

TECHNICAL  
MAGAZINE



# आविष्कार

*Enlightening Inventions*

Sept 2023



**MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY**  
**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**

## Vision

To produce technically competent human resource for electrical and electronics industry with high moral and ethical values.

## Mission

M1: To impart quality education in the field to meet societal needs.

M2: To inculcate competency in hardware and software for industrial applications.

M3: To provide an environment for developing aptitude and skills towards research and innovation.

M4: To create a platform for preparing entrepreneurs having ethical values and global insight.

## Program Educational Objectives (PEO).

PEO1. The graduates shall apply their core competency in electrical and electronics engineering needed for industry, higher education, and research activities.

PEO2. The graduate shall have ability to analyze real life problems and design appropriate system to provide solutions that are economically feasible and socially acceptable.

PEO3. The graduate shall develop lifelong learning and ethical attitude for embracing global challenges.

PEO4. The graduate shall develop leadership qualities for a successful entrepreneur.

## Program Specific Outcome (PSO).

PSO 01: Students will be able to simulate and develop models, circuits to provide solutions for multidisciplinary problems.

PSO 02: Students will be able to contribute for development of intelligent automation in various industrial and societal applications.

PSO 03: Students will be able to contribute towards the integration and applications of sustainable energy sources.



## Technical Magazine Committee

### Chief-Editor:

Dr. Monika Gupta

### Editor:

Ms. Poonam Juneja

### Student-Coordinator:

- Abhay Kumar Upadhyay
- Anisha Kumari
- Bharti
- Sarthak Rawat
- Moksh Gupta
- Saksham Aggarwal



## Message From Founder and Chief Advisor's Desk



Dr. Nand Kishore Garg  
Founder & Chief Advisor, MATES

" I am extremely happy to release the LIVE WIRE Technical Magazine of the Electrical and Electronics Engineering Department, MAIT for the session between August 2021- September 2022.

This magazine, I understand has been designed to provide a broad range of information that focuses on the application of current technologies, research, developments through the latest technology innovations through the existing students and faculty members, and their practical explanations through industry experts.

I acknowledge the efforts of Prof. (Dr.) Rajveer Mittal, Head of the Department, and his Editorial Board Members in getting the magazine published.

I wish all the faculty members success and zeal to continuously work for the betterment of society. "

## Message From Chairman's Desk



Sh. Vineet Kumar Gupta  
Chairman, MATES

" I am gratified to know that the Department of Electrical and Electronics Engineering, MAIT has taken an initiative to publish the Technical Magazine in the month of September 2021.

This is productive as well as a great platform for the students, researchers, faculty members and industry experts to disseminate achievements in research and developments in computer science and technology.

I acknowledge the efforts of Prof. (Dr.) Rajveer Mittal, HOD. EEE, the Editorial Team, faculty members and the students of the departments for their efforts in publishing the Technical Magazine.

I also applaud the coordination and efforts by the editorial team to bring up the issue.

I wish them all a great success."

## Message From Vice Chairman's Desk



Prof. (Dr.) M.L. Goyal  
Vice Chairman(Academics), MATES

" I am very happy that the Department of Electrical and Electronics Engineering, MAIT is releasing its Technical Magazine to commemorate technical publications and articles of faculties, Industry experts, alumni, and students for the academic year

2021-2022.

This Technical Magazine is a forum that could aptly be used to record the technical articles and research papers published by the students and faculty members. I am sure that this magazine will be informative and resourceful.

I owe my hearty appreciation to Prof. (Dr.) Rajveer Mittal, Head of the Department EEE, and her team for their sincere efforts to make the release of this magazine a reality. I wish them "The Very Best" in all their future endeavors. "

## Message From Director's Desk



Prof. (Dr.) Neelam Sharma  
Director, MAIT

" It gives me immense pleasure to know that a LIVE WIRE Magazine September 2021 is being published by the Department of Electrical and Electronics Engineering, MAIT. It is a platform to combine the efforts of Faculty, students and the editorial team to publish their technical work going on in the department.

Industrial and productive technical material forming the contents of the magazine will definitely be a developing a tool to the readers.

