

**MANAKULA VINAYAGAR**  
INSTITUTE OF TECHNOLOGY

Accredited by NBA & NAAC 'A' Grade

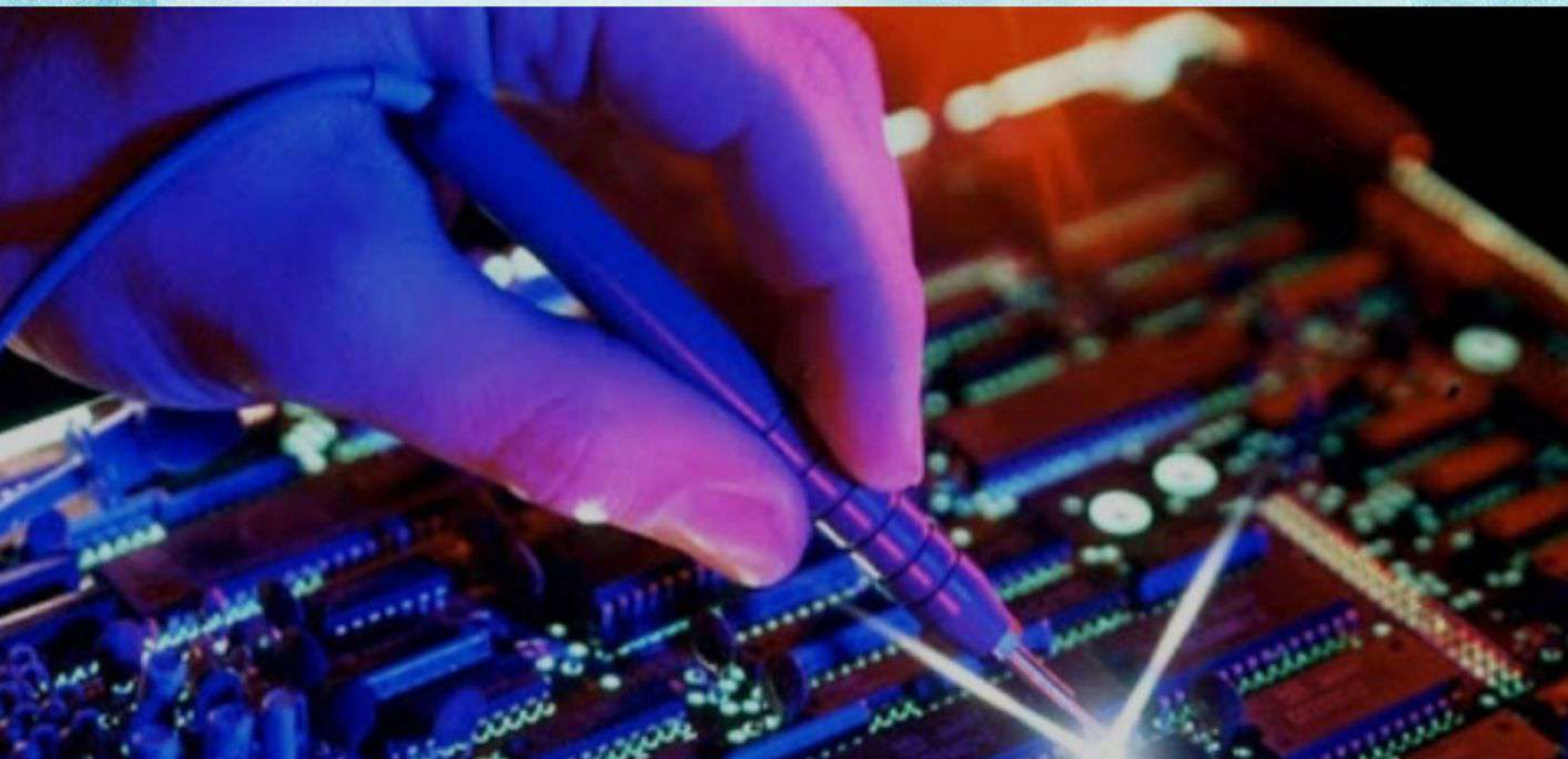


# ELECTROMAG

Volume -9

**DEPARTMENT OF ELECTRONICS  
AND COMMUNICATION  
ENGINEERING**

**MAGAZINE  
2022-2023**





# ABOUT THE DEPARTMENT

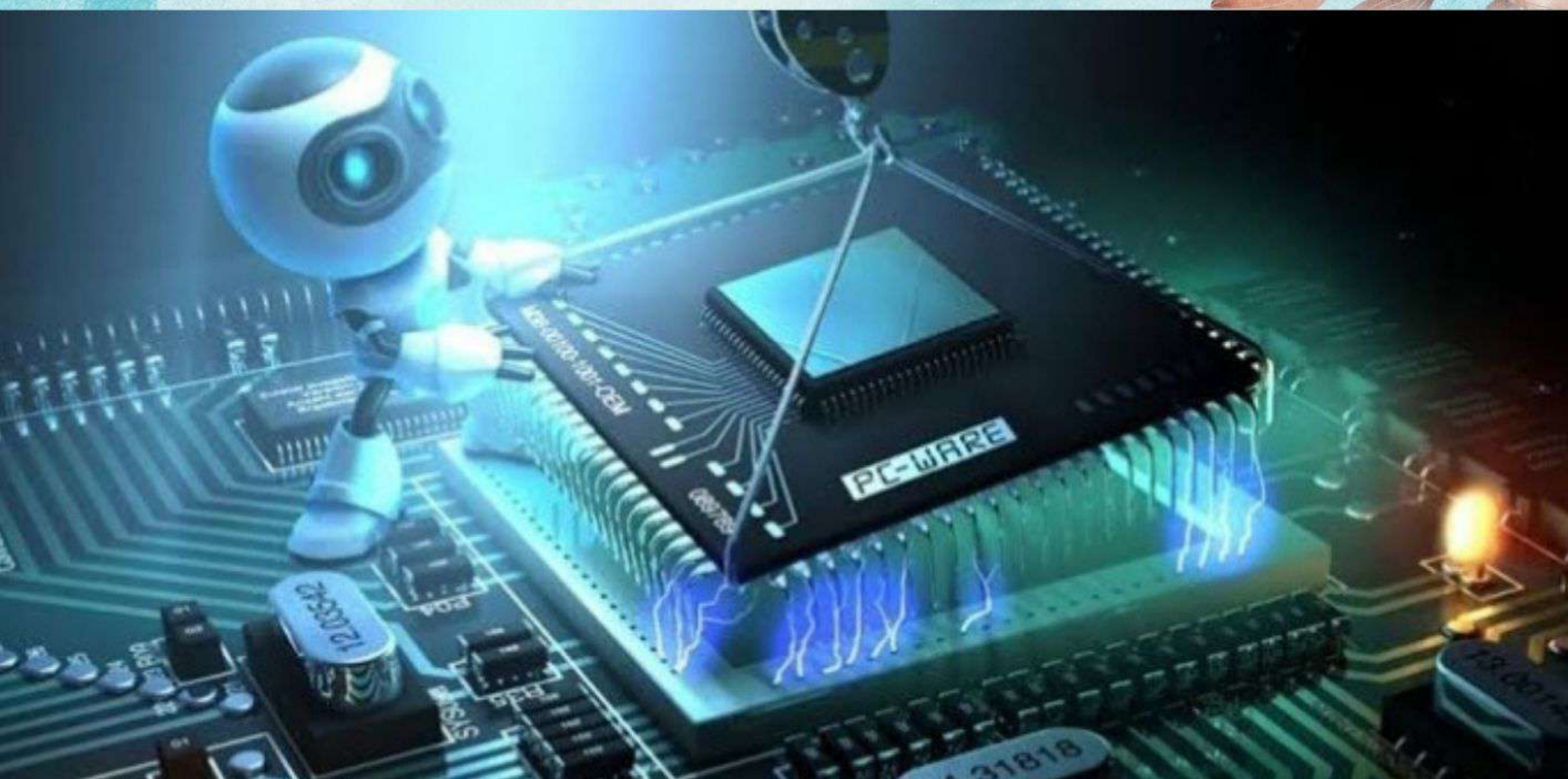
Electronics and Communication Engineering is gaining increasing importance in all works of life. The advancements and technological innovations in electronics are felt in areas as diverse as commercial communications, medicine, defense and day today common man activities. The department places strong emphasis on fundamentals, so that the student is introduced to complex subjects in an interesting and easy manner. The Department imparts technical knowledge in the areas of Semiconductor devices, Design of Electronic circuits, Communication engineering and its applications. To meet the nation's interest in developing the manufacturing electronics industries, the department offers training in various domains to develop an employable engineer.





# ABOUT THE DEPARTMENT

The Department of Electronics and Communication Engineering which was started in the year 2008 offers a UG Programme (B.Tech) in Electronics and Communication Engineering. The B.Tech Electronics and Communication Engineering Programme has been accredited by AICTE and is affiliated to Pondicherry university. The department has a team of committed faculty members who are not only well qualified but are also backed by rich industrial / research / teaching experience. The developments of competency of our students are of utmost importance and various activities are done to enrich the students





# **VISION**

**The department aspires to produce dexterous professionals, competent Researchers and entrepreneurial leaders for the benevolence of the society.**

# **MISSION**

**Department of Electronics and Communication Engineering is committed.**

**Higher Order Thinking: To invoke higher order thinking among the students by means of comprehensive teaching and learning process.**

**Competency: To provide training on cutting-edge technologies to improve the competency of the students.**

**Continuous learning: To promote innovation through providing state of-art facilities and active industry institute interaction.**

**Entrepreneurship: To facilitate the students to improve their leadership and entrepreneurship skills with ethical values.**



# STUDENTS ARTICLE

ARTICLE-1

