AllenTronica

Issue : 01
Feb. 2022

4th Rank in UP
Private Engineering Institute by the Education World India 2020-21

Top Engineering Institute in Kanpur in the category of PLACEMENTS
THE TIMES GROUP
by Times - All India Annual Engineering Institutes Ranking Survey 2021

From Director's Desk

Over the years, 'Electronics' and 'Communication' have crept in our lives like never before. The future of technology advancements is likely to depend on the developments in the Electronics & Communication Engineering field.

I am happy to note that the Electronics & Communication Engineering department at AIT has come up with this publication comprising the latest developments in the field of Electronics & Communication Engineering. My congratulations to the team!

Prof. (Dr.) Bhagwan Jagwani
Campus Director
Allenhouse Group of Institutions

From Director's Desk

Electronics & Communication Engineering is a very alluring career for the student community. There is an unquestionable paradigm shift in the needs of companies, now they want employees who are expert in handling Interpersonal and Intrapersonal issues at work. We believe in lifelong learning and training of students who may contribute to society.

I congratulate the department of ECE for putting in the right effort to develop the hard skills as well as soft skills of the students in their department.

Dr. Rubby Chawla
Director
Allenhouse Group of Institutions

About AIT

Allenhouse Institute of Technology, Kanpur approved by AICTE and affiliated to Dr. A.P.J.Abdul Kalam Technical University, Uttar Pradesh, Lucknow was established in the year 2009 with a vision to be pioneer in technical education, producing graduates with professional skills acknowledged across the world. Allenhouse Institute of Technology has consistently thriven to achieve its objective of inculcating thorough knowledge and encouraging innovative application of technology along with entrepreneurship development.

About ECE

Allenhouse Institute of Technology offers a Bachelor of Technology degree in Electronics & Communication with an intake of 30 Students. It is an engineering discipline that has contributed remarkably to evolution of mankind. This discipline aims at imparting requisite fundamentals of electronics and communication. The course offers a study that engages students in projects and activities that provide them with profound understanding and implementation of principles of electronics and communication. The students learn about subjects such as digital electronics and logic design, fundamentals of communication engineering electronics circuits, signals and systems, power electronics, applied electromagnetic theory, integrated circuits, VLSA, control systems and computer architecture.

The department of electronics and communication has been playing a vital role in producing engineers of highest calibre. The infrastructure and lab facilities are upgrading from time to time, and providing adequate opportunities for students to learn and innovate technologies. The department has assisted in keeping pace with ever emerging technology. This inclination towards evolution encourages students towards research and development along with practical knowledge and workshops that they require.

Director's AIT Message

This is indeed a matter of great pride and happiness that our ECE department is publishing a newsletter in which the advancements in the field of electronics, telecommunication, and other connected domains shall be showcased. I am sure that the departmental curricular as well as co-curricular and extra-curricular activities will get noticed by the students and other stakeholders.

It is expected that the INDIA SEMICONDUCTOR MISSION (ISM) will change the complete employment scenario of electronics engineering graduates. This newsletter will provide the platform for exposing the merits and academic achievements of student and faculty members of the department. I extend my best wishes to the whole team, and hope this publication will get success in achieving its goal.

Prof. (Dr.) Somendra Shukla
Director
Allenhouse Institute of Technology

Editor's Message :

Warm greetings to all the readers of AllenTronica!!!

We are very pleased to share with you the 1st edition of our newsletter.

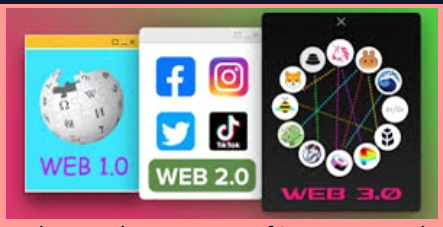
On this platform students and faculty can participate and share their ideas and views on various topics. It also contains the recent development and activities taking place in the domain of Electronics & Communication Engineering. In these pages you will also find much news related to diverse activities from the faculty members and students.

I would like to thank all the faculty members and students who have given their contribution in bringing this newsletter to the reality. I also thank to the members of editorial board for their unfathomable contributions.