I applaud the efforts of Prof. (Dr.) Rajveer Mittal, Head of the Department EEE, Editorial team members and Co-ordinators of the team to publish this issue. I wish them success for future publications. "



## Message From Head Of The Department



Prof. (Dr.) Monika Gupta  
Head of Department (EEE)

Electrical and Electronics Engineering Department has always been at the forefront of innovation, research, and education in the field of electrical engineering. We take immense pride in nurturing young minds and providing them with a platform to explore and excel in this dynamic discipline. In the past years, our department has continued to make remarkable strides. Our students are achieving remarkable success, securing excellent placements, and pursuing higher studies at prestigious foreign universities. Our faculty members have been instrumental in not only imparting knowledge but also in conducting cutting-edge research that has the potential to transform industries and improve lives. As we confront global challenges related to energy conservation and environmental preservation, it is our responsibility as electrical engineers to find innovative solutions that contribute to a more sustainable world. As we move forward, let us continue to embrace the spirit of collaboration, innovation, and lifelong learning. Our department legacy is built upon the collective efforts of each member, and together, we will continue to reach new heights. I encourage all of you to make the most of the opportunities presented to you during your time at our esteemed institution.



# TABLE OF CONTENT

|                        |    |
|------------------------|----|
| • FACULTY CORNER ..... | I  |
| • STUDENT CORNER ..... | 5  |
| • PATENTS CORNER ..... | II |
| • PROJECTS .....       | I5 |
| • ALUMNI CORNER .....  | I8 |

## FACULTY CORNER



Technological Advancements in EEE

Mr. Sheersh Kumar Garg,

Asst. Professor, EEE Department

Although the electric vehicle industry as a whole opened more options for people with entrepreneurial mindsets, the same may be true for the battery shortage issue. After all, most businesspeople know the importance of coming up with ideas that solve identified problems.

One of the options is to build more battery factories in the United States. That would reduce dependence on China, which currently dominates the lithium-ion battery market. According to one industry source, only 23% of the world's raw battery materials come from China. However, the Asian nation still accounts for

80% of overall production due to its success in chemically producing battery-grade materials. Setting up factories in the United States makes sense, but it's also not straightforward. Dr. Francis Wang, CEO of battery technology company NanoGraf, admitted, "We don't have a supply chain in the United States. I think we're trailing behind." He continued, "The battery business is a tough business. It's incredibly capital-intensive. It costs millions, if not billions, of dollars to get a factory off the ground. The margins are pretty tight. Razor-thin. And there is a tremendous amount of risk."

### Making Old Batteries Into New Ones

A new startup called Redwood Materials could provide an alternative until more U.S. factories get built. Rather than creating batteries, this business model focuses on recycling them. Company leaders envision a closed-loop battery supply chain that supports sustainability while addressing the materials shortage.

One challenge is that there are not enough EVs in junkyards yet to source the company's needs. For now, one of its workarounds is to get batteries from consumers. That makes sense, especially since most people have at least a few lithium-ion phone batteries associated with smartphones they no longer use. The Redwood Materials process involves heating the batteries to 2,700 degrees Fahrenheit to turn the metal into a hot liquid. Then, supplementary chemical processes reduce the metal into ultra-concentrated forms of lithium, cobalt, and nickel. It's too early to say how much pioneering approaches like that one could address the battery shortage, but that's an example of what's possible.



## Tactile Sensations: Sense of Touch

Dr. Laxya, Asst. Professor, EEE Department

Haptic technology is the use of tactile sensations to stimulate the sense of touch in a user experience. For example, direct applications of haptic solutions frequently include phone and game controller vibrations. Haptic science also involves any tactile feedback such as air pressure or sound waves.

Also known as 3D touch or kinaesthetic communication, this technology creates experiences using vibrations, motions, and other forces. Since touch is the most fundamental method of interaction, leveraging sensation within your products is fast becoming the newest approach for creating memorable brand experiences.

It is helpful to distinguish between haptic technology and two similar terms—haptics and haptic feedback.

- Haptic technology refers to the technical applications (virtual or physical) that create tactile stimulations.
- Haptic feedback comprises the methods in which haptic technology communicates tactile information to users.
- Haptics is the overarching umbrella term that describes the science of haptic feedback and haptic technology, in addition to neuroscience and physiology of touch.