## Metaverse Technology: Overview, Use Cases, and Future Potential

Virtual Reality (VR) has been one of the most fascinating contributions of the technological boom in the past decade. The metaverse, the most significant emerging tech trend of modern times, is set to elevate this experience to the next level. How about an immersive 3D digital experience that combines multiple virtual and physical worlds? Well, this is exactly what the metaverse promises. The concept is being considered the future iteration of the internet and will enable users to meet, socialize, play games, and work with other users within 3D spaces.

The term "metaverse" was conceptualized by Neal Stephenson in his science fiction novel *Snow Crash*, written in 1992. The novel envisaged that individuals could escape from the real world into a virtual world called "Metaverse" with the help of digital avatars and explore this virtual world to the fullest. Decades later, with the advent of innovative technologies like Augmented Reality (AR), VR, Artificial Intelligence (AI), machine learning, blockchain, etc. it has become possible to convert this fascinating concept into reality. Several brands like Facebook, Microsoft, Nvidia, and Decentraland have started to explore this area over the past couple of years.





# How Does A Metaverse Work?

A metaverse is a virtual, digital 3D universe formed by merging various kinds of virtual spaces. Users can enter this digital universe using their virtual identity in the form of digital avatars and can move across various metaverse spaces for shopping, hanging out, or meeting friends, just as they would in the real world. The only difference is users can enjoy immersive experiences from the comfort of their own homes. Simply put, activities that happen within isolated environments in the real world will now happen virtually, within the metaverse.

## Examples

For example, if a user taking a virtual tour within a metaverse spots a store and shops there via immersive commerce, the order that they place will be delivered to the address provided. Other instances of metaverse experiences include participation in virtual social events, purchasing digital land and building virtual houses, joining fellow viewers of a virtual rock band concert, paying visits to virtual museums to view the latest works of art, and participating in immersive learning through virtual classrooms, etc. Businesses can leverage this technology by carrying out interactions with digital humans for business purposes, like employee onboarding, sales, providing customer services, and many others. Users can also utilize a metaverse for creating, sharing, and trading assets or experiences.