I extend my deepest gratitude to the Campus Director (Allenhouse Group of Institutions) Prof. (Dr.) Bhagwan Jagwani, Director (Allenhouse Group of Institutions) Dr. Rubby Chawla and Director (Allenhouse Institute of Technology) Prof. (Dr.) Somendra Shukla for their continuous guidance and suggestions to bring the best of our efforts.

Ms. Ankita Bajpai
Assistant Professor - ECE

Web 3.0



Welcome the new age of internet - web 3.0 that would make the web world more intelligent with near-human-like intelligence by using the power of Artificial Intelligence (AI) systems that can run many types of smart programs for effective and accurate completion of the task.

We all are aware about web 1.0 and web 2.0. We are living in the information age of 2.0. Very soon, the whole world will enter the age of web 3.0. Block Chain technology is the backbone of this new emerging net world. Recent technological advancement in the communication engineering changes our life style from physical world to imaginary world, the Metaverse is the live example. Popularity of Metaverse itself demonstrate the future of web 3.0.

In the second generation of web world i.e. web 2.0, Internet has turned its roll as more social and connecting people in the world. This stage of internet encouraged us to socially connect with each other in the area of culture, tradition and our life style. There are so many platforms available to fulfill the concept of VASUDHAIV KUTUMBKAM. There is also a non-avoidable drawback of web 2.0, which is our valuable data. Web 2.0 provided a new type of wealth – a huge data. Social networking sites share these data to different marketing companies.

These huge data and contents are mainly controlled by a many group of tech companies including Meta, Amazon, Apple, Google and Microsoft in the current Web 2.0 stage. This is the cause of creating privacy issues and users are thinking that someone stolen their freedom over their business, personal or financial data as we have to accept all the terms and conditions to properly use the web services offered by these giant companies.

The Web 3.0 definition can be expanded as follows: The interconnected data will be controlled in a decentralized way, which would be a big leap forward to our present generation of the web world (Web 2.0), where almost all the data is stored in a centralized way.

Furthermore, users and computer devices will be able to communicate with data. But for this to be happened, programs need to understand the message content both conceptually and contextually. With this in mind, the two cornerstones of Web 3.0 are semantic web and artificial intelligence (AI).

Mr. Shivakant Pandey
Assistant Professor - ECE

Direct solar rechargeable battries

Researchers have devised a method to directly recharge batteries using solar energy to reduce reliance on electricity for battery charging.

When the stored energy in lithium-ion batteries depletes, they must be recharged by connecting them to an external electric power supply via a charger.

Scientists have been looking on sustainable ways to recharge rechargeable batteries in order to reduce reliance on electricity generated from non-renewable energy sources like coal.

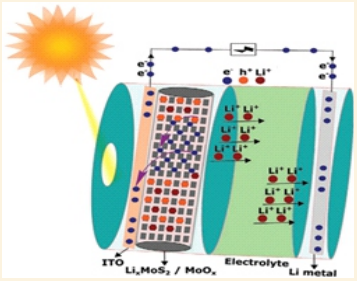
A team of scientists from the Tata Institute of Fundamental Research have developed a small lithium-ion battery using photosensitive materials that can be recharged directly with sun light.

Solar energy was converted into electrical energy using photovoltaic cells. The battery's stored energy was then used to power electrical devices.

To minimise any losses during energy transfer, corrosion owing to organic electrolytes, and other issues, photosensitive materials that can integrate lithium were used, resulting in a leak-proof, efficient solar battery.

In most of the solar batteries, one of the electrodes is physically mixed with a stabilising component to drive electron flow across the battery. However, this limits the most efficient use of surface area.

To circumvent this, the researchers made a single electrode out of a heterostructure of photosensitive MoS2

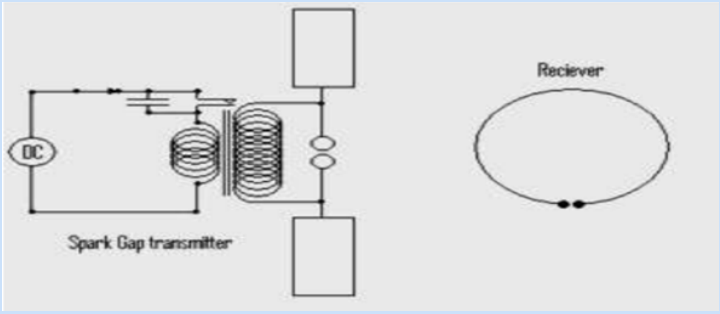


(molybdenum disulphide) and MoOx (molybdenum oxide). The electrode allowed for larger surface area to absorb solar energy because it had a heterostructure with MoS2 and MoOx fused together. When light rays struck the electrode, photosensitive MoS2 produced electrons while simultaneously creating holes. While transporting electrons to the battery circuit, MoOx kept electrons and holes apart.