Immersion Corporation is a pioneer in haptic technology that powers over 3 billion devices worldwide. One study on haptics demonstrated that participants could recall objects purely through touch 94% of the time. As the global user base grows, haptics will continue to expand across multiple applications.

The four primary haptic modalities—vibration, button stimulation, thermal, and kinesthetic. Ø Vibration

Most haptic experiences focus on vibration-centric feedback. Technology such as linear resonant actuators (LRA) and eccentric rotating mass (ERM) create much of the haptic experiences you encounter for mobile and wearable devices (think of the vibration included with a game controller).

Ø Button stimulation

Smart screens don't naturally offer tactical feedback and versatility like mechanical buttons. And so, we can expect simulated buttons to become more popular, like the technology in the Apple Force Touch trackpad. Buttons can use haptic and audio feedback to mimic the feeling of a mechanical pressure pad under your finger.

## USES OF HAPTIC TECHNOLOGY

Haptic technology offers numerous potential advantages. Here are several use cases for touch-based solutions that can tap into the benefits of haptics to offer a better user experience.

### Product design

Through touch optimization, haptic technology can improve the user experience in many ways. Haptics will also play a prominent role in automotive infotainment systems. Touch screens can become more responsive and provide multiple settings based on the driver's preference. Other additional automotive applications include pedal feedback and steering wheel enhancement.

### Wellness

The advances in wearable haptics offer great opportunities within the healthtech industry. Real-time haptics gathers biometric data and can adjust the user experience to suit the user. Better feedback and data collection will make it possible for enhanced user experiences and improved health outcomes. Touch Points reports that its wearable devices can reduce stress by 74% in 30 seconds. Companies involved with posture correction, such as ergonomic furniture makers, app creators, or chiropractors, can take advantage of these improvements in the technology.

### Industrial training

With haptic feedback, your training environments can simulate real work environments and labor conditions with improved accuracy. Users can partake in virtual training scenarios, using haptics to get a lifelike experience in a safe, offline environment. From training in maintenance, safety procedures, assembly line usage, and machinery operation and product testing, there are many uses for haptics that can allow users to train without any risks to themselves or company property.

### Accessibility

You can improve the accessibility of your products and services for the visually disabled. Haptic technology allows users to create virtual objects, interact with products, and approximate the appearance of an object via touch-based sensory input. For example, the 2.5D display from a Stanford team helps visually impaired people accomplish visual tasks. Not only will these solutions open up new potential markets and aid those with restricted accessibility, but they will ensure your company stays compliant with access regulations.





## Digital applications of Grid

### Mr. Rahul Garg, Asst. Professor, EEE Department

The smart grid is called as one of the best utilization in the computer intelligence sector that also proves the ability for networking. There are many features that discriminate against the conventional electricity distribution system. Since the invention of the smart grid electricity system, operation and maintenance have been drastically easy for the companies. Although, each component of the smart grid is able to listen and talk that provides an efficient operation during the distribution of the electricity. Apart, it also plays a vital role in accomplishing automation purposes. The utilization of smart grid technology has been increased in the contemporary scenario when everyone enjoys uninterrupted services all the time so there are a lot of companies that are implementing the same technology for efficient operation. If any user is inconvenient during the operation, the electricity company knows instantly the affected area through the smart meter assistance. Although, the smart grid technology also enables the transformers from the IP address that helps companies for two-way communication. Here, through smart grid technology, the company can manage the distribution of electricity efficiently. A company in the United States also provides the various types of technologies for the advancement in the smart grid sector so the world can take benefit from the same in a great manner. After the advancement of the SmartGrid, companies will be benefitted from the integrated and automated transmission between the various elements of the electric grid. Besides, sensing and computations will also be made by the electricity companies drastically with the automated controls. Management of the dashboard with the decision support software will also be improved after the improvisation in smart grid technologies. Unique Identifier (UID) is the vital thing that can be used for the identification of any entity and the smart grid is enabled with the Internet of Things (IoT) that makes it able to communicate over the system all the time.

It is vital to know about the Smart Grid technology before starting the importance of it. The smart grid is the smart electrical network that is also known as the combination of the electrical network as well as smart digital transmission technology. Nowadays, various companies are implementing the technology which is proficient in producing an electrical network through various distributed sources to the customers. These sources may be turbines, solar power systems, and others. During the composition of the smart grid technology, various components like intelligent appliances, smart substations, smart power meters, and super-conducting cables are being used with a wide range of technologies that help in organizing it as a smart tool for the companies.