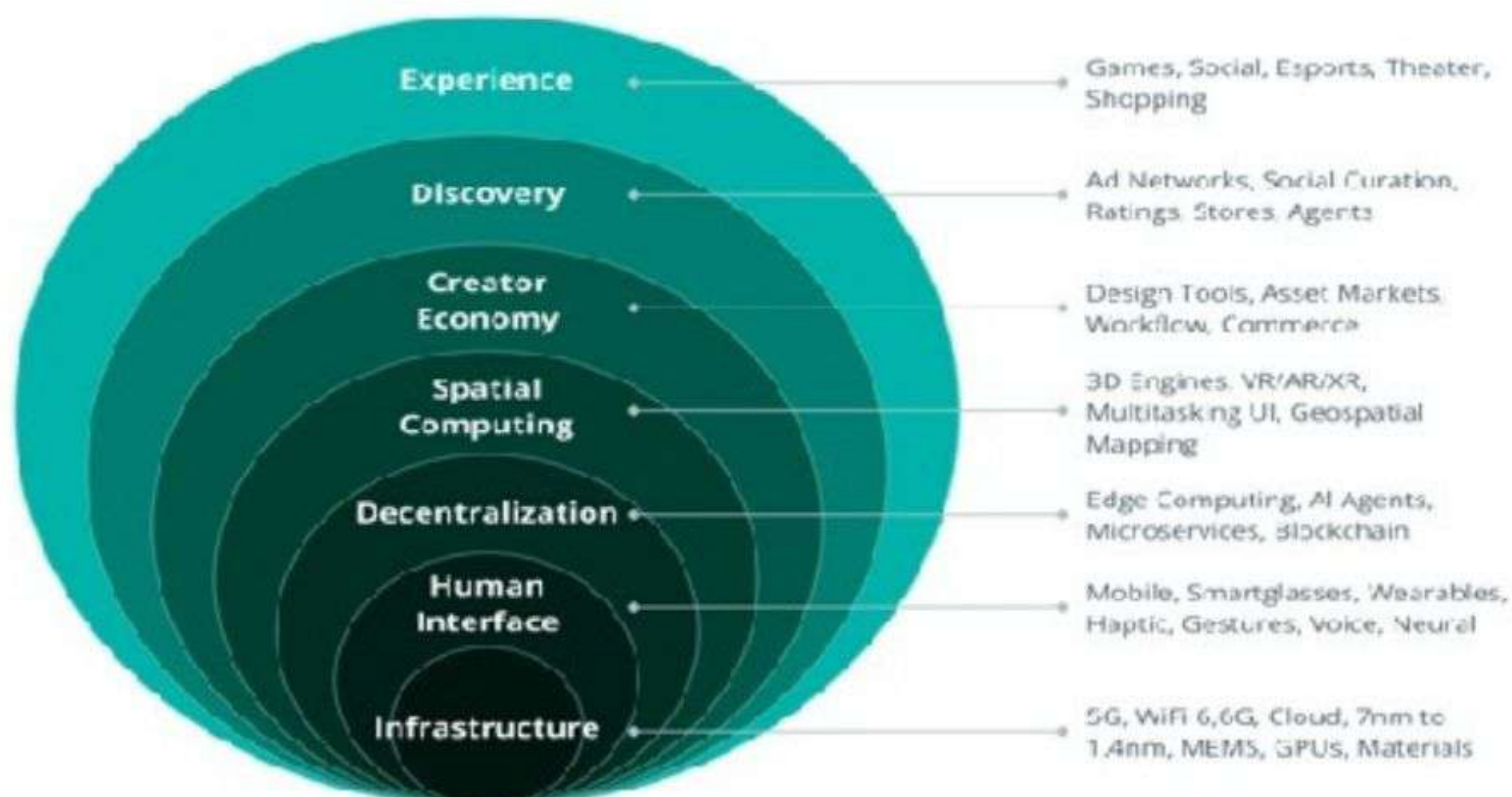


# Technologies That Empower The Metaverse

The functioning of a metaverse requires a combination of several cutting-edge technologies like Virtual Reality, Augmented Reality, Artificial Intelligence, machine learning, blockchain, an AR cloud, Internet of Things (IoT), spatial technologies, head-mounted displays (HMDs), and 3D reconstruction. Apart from these avant-garde technologies, the metaverse will also need the support of software tools, apps, platforms, hardware, and content generated by users.

Blockchain will validate value transfer, credibility, and data storage within a metaverse; AR will enable 3D visualization of objects, interaction in real time, and the merging of the virtual and real worlds; while VR will provide users with a sensory experience like that of physical reality. However, while AR implementation needs only a camera-enabled device, VR requires more expensive equipment like multi-modal screens and HMDs. Metaverse technology is more likely to employ a combination of AR and VR, popularly called Extended Reality (XR). Integration of AI, machine learning, and IoT will facilitate crucial functions like limitless interactions and seamless integrations of data.

