team! AR and VR are the first step in a grand adventure into the landscape of the imagination. Virtual reality is an interactive computer generated experience taking place within a simulated environment. This immersive environment can be similar to the real world or it can be fantastical. So,we would like to bring you this edition of our newsletter, the theme being "Augmented Reality & Virtual Reality". Hope this edition is enlightening and helps you to get a gist of the virtual world -- both personally and in general.

Happy apprehending!

Department of Information Science & Engineering has been accredited by National Board of Accreditation (NBA) for the academic years2018-19, 2019-20and 2020-21.

About the Department

TheDepartmentofInformationScienceandEngineeringwas establishedintheyear2001withanintakeof60. Since its inception, the department has forged a path of technical excellence and innovative teaching methods. The department comprises of highly qualified, research-oriented teaching staff committed to instill moral values among students in addition to providing cutting edge technical knowledge. The department has well equipped laboratories with state of the art computational facilities. Department regularly organizes technical talks, workshops, industry visits to nurture the core competencies among students. Students in the department are multifaceted securing ranks in VTU examinations in addition to excelling in technical, sports and cultural competitions. Six students from the department were part of the cultural team that won the overall championship in 19th Inter-collegiate VTU Youth Festival-2018.

Brahma S P of III semester and Nayana Bhat of V Semester bagged I prize in the 24-hour State Level Hackathon, 2018 with a prize money of Rs. 25,000/-

Nayana Bhat, Likhita B and Manasa Deshpande of V Semester were part of the team that won Runner up in VTU Central Zone Throwball Tournament-2018

BNMIT won the Overall Championship at VTUYouth Festival -2018

"One word in every page, a message in disguise"
Search for it!!

Virtual Reality and Augmented Reality

Augmented and virtual reality has one big thing in common. They both have the remarkable ability to alter our perception of the world. The place where they differ is the perception of our presence. Virtual reality is able to transpose the user. In other words, brings us someplace else through closed visors or goggles. VR blocks out the room and puts our presence elsewhere.
Oculus Rift, Samsung Gear VR and Google Cardboard are some of VR gadgets that have been developed recently.
Putting a VR headset over your eyes will leave you blind to the current world, but will expand your senses with experiences within. You might even find yourself on top of Mount Kilimanjaro. The immersion is quite dramatic, with some users reporting their feelings of movement as they ascend a staircase or ride a roller coaster within the virtual environment.
Augmented reality however, takes our current reality and adds something to it. It does not move us elsewhere. It simply "augments" our current state of presence, often with clear visors.

What is the real difference?

With virtual reality, you can swim with sharks. And with augmented reality, you can watch a shark pop out of your business card. While VR is more immersive, AR provides more freedom to the user and more possibilities to marketers because it does not need to be a head-mounted display.
When Microsoft first demoed HoloLens at Build 2015, they stole the show. HoloLens created waves in the ocean of augmented reality, painting the most ground breaking picture of what is to come in the ever expanding world of AR. Using HoloLens, you can literally surround yourself with your Windows apps.
In 2016, the world witnessed augmented reality take center stage in the form of Pokemon Go. The viral sensation that got Pikachu and Charizard out of the Gameboy and onto your front lawn, whether you

wanted them there. This was the first major example of AR finding mass market acceptance and infiltrating our daily lives.
Virtual and augmented realities in 2017 were already making dramatic leaps forward as startups find ways to introduce smell and touch to expand your sensory experiences. 'Technology Company Immersion' has introduced TouchSense Force, using haptic feedback to bring player's hands into VR worlds, and researchers at Stanford University's Virtual Human Interaction Lab, having to resist eating foam doughnuts as they experiment with adding scent to VR.

-Sarthak Sureka (VII Semester)

Augmented Reality on Smartphones

In Netherlands, cell phone owners can download an application called Layar that uses the phone's camera and GPS capabilities to gather information about the surrounding area. Layar then shows information about restaurants or other sites in the area, overlaying this information on the phone's screen. You can even point the phone at a building and Layar will tell you if any company in that building is hiring or it might be able to find photos of the building on Flickr or to locate its history on Wikipedia.