# STUDENTS CORNER

## Transformers

*Harsh Baisoya (05514804920), Abhay kumar Upadhyay (00314804920)*

*Student, Department of Electrical & Electronics Engg*

Transformer, device that transfers electric energy from one alternating-current circuit to one or more other circuits, either increasing (stepping up) or reducing (stepping down) the voltage. Transformers are employed for widely varying purposes.

e.g., to reduce the voltage of conventional power circuits to operate low-voltage devices, such as doorbells and toy electric trains, and to raise the voltage from electric generators so that electric power can be transmitted over long distances. It is beneficial to power electrical gadgets that are inconvenient, or no longer possible, as is the case of body-embedded sensors, actuators, and communication devices. Most of these functions transfer low amounts of power, in the vary of microwatts to milliwatts, for data transfer. WPT has lately been the centre of attention of industrial traits for higher-power applications, from a few watts to countless kilowatts, over average distances. The most frequent approach of high power. It is inductive coupling which was once invented by Nikola Tesla more than a century ago. The current developments in the semiconductor industry for high frequency and high-power applications have paved the route for high-power inductive WPT improvements. Inductive WPT presents various advantages over the wired connection and is utilized for several purposes such as wearable electronics, health care, and the car industry. This chapter begins by way of reviewing more than a few techniques of WPT, accompanied by the sketch and evaluation of inductive WPT. The overall inductive WPT is studied step by step.

Transformer, device that transfers electric energy from one alternating-current circuit to one or more other circuits, either increasing (stepping up) or reducing (stepping down) the voltage. Transformers are employed for widely varying purposes. e.g., to reduce the voltage of conventional power circuits to operate low-voltage devices, such as doorbells and toy electric trains, and to raise the voltage from electric generators so that electric power can be transmitted over long distances.

See aers change voltage through electromagnetic induction. i.e., as the magnetic lines of force (flux lines) build up and collapse with the changes in current passing through the primary coil, current is induced in another coil, called the secondary. The secondary voltage is calculated by multiplying the primary voltage by the ratio of the number of turns in the secondary coil to the number of turns in the primary coil, a quantity called the turns ratio.

Air-core transformers are designed to transfer radio-frequency currents—i.e., the currents used for radio transmission. they consist of two or more coils wound around a solid insulating substance or on an insulating coil form. Iron-core transformers serve analogous functions in the audio-frequency range.

## WIRELESS POWER TRANSFER

*Sarthak Rawat(05714804922), Himanshi (11714804921)*

*Student, Department of Electrical & Electronics Engg*

The magnetic resonant coupling wireless power transfer (MRCWPT) system has distinctly high transfer efficiency over relatively long distances, and the MRCWPT system has received a lot of attention.

. And the MRCWPT system is much promising in the field of charging, which has been applied in potential functions such as scientific implants, electric powered automobile charging, sensor networks and client electronics.

For conventional MRCWPT systems, each the transmitter and the receiver have the equal resonant frequency to preserve relatively high power transfer efficiency (PTE). The receiver and the transmitter work at a single resonant frequency. When the electrical energy is transmitted from the transmitter to the receiver at exceptional working frequencies and malfunctions may additionally be brought on regardless of the receivers' demands. The so, PTE of the system recorder to resolve the problem, the frequency reconfigurable MRCWPT system with extra manipulate circuits is proposed in through altering the resonant capacitance value. An efficient and reconfigurable rectifier circuit, with the capability of automatically switching from low- power to high-power operation mode, is presented. The new topology lets in the rectifier to convert RF power to DC power efficaciously over an prolonged input power range. The frequency reconfigurable science is achieved by means of varying the distance between the receiver and the transmitter of the MRCWPT system. A shape-reconfigurable MRCWPT system achieves frequency reconfigurability via exceptional constructions of resonant coils. A novel planar-spiral transmitter coil (TX-coil) with an outer-tight and inner-sparse configuration is proposed to attain a extraordinary factor and uniform magnetic field, which ensures high efficiency and improves the misalignment tolerance for several-megahertz WPT systems.