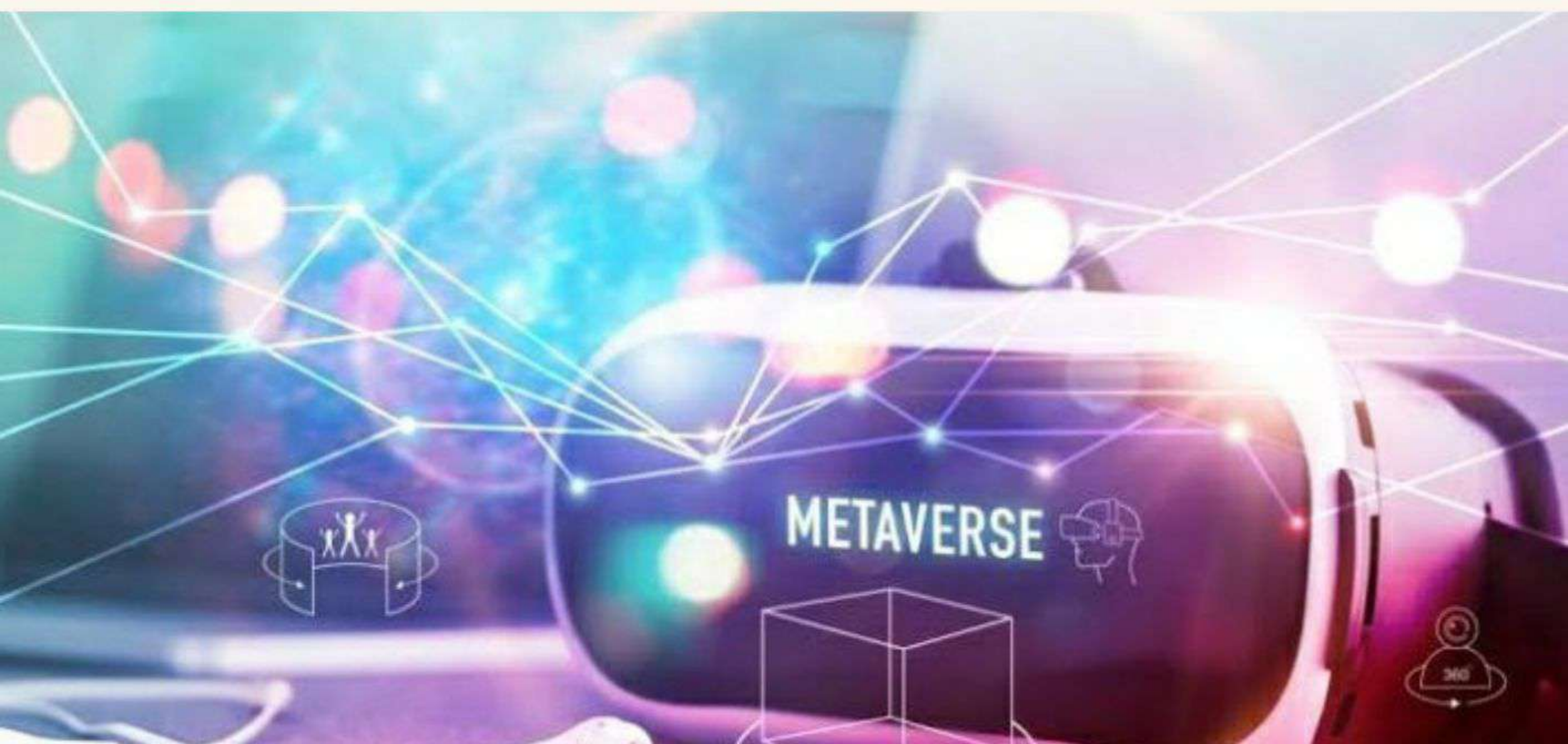
## Seven layers of the metaverse





**3D reconstruction helps in creating virtual spaces that are realistic and look natural, leading to the formation of a digital ecosystem that is almost like the real world. With the help of special 3D cameras, one can render accurate models of objects, buildings, and physical locations. These models are 3D photorealistic. Computers then process the 4K HD photos captured and the 3D spatial data for generating a virtual duplicate or digital twin of the real physical world that can be experienced by the users.**

**Challenges Likely To Arise While Implementing A Metaverse**  
Tech experts have predicted certain challenges that are likely to be encountered by a metaverse. The major challenges include controlling the privacy of users and businesses and authenticating the identity of individuals who are moving around the virtual world disguised as digital avatars. As a result, unscrupulous persons or even bots can explore the metaverse under the disguise of an individual, and scam other users or damage the reputation of business brands. Also, the usage of AR and VR with the camera on can lead to data breaches of personal information.





## Concluding Thoughts

The metaverse is a collective, virtual, open space developed by integrating virtually enhanced digital, as well as physical, reality, known for offering immersive experiences to users. Although this concept is in its infancy and has a long way to go before reaching stability, it possesses an immense potential to disrupt the AR/VR experience altogether. Several big players including Facebook are investing heavily and working relentlessly to make this concept a success in the coming years. The metaverse is expected to offer decentralized, persistent, interoperable, and collaborative business opportunities and models that will help companies to elevate digital business to unprecedented heights.

By:  
NANDHINI. T  
II ECE-A





# STUDENTS ARTICLE

## ARTICLE-2

### 5G - TECHNOLOGIES AND ITS APPLICATIONS

5G Technology stands for Fifth Generation, which is the next generation of wireless network technology, designed to broaden the reach of mobile technology beyond LTE's capabilities. It is the most recent version of cellular technology. 5G is distinguished by three key characteristics: faster speeds, lower latency, and the ability to connect many devices at the same time. Because of higher accessible bandwidth and new antenna technology, 5G enables a significant increase in data quantities sent through wireless systems. mmWave (millimeter-wave) technology powers these 5G networks. 5G technology will change the way cell phones are used in areas with very high bandwidth, such as 1Gbps or more. People will encounter unprecedented levels of call volume and data transmission when 5G is pushed over a VoIP-enabled device. 5G technology will provide services such as ubiquitous networks, radio resource management, high altitude stratospheric platform station (HAPS) systems, and so on.

5G wireless technology is a significant advancement over previous generations. It solves all prior disadvantages, such as a lack of coverage, lack of performance at cell edges, and dropped calls. 5G promises better coverage and connectivity.





# How 5G Works

The introduction of 5G technology has resulted in advancements in network design. The 5G New Radio, hailed as the worldwide standard for a better 5G wireless air interface, includes spectrums that were previously unutilized in 4G. Massive MIMO (multiple inputs, multiple outputs) technologies are used for the new antennas, allowing many receivers and transmitters to transfer massive amounts of data at the same time.

However, 5G technology is not limited to New Radio. It strengthens a convergent and heterogeneous network that combines unlicensed and licensed wireless technologies. This increases the level of bandwidth available to users.

5G enhances digital experiences through machine-learning (ML)-aided automation. The requirement for fractions of second response times (for example, self-driving vehicles) pushes 5G networks to create automation with ML and, in the long run, artificial intelligence (AI) and deep learning (DL). Active management and automated service and traffic provisioning improve the connected experience while also reducing infrastructure expenses.





## Some of the significant applications are

- It will make unified global standard for all.
- Network availability will be everywhere and will facilitate people to use their computer and such kind of mobile devices anywhere anytime.
- Because of the IPv6 technology, visiting care of mobile IP address will be assigned as per the connected network and geographical position.
- Its application will make world real Wi Fi zone. Its cognitive radio technology will facilitate different version of radio technologies to share the same spectrum efficiently.
- Its application will facilitate people to avail radio signal at higher altitude as well.

By:  
M. SUBIKSHA  
II ECE-A





*Poetry*

*Poems in Tamil and  
English*





நீல நிறத்தை உடைய கார்  
முகில் வண்ணன்!  
குழல் வாசிப்பதில் மன்னன்!  
வெண்ணெய் திருடுவதில்  
சிறந்தவன்!  
குறும்பு செய்வதில் கள்ளன்!  
அனைத்து லீலைகளையும்  
புரியும் ஓர் அழகிய அதிசயம்.....  
தாமரை மலர் போன்ற  
பாதத்தினை வணங்க  
வேண்டும்... இனிமையான  
குழலோசையை நெஞ்சில்  
பாய்க்க வேண்டும்..  
இவ்வனைத்தும் நிகழ  
வாய்ப்புகள் தருவாயா  
கிருஷ்ணா?