Layar isn't the only application of its type. In October 2018, an organization called Mural Arts Philadelphia created a gigantic interactive outdoors mural. Viewers pointed their smartphones at parts of the mural and then viewed various holograms and listened to matching music for a fully immersive art experience. In a science-fiction, dreams come true, fans of the movies can now play "Star Wars" Holo chess right on their phones and complete with futuristic graphics and sound.

A company called Tissue Analytics is honing an app that helps doctors and nurses use their phones to quickly identify specific types of wounds for faster

3D movies are technically an early form of Augmented Reality.

diagnosis and more efficient care. AR Compass Map 3D is like a mapping app on steroids. It combines compass and map overlays with your camera to create a fully-immersive 3D map that guides you wherever you want to go. Similarly, a company called Total Immersion makes a wide variety of applications for business and fun.

Then there are apps like Pokémon Go, a game that was insanely popular in 2016, and allowed players to hunt on their smartphone or tablet virtual creatures scattered in public spaces.

The Mobile AR Revolution

Two powerful tech leaders – Apple and Google – continue to tweak their mobile devices to handle the demands of AR-specific software. With ever-faster processors for the iPhone, iPad, and the entire galaxy of Android driven smart phones, these pocket sized computers are now powerful enough to run data intensive apps of all kinds, including those that feature AR.

Facebook has its own AR Studio, which helps developers create AR apps meant specifically to work within Facebook's framework, and it is working on AR glasses, too. In the meantime, Google is touting its Tango AR platform that sports visual search capabilities through Google Lens, a range of camera-enabled AR tools.

- Srikrishna Venkatesh (III Semester)

Magic Leap
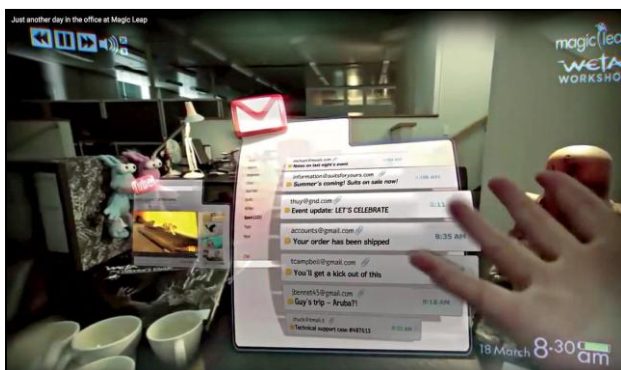
Virtual reality and augmented reality are pretty well known among the common masses. One immersive technology which has slipped a lot of people, yet is important and has the potential to be much more widely used than either of the ones mentioned is Mixed Reality or MR for short.

Mixed reality also called as hybrid reality is the merging of real and virtual worlds creating a form of environment where both physical objects as well as digital objects co-exist and interact in real time.

This form of immersive technology does not intend to replace either of the worlds, but rather exploits the strength from both. This could be in the form of MR powered glasses or lens which could then be used to give real time information on the objects being seen and the ability to interact with them through a virtual interface.

One company which is at the forefront of this technology is Magic Leap. This company is not based in Silicon Valley, yet it has the CEO of Google as one of its board members (The other investors include Alibaba, JP Morgan and AT&T). It obtained about 2 billion dollars of investment before it even shipped a single head set. Its evaluation at the time of this article is over 6 billion dollars.

If you buy a Magic Leap system today, you get a headset, called Light-wear that weighs less than a pound and looks like it came out of sci-fi flick. It's an oval-shaped ring that sits like a crown on your head to distribute the weight and that puts its round lenses, with cameras on either side, right in front of your eyes.

The tech built into those lenses is attached by a wire to the small disc-shaped computer called Light pack, which straddles your pocket and has enough computing power to generate realistic-looking 3D images of real and fictional characters and scenes that are then overlaid onto the real world. That means you could be sitting at home while your kids play and also be reading an email or watching a baseball game in the corner of your living room, on a screen you can see in your glasses but that isn't there in the real world. You navigate through that world and experiences with a remote control of that Magic Leap, calls Control.