The above MRCWPT structures have the frequency reconfigurable property, however the volume and complexity of the system increase. To gain higher PTE and power receivers at different frequencies, a frequency reconfigurable MRCWPT system is introduced by adjusting the capacitance price of the adjustable capacitor related to the coil of the system.

. At present, many researchers proposed MRCWPT systems to further enhance PTE and lengthen the distance of the system. A kind of technique in which adding relay resonators is proposed.

The distance and PTE of the system are extended. Intermediate resonators arranged between the transmitter and the receiver are used to transmit the magnetic field. This approach is used to enhance the PTE of the system to maximize the advantages of magnetic field repeaters. MRCWPT systems with the metamaterial are proposed. Some MRCWPT systems with repeaters and metamaterial are analyzed for applications. The analysis indicates that the PTE of MRCWPT systems with repeaters and metamaterial is elevated in one-of-a-kind ways. The metamaterial can provide the MRCWPT system with more than a few tunable functions.



And the MRCWPT system with nonidentical coils using metamaterial is proposed. However, further investigation should be carried out about its systems using metamaterial to improve the PTE and the distance. Investigations about the metamaterial are mainly in the far field, however the metamaterial used in the MRCWPT system in the near area is lacking. Theoretical analysis and experimental investigation about using metamaterial to improve the PTE of the machine are shown. The PTE of the gadget increases from 17 to 35% by using metamaterial at the working frequency of 27.12 MHz. A maximum 25.4% efficiency enhancement is achieved when the distance between Tx and Rx coils is 15 cm, and in standard distance variation cases, the proposed two-stack hybrid metamaterial slab makes the power transfer efficiency increase. The metamaterial is used in the MRCWPT system, and the more advantageous PTE is 54.3% at a distance of 1.0 m. The overall performance of the MRCWPT system is improved by using metamaterial in the above work. However, the metamaterial is so thick and large that it limits the application of the system. The conventional metamaterial used for the system to improve the efficiency just works at only a single frequency. Also, the research about it used for frequency reconfigurable magnetic resonant coupling wi-fi electricity switch structures is lacking. This paper provides a method for enhancing the efficiency of the frequency reconfigurable wireless power transfer system dynamically by using the frequency reconfigurable metamaterial at different working frequencies. The reconfigurability is achieved by adjusting the capacitance value of the adjustable capacitor connected to the coil of the system. The conventional structures of the coil and the metamaterial are used in the system, so the universality of this method is further illustrated.



## Optical Communication

*Anmol Dureja , Anshita Pandit*

A conversation between two or more airplanes is referred to as aviation communication. The design of aircraft makes it exceedingly challenging for them to see anything beyond what is right in front of them. Aircraft can effectively connect with the required employees using communication techniques like wireless radio since safety is the aviation industry's top priority. Since the aviation sector is global, many different languages are used. The International Civil Aviation Organization (ICAO) has determined that English is the aviation industry's official language. Pilots are required to take an English proficiency exam since the business recognizes that some pilots may not be native English speakers. In the early days of flying, it was believed that the sky was too vast and empty for two planes to collide. However, the catastrophic accident of two aircraft over the Grand Canyon in 1956 led to the establishment of the Federal Aviation Administration (FAA).

The Jet Age saw a boom in aviation, necessitating the development of communication technology. To communicate with pilots in the air, ground controls employed visual aids, which was once thought to be a highly challenging operation. Pilots could connect with people on the ground thanks to the development of portable radios that were tiny enough to be stored in aircraft.

Pilots could then communicate both air-to-air and air-to-ground thanks to subsequent advances. Today, a lot of different methods are used in aviation communication. Modern radio, GPS, Internet, and video systems are all standard equipment on airplanes.

Air-to-ground communication greatly improved with the invention of radar in the middle of the 1930s. Radar may be used to follow aircraft in the sky and detect their location, direction, speed, and even kind. This made it possible for pilot navigational aids and better air traffic control. It was then widely used during World War 2 for targeting for bombers. Two different radar beams might be pointed in the direction of Germany from radar sites along the British coast.

An aircraft might track one radar signal until it crossed with the other, at which point it would know to drop bombs, by aligning the two radar beams to intersect over the targeted target, such as a town or industrial.