Mr. Abhishek Dwivedi
Assistant Professor - ECE

Heinrich Hertz's role in wave propagation and Maxwell's theory

Heinrich Hertz, who proved the reality of electromagnetic waves predicted by James Clerk Maxwell, died in 1864 at the age of 36, following a long illness. The International Electrotechnical Commission (IEC) designated the hertz (Hz) as the frequency unit in 1930. In the United States, the Hertz, along with other SI units, replaced cycles per second as part of a partial step towards metrification.



To set the stage, James Clerk Maxwell proposed the existence of electromagnetic waves based on theoretical considerations. He predicted that electromagnetic fields propagate through space at the speed of light in Dynamical Theory of the Electromagnetic Field (1865). He defined electromagnetic energy as waves, with a luminiferous medium acting as a carrier, similar to how air carries sound waves. Maxwell believed correctly that light is a similar wave phenomenon consisting of vibrations of the same medium albeit at a different frequency.

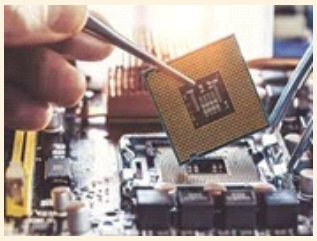
Maxwell's research was based on Michael Faraday's work from a few years before. Maxwell's claimed that electromagnetic energy, including light, is made up of waves travelling across space was totally theoretical, based on equations, he found. No other electromagnetic energy had ever been detected moving through space in waves other than light.

Despite the widespread acceptance of Maxwell's work, experimental evidence was still lacking in 1885. Hertz finally devised an experiment in 1887 that proved Maxwell's theory of wave propagation. There was a transmitter and a receiver, but no direct electrical connection between them.

Mr. Sunil Kumar Dubey
Assistant Professor - ECE

India aims to be electronic manufacturing hub in next 5 years.

Ashwini Vaishnav (Union Minister for Electronics & Information Technology) said that the government is keen to make India a USD 250 Billion electronic manufacturing hub in the next five years. He explains the whole scenario by the following points:-



The minister announces this in the event celebrated by the ministry of electronics and information technology named as Azadi ka Digital Mahotsav and he also expresses happiness over the electronic manufacturing industry who assures the revenue of USD 300 billion by 2025-26.

According to the review report of ministry there may be 45 percent chances to achieve this target as we are already leading in the field of telecom. Our 5G Stack will be the first virtualized stack in the world. So, now we can think on the manufacturing at a different scale because the world will move towards the ecosystem where our companies will manage telecom network across the world.

The vision of our PM Narendra Modi is to make India a big hub of electronics manufacturing. We have reached to USD 75 billions and have a goal to reach USD 250 billions in the next 5 years.

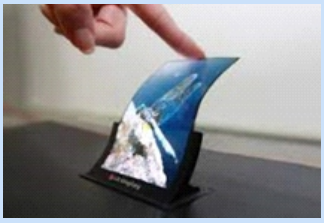
For making this vision to reality, the government is stared to work on this as well.

Shubham Singh
EC 2nd Year

OLED – An Inflexible Technology

Organic light emitting diode (OLED) is one of the new and trending technologies in the era of electronics that is basically an advanced version of LED technology which is used to create a digital displays, television display, monitors, smart phones displays and many more.