Medicine is a field which is almost impossible to practice without actually joining a medical college. This could change if MR becomes more viable. One could simulate a heart surgery with a plastic fork made to look like medical equipment through the eyes of the head set. Sensations of the person is being performed on could indicate a very realistic scenario. This is also very useful in cases of trainees whose only method of practice otherwise would be to implement it on real people which is a pretty scary situation to be in.

- Ujjnath Arhan (V Semester)

Augmented Reality is expected to outspace Virtual Reality.

Seeing the Ancient World through Virtual Reality

Have you ever stood in front of historic ruins—Agra Fort or one of India's many ancient palaces and forts —and closed your eyes, imagining what the scene before you would have looked like centuries ago? Thanks to virtual reality, seeing ruins as they looked in their heyday is becoming possible. This has been implemented in ancient cities like Rome and Jerusalem by a company called Lithodomos *V*R. Lithodomos VR creates immersive virtual recreations of iconic ruins. The recreations can be used on site with a smart phone headset or from home or school using a commercial VR system like Oculus Rift.

Today, Rome's Temple of Venus has split in a half. Most of its columns have gone, ravaged by the centuries of fire, earthquakes and pillaging. But after putting on a virtual reality headset with Lithodomos' app, suddenly the temple before you became a whole again. Its vanished columns are standing tall; its facade all shining like white marble and the intricate relief sculptures of its pediments cast its shadow in the summer sun.

The app maps your phys*i*cal location onto the temple and allows you to look around from various angles. It might be raining outside or nighttime. But in the VR world, the sky is a hazy blue and the perimeter of the temple is lined with trees.

Andrew Parkin, Specialist Collections Adviser at the Great North Museum: Hancock added: "I think that virtual reality in museums has great potential and can revolutionize the way we expe*r*ience and interact with artifacts."

The VR creation process starts by using a camera rig to photograph the object from every possible angle. Creators then use the photos to create a 3D model, which is turned into a texture map to recreate the object. After optimization, the model is ready to be placed into its own tailored virtual world and be saved for future archives or projects.

The use of augmented reality in museum contexts has been researched but there are s*t*ill many unsolved questions related to technological challenges, content production processes and feasible business models.

-Sachin V Murthy (VII Semester)

FLOW – The Subconscious taking Control

"I had absolutely no idea what happened in the last quarter. My body moved on its own. I had turned off my entire thought process and I was completely in auto pilot" mode. These were the words of Michael Jordan, the basketball legend. I am pretty sure most of us would have got into such 'zones' but how many of you actually know what it is? That is nothing but a state of mind called flow.

Before we get to the specifics, try to think of a time when you're doing something extremely simple, eg. Copying down something from another notebook. Have you ever noticed that yo*u*'ve continued copying but haven't been paying attention to what you're doing? That is right. Ladies and gentleman! This is a flow.

The formal definition of flow would be the mental state of operation in which a person performing an activity is fully immersed in energized focus, full involvement and enjoyment in the process of the activity. The above sentence is too much to take I agree but in simple layman terms it is just a mental state in which you lose the consciousness of your body activities, time and your surroundings , where you would have given a 100 percent of your concentration power to the work you were doing.

Ex*a*mples of the same would be listening to the music, playing a sport or your instruments, solving puzzles or mathematical equation, playing video games and several other activities that one loves.

F*l*ow could be analogized to a drug which gives you similar experiences. The godfather of the flow concept Mihaly Csikszent states that the quality of the life increases with increased amount of flow experiences since you are happy during those optimal experiences.

Now that was the psychological part of flow. Let us now get to the matter at hand, 'Flow in Virtual reality'. Virtual reality has been a technology to enhance the video viewing experience and gaming experience from the past few years of its marketization.

Let us consider a scenario whe*r*e you come from work or college and 80 percent of your energy has drained due to a regular working day. Most p*e*ople, will actually watch some TV, spend some time on social media, have dinner and finally sleep. The stress could

be nullified, by making them involved in certain *a*ctivities they like and also no longer they feel like having to work very hard and their productive result and output just "flows" naturally.