- ஜெ. சி .சுஜி  
(2nd year, ECE)



## ***Orange Magic...***

Sitting in the sky between the clouds  
You are looking at me, Ready to wave a goodbye...  
The way you blur my vision, When all I want is to capture you  
The after effects of looking at the Sun!  
The whole city is gonna turn on it's lights  
But I'm gonna lose my light  
I know you'll find me sooner  
Yet I wanna be trapped in this moment, With you and me  
The moment where all I see is the Orange Magic Of Yours!

S.K. Nevetha  
ECE - A (II Year)





## ***The Blue Night***

Under the sapphire canopy, the night unfurls, Aesthetic whispers, like silk, softly swirls. Stars, like diamonds, stud the velvet sky, As the moon paints dreams in hues that sigh.

Midnight's palette, a masterpiece divine, Ephemeral beauty in every star's shine. Shadows and secrets in the moonlit waltz, An aesthetic dance in the night's exalting vaults.

D. Sherllin Iswarya  
ECE - A (II Year)



# ***The Replay Button***

An hesitant start

With endless doubts & dislikes

But it all ended when we got tangled in the tales of academics & people

A place where all our fears started & ended at the same time

We studied less, But learnt more

More familiar faces that holds the best place in our hearts

Who knows that we were crafting memories while we were busy writing assignments?

We were slowly walking towards the end of a beautiful journey while we were enjoying our semester holidays

Time passes like a magic

So, like this rhyming less poem.... Be rhyming less, Be crazy

Get the best out of you

Show off your talents and watch people crave for the things you have

Not all hesitant beginnings has a disastrous endings

Some may end with Graduation and friends for a lifetime

This beautiful journey may end

But we'll have our own Replay Buttons to play our very own college days of our lives!!

S.K. Nevetha  
ECE - A (II Year)