OLED provides a better picture view, foldable and transparent display. Basically, OLED has a quality of images or brightness better than Normal LED. OLED is pioneered by Steven Van Slyke and Ching Wan Tang. The LG was the first company that started making an OLED TVs in 2018. LG company states that an OLED TV has 30000 hours of lifespan The first practical of OLED device was built at Eastman Kodak in 1987. OLED has also a much faster response than LCD. It responses 1000 time faster than an LCD. OLED also has some disadvantages such as power consumption. An OLED uses more than 300% power to display an image with white background and it can also be instantly damaged by water. The flexibility of OLED allows us to roll to roll manufacturing



Himahu Raj Valecha
ECE 1st Year

INDIAN SPACE ASSOCIATION

We all know that INDIA is making progress in every field. It shows that Indians have the potential to surpass any country. As we know that recently, the Prime Minister has launched the INDIAN SPACE ASSOCIATION (ISPA) through video conferencing and he also said that it will act as a SINGLE-WINDOW and INDEPENDENT AGENCY on the matters that are related to space technology. ISPA will be represented by leading domestic and global corporations which have advanced capabilities in space and satellite technologies.

It will also work to build the connections with the other countries for the Indian space industry to bring and invest the advance technologies to create more high performance gadgets and devices, so that the accuracy can be increased in every way.

The main moto of ISPA is to increase the market share of the INDIAN SPACE ECONOMY from 2 Billion $ to 10 Billion $.

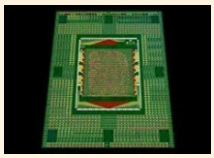
Many private sector companies are taking an interest in India's Space Domain, with space based communication networks.

It will be headed by retired Lieutenant General A K BHATT as the Director-General and Jayant Patil, Senior executive vice president, defence, L&T(Larson & Toubro)-NxT, will serve as the chairperson.

Anshul Kumar
ECE-2nd Year

TURNING A NANOTUBE INTO A TINY TRANSISTOR

Scientists created a tiny transistor from a carbon nanotube (CNT) using a transmission electron microscope. It was developed by a team of researchers from Japan, China, Russia and Australia, led by Professor Dmitri Goldberg, who had been working on it for past five years. The transistor is 25000 times smaller than the width of a human hair.



It was created by applying a force and low voltage simultaneously, which heated a CNT made up of a few layers until outer tube shells separated leaving just a single-layer nanotube. This caused changes in its chirality along sections of the nanotube causing metallic-to-semiconducting transitions. Then a semiconducting nanotube channel was covalently bonded to the metallic nanotube source and drain regions. This CNT intramolecular transistor had channel lengths as short as 2.8 nanometres.

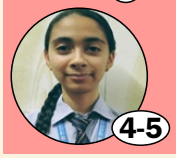
This discovery, although not practical for mass production of tiny transistors, shows a new and innovative fabrication principle and opens up a new path of using thermomechanical treatments of nanotubes for making small transistors with desired characteristics

Samrah Rizwan
ECE 1st Year

Technical Achievements

Mr. Ashmal Aizaz from EC 4th year appreciated as **Allen Achiever** for his diligence and dedication for **outstanding achievements** and also has successfully completed **Network Essential Course from CISCO.**

Mr. Suyesh Kumar of EC final year secured 3rd position in Innovative Idea contest organized in **Artificial Intelligence & Machine Learning** and **Deep Learning** and also appreciated as **Allen Achiever** for his diligence and dedication for outstanding achievements in academics.



1.Ms. Poonam Bhengra, 2.Ms. Shivani, 3.Ms. Khushi Chaurasia, 4.Ms. Simranjeet Kaur from EC 3rd year has participated in **Toycathon 2021.5.Ms. Simranjeet Kaur** from EC 3rd year has *participated in* **One District One Product (ODOP) pilot Hackathon 2021.**

PUZZLE

Find and circle all of the Electronics related terms that are hidden in the grid. The remaining letters spell the name of a common electronic component.

A N A L O G L T I N N I N G R N Y
R E W O P C A P A C I T O R E O T
E I E D O R T C E L E R D A D R I
C P T W G S A H C T E A I M L T C
N O T M I N T A R V I N O P O C I
A S A R O R T C A O R S D E S E R
D I W D E H E C A O T I E R T L T
E T E I O S U M T T N S O E T E C
P I N D T U I C R E N T I C I L E
M V E O M C U S G O A O I R A N L
I E C T C D H A T L F R C T Y F E
D P U U N I T E U A C S I F A H S
A B I O R I L S S U N G N R L L T
E G C H V R N I I M I C A A L U D
L I O E C I E T S D H D E E R D X
I N D U C T A N C E S O C G A T E
E G A T L O V E T R O T S I S E R