Similarly, flow can be used as rehabi*l*itation for drug abusers, alcoholics and chain smokers by creating an artificial scenario that they would enjoy. Hence, slowly they can be dragged out of addiction as well as limiting their flow to prevent the addiction to VR or artificially induced flow. As they say, too much of anything is too bad.

A question might arise at the end of the day saying what if the people do end up getting add*i*cted to flow, after all. As peter parker says "With great power comes great responsibility" and prowess over technology is indeed a huge responsibility. One who is in charge of this must ensure proper usage.

- Vinay (III Semester)

MCQ

1. Augment is derived from a Latin word 'Augere' meaning _____.

   a) Increase
   b) Artificial
   c) Retrieve
   d) Pretend

2. BOOM stands for

   a) Binocular Omni-orientation Manager
   b) Binary Omni-orientation Manager
   c) Binocular Omni-orientation Monitor
   d) Binary Omni-orientation Manager

3. What key aspect differentiates today's digital media from traditional media?

   a) Longevity
   b) Interactivity
   c) Portability
   d) None of the above

4. Which of the following algori*t*hm is used in AR?

   a) Markov
   b) Ransac
   c) PCA
   d) Apriori

5. What are the two main types of Virtual Reality?

   a) Fully immersive and Non-immersive
   b) VR and AR
   c) Realistic and Unrealistic
   d) Oculus Rift and HTV Vive

6. The advantage of AR over VR:

   a) Security
   b) Data Visualization
   c) Customer Service
   d) Mixed visual perception of real world and virtual world

7. Which organization used AR as a navigation tool in 1990s?

   a) NASA
   b) British Navy
   c) US Air Force
   d) MI16

8. What is Google's affordable VR solution?

   a) Google plastic
   b) Google Cardboard
   c) Google Box
   d) Google Viewer

9. In 2009, who was the first celebrity to be brought to life in AR in a print magazine?

   a) Taylor Swift
   b) Brad Pitt
   c) Robert Downey Jr
   d) Beyonce Knowles

10. Pokémon Go is an example of

    a) AR
    b) VR
    c) Mixed realit*y*
    d) Graphic game

Answers:

1	2	3	4	5	6	7	8	9	10
A	C	B	A	A	D	A	B	C	A

-Brahma S P (III Semester)

"Augmented reality" was coined at Boeing in 1990 by a researcher Tom Caudell.

Technical Talk on Cloud Computing

A technical talk on "Latest Trends & Technologies in Cloud Computing" followed by distribution of mementos to distinction holders in the VTU examinations was conducted under ISTE (Indian Society for Technical Education) student chapter on October 31st 2018. The chief guest Mr. Sachin Kumar R. S., Regional Program Manager - IT Academy, Asia-Pacific & Japan, VMware, Bangalore, focused his talk on to the types of cloud services followed by a discussion on cloud service providers, introduction to Cognitive Computing and Chatbot with an example of IBM Watson.

Entrepreneurship Awareness Camp

The Department of Information Science & Engineering in association with Entrepreneurship Development Cell organized an Entrepreneurship Awareness Camp for 3-day. A talk on Innovation and Entrepreneurship by Mr. Dattatreya Sharma, Founder and CEO, Guruprevails was conducted on 16th November 2018. A talk on Entrepreneurship was organized on 19th November 2018. The resource person for the event was Mr.YeshaswiNag.N. The Students visited TCS as part of Industry visit on 23rd November 2018. It was an overwhelming experience for the students.

Workshop on Circuit Prototyping

A workshop on Circuit Prototyping was conducted under CSI-BNMIT student branch on 2nd and 3rd November 2018. The resource person, Mr. Kotresh M is an experienced trainer and currently the director of organization Indian Tech-Keys, Bengaluru. He is a skilled PCB Designer with experience in the RS Components and Controls-India industry. The topics covered with hands-on sessions were: ITK introduction, Analog Circuit Explanation with working, PCB Technology and Tool Explanation, Schematic Design Practice, Foot Print Design, Foot Print Transfer and Etching, PCB Drilling, Info Layer, Component Placement, Soldering, Unit Testing, Circuit Integration and Product Testing. The students were able to design and develop PCB board for a product. They were able to print the design on copper clad using toner transfer method followed with few scientific steps and mount all the required electronic components on it with soldering.