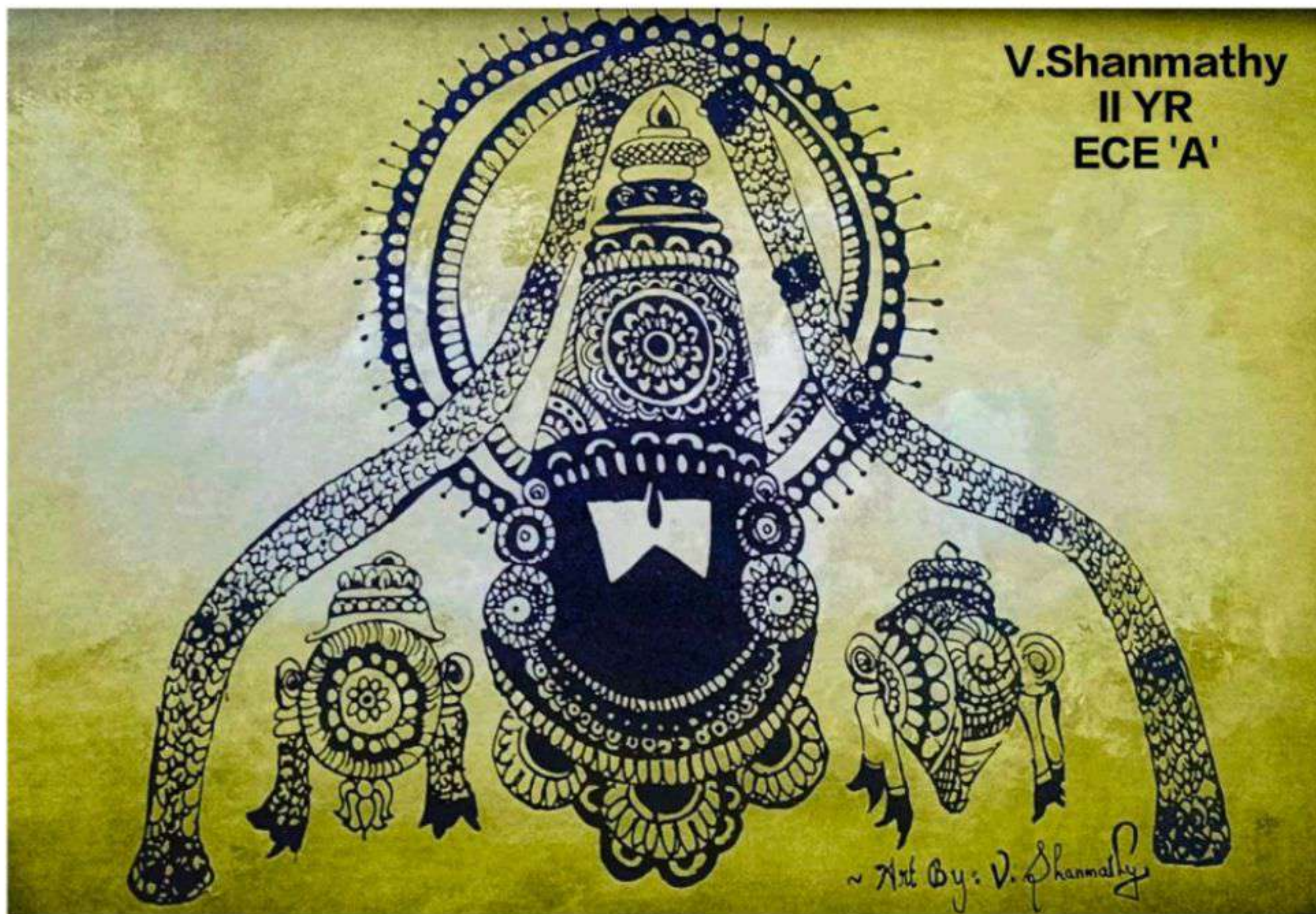




# Talent Works



## Paintings



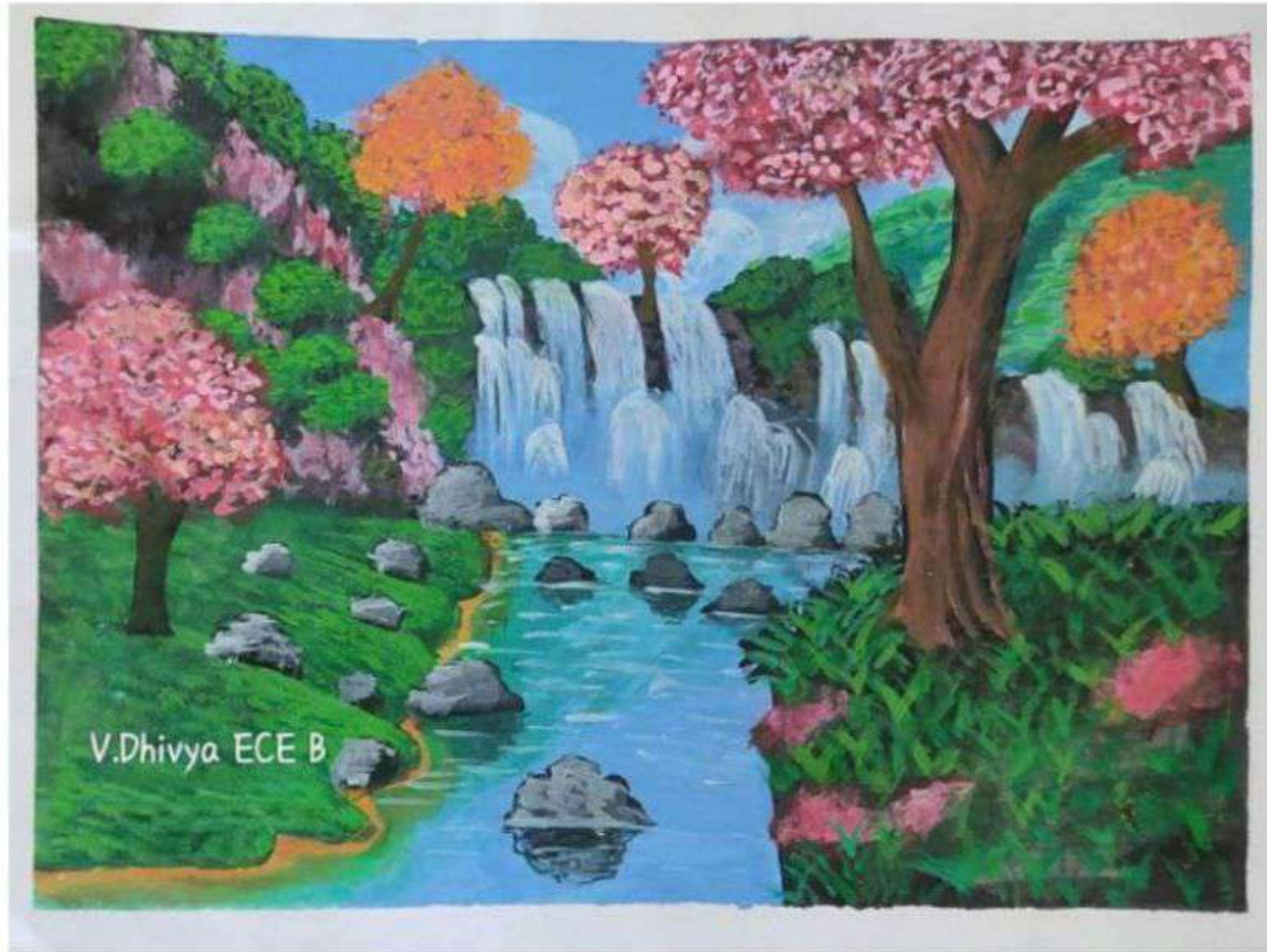
*Shanmathy. V*  
*2nd year ECE-A*







# Paintings



Dhivya. V  
2nd year ECE-B





# Paintings



Thanuja. R  
2nd year ECE-A







# Paintings



Kapilnathan. G  
2nd year ECE-A





# Paintings



Nandhini. T  
2nd year ECE-A





# Paintings



Vinoth. K  
2nd year ECE-B





# Paintings



Monika. A  
2nd year ECE-CA



# Crafts



*Monika. CA*  
*2nd year ECE-CA*



# Crafts



Mandhini. T  
2nd year ECE-CA



## ACTIVITIES AND ACHIEVEMENTS



**Final year students have participated in AIM THE PUDUCHERRY CHAPTER conducted and sponsored by Atal Incubation Centre-PTU**