Currently aviation communication is used to reduce the risk of mishappenings by telling the pilots the latest weather conditions or the availability of runways. Sometimes flights are even redirected to some other airports. It has saved many lives till date and the engineers are still trying to improve the current technology to meet the future needs. Aviation has truly been the forefront of innovation to become one of the safest and most reliable modes of transportation in the world today and a major part of this is because of the communication system which helps in planning and getting ready for every situation.

## Acoustic transmission

*Sagar Bharti*

An autonomous underwater vehicle (AUV) is a robot that travels underwater without requiring input from an operator. AUVs are a smaller subset of the wider class of underwater systems known as unmanned underwater vehicles, a classification that includes non-autonomous remotely operated underwater vehicles (ROVs) – controlled and powered from the surface by an operator/pilot via an umbilical or using remote control. An AUV is more frequently referred to as an unmanned underwater vehicle in military contexts (UUV). AUVs include underwater gliders as a subtype. The first AUV was developed at the Applied Physics Laboratory at the University of Washington as early as 1957 by Stan Murphy, Bob Francois and later on, Terry Ewart. The "Special Purpose Underwater Research Vehicle", or SPURV, was used to study diffusion, acoustic transmission, and submarine wakes. Other early AUVs were developed at the Massachusetts Institute of Technology in the 1970s. One of these is on display in the Hart Nautical Gallery in MIT. At the same time, AUVs were also developed in the Soviet Union.

The ocean is an environment that is saturated with seawater. Seawater has a high degree of viscosity, making it more difficult for the ocean to move than the atmosphere. The ocean's environment, where air pressure rises by one per ten metres of depth, is another amazing feature. When a result, as objects are destroyed, the water pressure increases to a point that it may be felt in the deep sea.

So many factors come in account in designing AUVs. It includes Solid pressure vessels to contain the electronics underwater as well handling the pressure from water. It contains sensors some of which are compasses, depth sensors, side-scan and other sonars, magnetometers, thermistors and conductivity probes. Some AUVs are outfitted with biological sensors

including fluorometers (also known as chlorophyll sensors), turbidity sensors, and sensors to measure pH, and amounts of dissolved oxygen. Some of the uses of AUVs are for research work, commercial work like for oil and gas industries uses AUVs to make detailed maps of the seafloor before they start building subsea infrastructure; pipelines and subsea completions can be installed in the most cost-effective manner with minimum disruption to the environment, air crash investigations, military applications etc.

## Pushing Researchers To Different Powersources

*Ashutosh Singh*

As people become more concerned about the reality that a lithium-ion battery does not represent a limitless resource, that could cause researchers to prioritize coming up with newer, better batteries that don't rely on materials facing shortages. Selecting a battery as a safe and effective candidate starts with understanding its characteristics during all types of use.

For example, lithium-ion batteries have an exothermic reaction during charging that produces heat. Engineers must develop temperature management devices to stop them from overheating. Thus, finding a battery alternative is only part of the goal. Other efforts center on ensuring it performs as expected without creating hazards. However, progress is underway. In one example, researchers from the University of Texas at Austin developed a lithium-ion battery without cobalt, which they said was its least abundant material. A battery's cathode typically contains all of its cobalt.

However, the option developed in this research was 89% nickel, along with manganese and aluminum. The primary use of nickel for the cathode should lead to longer driving distances, the researchers said. They also noted that cobalt is the most expensive material used for a cathode. It's costlier than the combined costs of nickel, manganese, and aluminum and can account for nearly a third of many lithium-ion battery cathodes, they said. Thus, this achievement could pave the way for battery alternatives with superior performance and reasonable production costs. If so, that's a mutually beneficial situation for EV owners and manufacturers.