Workshop on Internet of Things

A workshop on Internet of Things was conducted in association with NewGen Innovation & Entrepreneurship Development Centre and sponsored by NSTEDB, DST, and Government of India from 9th to 13th July, 2018. The resource persons were Mr. Karthy R-Engineer, SkiFi Labs and Mr. Sandeep-founder and mentor, Engineer's Nook - Mr. Karthy R conducted hands-on sessions on Cloud setting and API key generation, smart irrigation system and water level monitoring system for 2-day. Mr. Sandeep conducted hands-on sessions on introduction to Arduino and its uses, Timers and Interrupts, "Smart Home": Bluetooth controlled home devices and Smart Home via Mobile/DTMF (Dual Tone Multi-Frequency). The students were motivated to develop an application of their interest. They formed ten groups and so were successful in the completion of application. Mr. Sandeep evaluated the applications and best two applications were awarded.

The Nintendo Virtual Boy was the first gaming console to ever use virtual reality technology

Message: Live in reality Not virtual reality

Students' Achievements

Technical Achievements

- Brahma S P of III Semester and Nayana Bhat of V Semester won I place in the 24-hour State Level Hackathon held at KSIT, Bengaluru on 9th and 10th November 2018.
- Jatin Rajpal of III Semester participated and qualified to the second round in the Meshmerize event conducted by IIT Bombay at UVCE Bangalore.
- Hiranmayee S Dixith, Kirthi, Likhita B and Manasa Deshpande of V Semester were finalists in the 24-hour State Level Hackathon at KSIT, Bengaluru on 9th and 10th November 2018.
- Bharath S, Rajat M Jain and Vinay S of III Semester were finalists in the 24-hour State Level Hackathon at KSIT, Bengaluru on 9th and 10th November 2018.
- Krithi and Hiranmayee S Dixith showcased their project "Audiometer" at IEEE CCEM 2018.
- Mithun R, Mohammed Sadiq and Neha Rajeeva showcased their project "P2P Cloud Computing" at IEEE CCEM 2018.

Sports Achievements

- Mahesh Kumar S of III semester was part of the team that won I prize in Y Nagesh Rao Maanay Memorial Throwball Tournament held at BNMIT, Bengaluru.
- Nayana Bhat, Likhita B and Manasa Deshpande of V Semester were part of the team that won I prize in Y Nagesh Rao Maanay Memorial Throwball Tournament held at BNMIT, Bengaluru.
- Nayana Bhat, Likhita B and Manasa Deshpande of V Semester were part of the team that won Runner up in VTU Central Zone Throwball Tournament-2018 held at Vemana Institute of Technology, Bengaluru.

Cultural Achievements

- Akshay Anand of VII Semester has won Gold medal in Instrumental solo (percussion) at 19th Inter-collegiate VTU Youth Festival.
- Manish Y M of VII Semester has won Bronze medal in One Act Play at 19th Inter-collegiate VTU Youth Festival.
- Sumukh Venugopal of VII Semester has won Gold medal in Indian Group Song and Silver medal in Western Group Song at 19th Inter-collegiate VTU Youth Festival.
- Sunidhi G of VII Semester has won Gold medal in Group Folk Dance, Bronze medal in Classical Dance solo and Bronze medal in One Act Play at 19th Inter-collegiate VTU Youth Festival.
- Sudarshan Rao of VII Semester has won Bronze medal in One Act Play at 19th Inter-collegiate VTU Youth Festival.
- Hiranmayee S Dixith of V Semester has won Gold medal in Indian Group Song and Bronze medal in One Act Play at 19th Inter-collegiate VTU Youth Festival.
- Akshay Anand of VII Semester has been awarded the Bharat Ratna MS Subbulakshmi Fellowship for Mrindagam from Shanmukhanandha Sabha Bombay.

Editorial Team

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