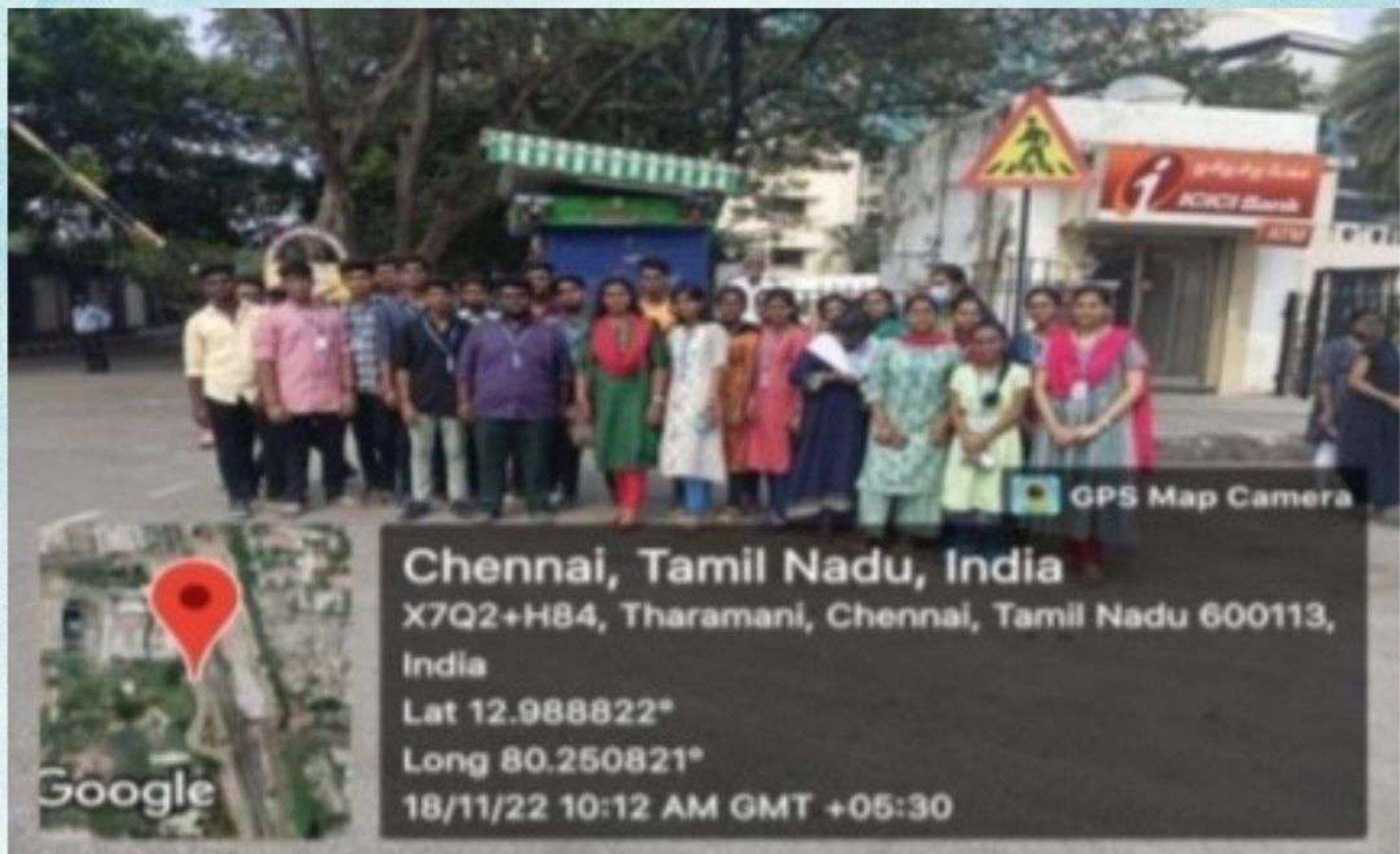
**Hands-On Sensor Based Products was displayed and explained in R&D Lab on 30th September 2022.**



**HANDS-ON SENSOR BASED PLC PRODUCTS (30/09/2022)**



**Hands-On Sensor Based Products was displayed and explained in R&D Lab on 30th September 2022.**



**II year ECE B sec students went to Madras Science & Industrial Resources" #40, 2nd Floor, 2nd St, Padmavathy Nagar, Chromepet, Chennai on 18.11.2022**





PEC-ATAL Incubation center conducted an exhibition in Thanthai Periyar Girls Higher Secondary School on 23.11.2022 in that our students V. Githendra, G. Jayachandran, Chandru, and Ashwinkumar Presented and given the project to school:

1. Eye paralyses
2. Peltier based insulin carrier
3. Temperature Monitoring Boiler



II year ECE A sec Students went to industrial visit for CODOID, Tidal park, Chennai on 18.11.2022





**Mr.V.Rajesh,Mr.K.Kumaran,Mr.Ramassamy,Mrs.Vidya and Mr.Gowshammed Attended the ICT academy event in the topic of “ THE GLOBAL IMPACT OF 5G IN THE TELECOM AND ICT SECTOR” on 21st December 2022.**



**ECE Students have participated in the NSS camp organized by Manakula Vinayagar institute of technology ,on 6th January 2023**





**Dr.S.Arunmozhi, V.Rajesh, S.Baskaran visited Electronics Expo in south Chennai trade center on 13th Feb 2023**



**Mr.E.Ramassamy arranged industrial visit for III Yr students to ISRO on 17th March 2023.**





**On the women's day celebration Women's Empowerment Cell awards the entire MVIT women faculty on 8th March 2023.**







**On the women's day celebration Women's Empowerment Cell awards the entire MVIT women faculty on 8th March 2023.**



**Project Expo was conducted for the final year students on 26th May 2023.**





ECE department conduct Bridge course for the first year department students from 21-27 July 2023

**MANAKULA VINAYAGAR**  
**INSTITUTE OF TECHNOLOGY**  
Approved by the AICTE, New Delhi - Affiliated to Pondicherry University  
Accredited by NAAC, WVA, SI, UGC and UBA (National Board of Accreditation)  
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**VEDIC MATHS**

**COURSE ID: VEDIC MATHS**

SESSION DATE AND TIME

17 to 21 July 2023  
Everyday : 10.00 to 11.00 AM

Course facilitator  
Dr.S.Arunmozhi  
Professor- ECE

Educate Empower Excel

Dr.S.Arunmozhi conduct one week induction course in the topic of “VEDIC MATHS” for pre- first year students, from 17- 21 july 2023.



## GLIMPSE OF THE YEAR MEMORY MOMENTS



Mr.Kumaran has attended HeadStart season 8 in Virtusa on 29th Sep 2022, Hyderabad.