AMPERE, ANALOG, ANODE, CAPACITOR, CATHODE, CELLS, CHIP, CIRCUIT, CONDUCTOR, CONTACTS, CURRENT, DIGITAL, DIODE, ELECTRICITY, ELECTRODE, ELECTRON, FARADS, FLUX, GATE, IMPEDANCE, INDUCTANCE, INSULATORS, LEAD, NEGATIVE, OHMS, POSITIVE, POWER, RESISTANCE, RESISTOR, SILICON, SOLDER, SWITCHES, THYRISTOR, TINNING, TRANSFORMER, TRANSISTOR, VACUUM TUBE, VOLTAGE, WATT, WIRE

Faculty Achievements (FDP)

- Internet of Things: Concepts & implementation
- Advances in Control Systems & Sensor Technology
- Neuronal Dynamics & neuromorphic Computing

Mr. Abhai Shankar Chaurasia

Published research paper on **Design & Analysis of Complex Shaped Flexible Patch Antenna** in **IEEE**

- Artificial Intelligence
- Achieving Leadership Excellence for teachers of Higher Educational Institutions

Mr. Rajeev Kumar Sachan

- Seismic Safety of Structures
- Mobile Robotics

Mr. Abhishek Dwivedi

Future Job Scope of Electronics and Communication Engineering

Imagining a life without electronic gadgets seems impossible in today's world. Electronics has become the vertebrae of digital technology. However, as a student planning to pursue ECE courses in India, one needs to walk around and explore all frames. Undoubtedly, selecting a branch of engineering from multiple options is a huge task. It is confusing and that is why most of the students end up making the wrong choice. To avoid this, let's drive through the write-up and unfold the different chords attached to ECE courses.

It has been found that the employment in the ECE sector has amplified significantly in the last few years. The reason behind this positive change of wind is the growing nexus between the electronics industry and the digital technology. The application of ECE in fields, such as satellite and mobile communication, digital telecommunication, power electronics, etc. has created amazing career options. Apart from this, manufacturing companies, MNCs, research-based, government authorities, aerospace manufacturing companies, Armed forces many others look for candidates with ECE background.

In a Nutshell, it can be said that ECE graduates are blessed enough as they have endless opportunities in top-notch manufacturing and IT industries. The only thing that one needs to do is to ensure the right skill-sets and prepare themselves well for the job opportunities that come in college campus.

Ms. Jai Nandini Singh
Manager, TnP

"As engineers, we were going to be in a position to change the world – not just study it."
—Henry Petroski, American Engineer and Author Specializing in Failure Analysis

Dream Achievers

Pie Infocomm Pvt. Ltd.


Suyesh Kumar


Aparna Sahu

Cloudshope Technologies


Vaishnavi Mishra


Komal Singh

Extramarks Education


Ashmal Aijaz

Tech Mahindra


Archita


Amisha Srivastava


Shailendra Pratap

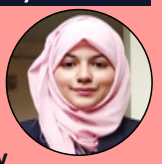
Jaro Education


Aditi Jha

Wipro

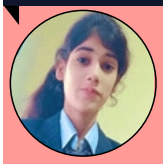

Anuprash Gupta

Student Achievement (Academic)



Ms. Mariam Rahman from the Department has secured **4th rank in University** in the session 2017-21

Student Achievement (Cultural)



Ms. Deepa Tejwani from EC 2nd Year has participated in street play **"Why Hindi is Important"** at **HINDI DIWAS** on 14th Sep, 2021.

Expert Talk

Mr. Sanjeev Kumar Mishra, Scientist/Engineer- SD, Planetary Sciences Division Physical Research Laboratory (Department of Space, Govt. of India) has given a wonderful Expert talk on **Topic – Pay Loads and Chandryan-2**

Guess the Picture : Answer
1. Eminent rocket scientist S. Somanath 2. PARAM Siddhi AI 3. John Bardeen, William Shockley and Walter Brattain

Guess the Picture :

1..... new chairman of ISRO, the successor of K. Sivan.

2. India's largest HPC-AI Supercomputer that achieved the 64th global ranking among top 500 most powerful non-distributed computer systems with speed upto 6.5 Petaflops.

3....., ... and ..... (Left to right) at Bell Labs in 1947 invented the first point contact transistor 1948.

see answer on this page