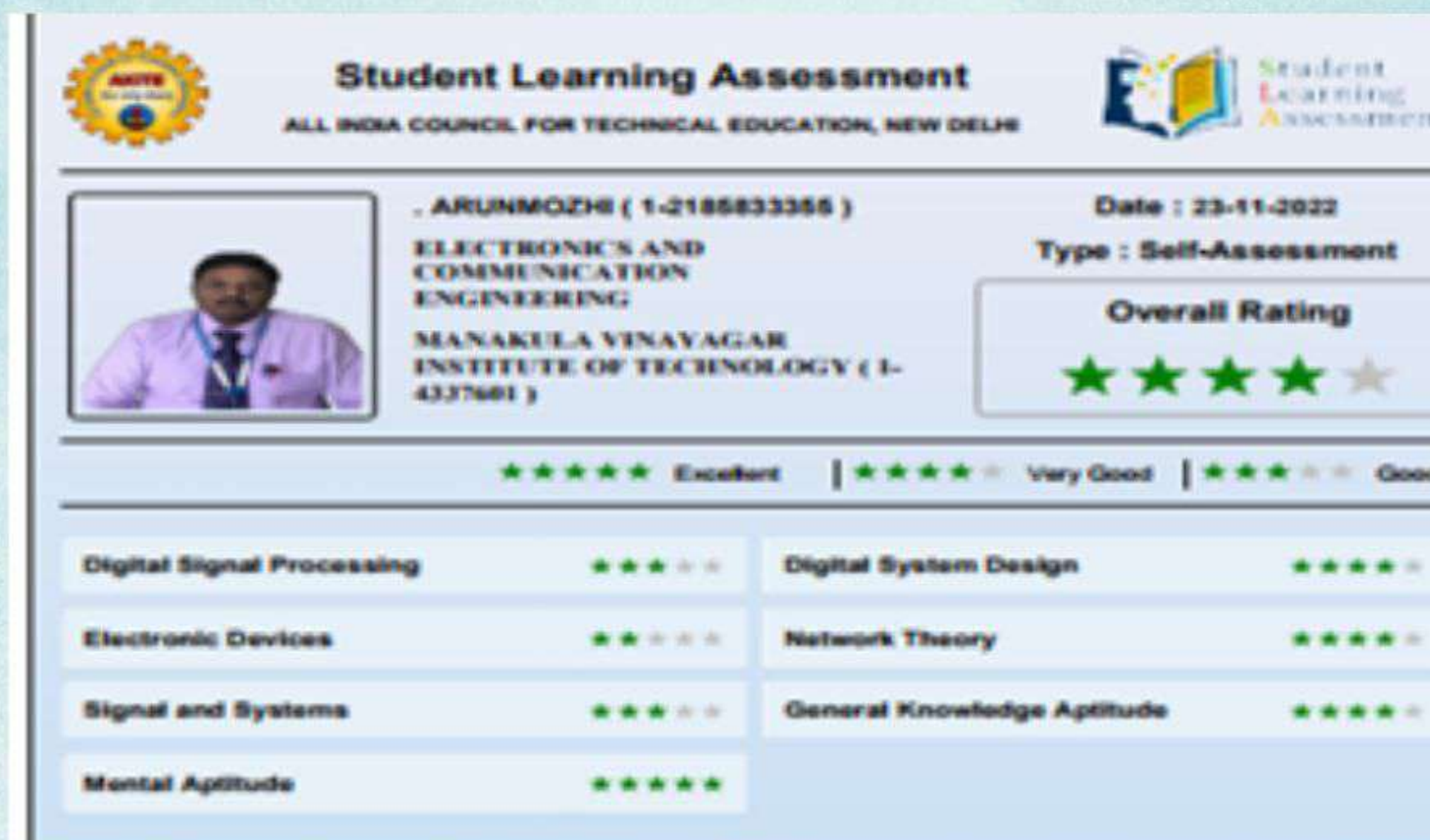


S.Vishnu from III Year B Sec have won first prize in Technical-Circuit Debugging in University College of Engineering, Tindivanam on 23rd October 2022.





K.Vinoth from II year B sec has awarded as Dream student by the organization Dr.Abdul kalam education and nature foundation on 15th October 2022



Dr. S. Arunmozhi has got a certificate after completing the test in AICTE PRAKH





Memorandum of understanding with Praya labs – 23/11/2023



K.V Sreenidhi from II Year attended the VI Annual HR Conference held on 18th December 2022





**Dr. Shankar has completed the training program under “National Intellectual Property Awareness Mission” on 16th December 2022**



**IV Year student have won inter college Cricket tournament “Sri Ambrose Trophy” conducted by ECE Department, on 4th January 2023.**



Application Details	
APPLICATION NUMBER	2023M1001480
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	04/01/2023
APPLICANT NAME	1. Mrs. D. Mary Getsy 2. Dr. Raju Rajan 3. Mrs. Anitha S. Sathy 4. Mrs. Zahana Tabassum 5. Dr. A. Pragna Kirubakaran 6. Prof. Dr. Kamal Aravind 7. Dr. S. Sridharan 8. Mr. Rakesh P 9. Mr. Mahendra Sathya 10. Mrs. A. Indhuja 11. Prof. Dr. P. Rajanathan
TITLE OF INVENTION	Remote Aquatic Environmental Monitoring using Internet of Things
FIELD OF INVENTION	MECHANICAL ENGINEERING
E-MAIL, IAS Per Record	marygetsy@mit.edu.in
ADDITIONAL E-MAIL, IAS Per Record	
E-MAIL, SUPPLEMENTAL	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (IIS 11A)	20/01/2023

**D.Marygetsy published patent in the topic of “Remote Aquatic Environment Monitoring using Internet of Things” on 20th Jan 2023**



**E.RAMASSAMY organized STELLAR’S TROPHY (A SPORTS EVENT) for 32 Teams From Various Colleges on 24th & 25th Feb 2023.**





**II year and III year students have pitched their ideas in the pitching event conducted in manakula vinayagar institute of technology on 22nd Feb 2023.**



**II year students have gone through the implant training in “Hindustan Unilever Ltd” from 22nd to 28th Feb 2023.**





**MoU was signed with “KAIVALYA TECH SERVICES PVT LTD” on 20th March 2023.**



**MoU was signed with “VAYUSASTRA AEROSPACE PVT LTD” on 19th march 2023.**



# **EDITORIAL MEMBERS**

<b>YUVAN PRABHU. R</b>	<b>IV YEAR ECE A</b>
<b>SINDUJA</b>	<b>IV YEAR ECE B</b>
<b>ABINESH.O.G</b>	<b>III YEAR ECE A</b>
<b>DEEPIKA.S</b>	<b>III YEAR ECE A</b>
<b>NAVIN KUMAR. K</b>	<b>III YEAR ECE B</b>
<b>NANDHINI .T</b>	<b>II YEAR ECE A</b>
<b>SUBIKSHA. M</b>	<b>II YEAR ECE A</b>
<b>KIRUTHI VENDAN. M</b>	<b>II YEAR ECE A</b>
<b>VINOTH. K</b>	<b>II YEAR ECE B</b>
<b>DHIVYA. V</b>	<b>II YEAR ECE B</b>

## **STAFF INCHARGE**

**Dr.A.SHANKAR AP/ECE**

## **CONTACT US**

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**Professor & Head,**

**Department of Electronics and Communication Engineering,  
Manakula Vinayagar Institute of Technology  
Kalitheerthalkuppam, Puducherry – 605 107**