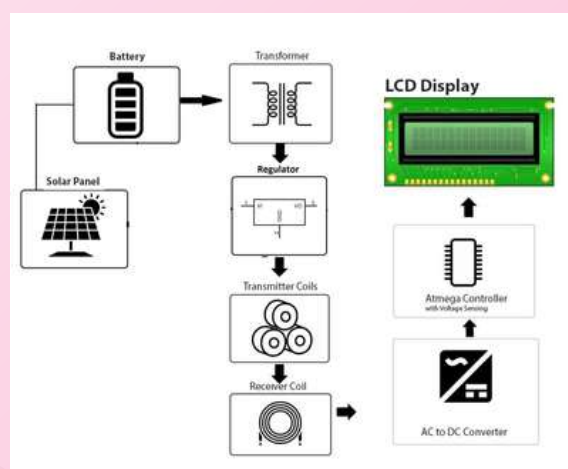
# PATENTS CORNER

## Design and development of solar based wireless electric vehicle charging system Renewable Power (ICRP-2023).

*Sanyam Jain (04514804919) , Harsh Kaushik (04014804919) Dr. Neelu Nagpal & Mr. Ravi Sharma June 2023*

### Abstract:

A new era of automobiles is upon us, with the industry rapidly transitioning from internal combustion engines to electric vehicles (EVs). The demand for EVs is growing, which has led to an increase in charging stations. Recently, wireless power transmission (WPT) technology has developed rapidly so the power ranges from milli-watts to kilo-watts, power transmission distances extend from millimeters to hundreds of millimeters, and load efficiencies exceed 90%. With this advancement, wireless power transmission (WPT) becomes very popular for deploying EV charging during both static and dynamic charging situations. This work proposes a design and implementation of a solar-based wireless EV battery charger where the objective is to charge a vehicle without connecting any wire through inductive coupling by simply parking of a car at the charging station. This study illustrates the applicability of WPT field technology for wireless charging of EV batteries in terms of charging time, range, and cost. The proposed charging system's performance is evaluated using black box and unit testing. Furthermore, the power efficiency of wireless charging systems is evaluated, with the conclusion that this charging outperforms wired charging.





# Semantic Parser Using a Sequence to Sequence RNN Model to Generate Logical Forms

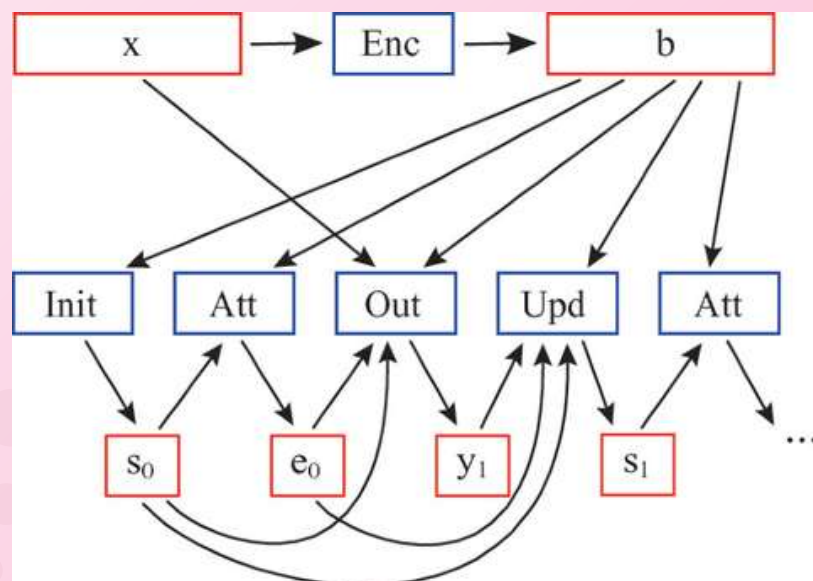
## Proceedings of Fourth International Conference on Computer and Communication Technologies

Sanyam Jain (04514804919)

March 2023

### Abstract:

Neural networks have been shown to replicate neural processing and in some cases intrinsically show features of semantic insight. It all starts with a word; a semantic parser converts words into meaning. Accurate parsing requires lexicons and grammar, two kinds of intelligence that machines are just starting to gain. As the neural networks get better and better, there will be more demand for machines to parse words into meaning through a system like this. The goal of this paper is to introduce the reader to a new method of semantic parsing with the use of vanilla or ordinary recurrent neural networks. This paper briefly discusses how mathematical formulation for recurrent neural networks (RNNs) could be utilized for tackling sparse matrices. Understanding how neural networks work is key to handling some of the most common errors that might come up with semantic parsers. This is because decisions are generated based on data from text inputs. At first, we present a copying method to speed up semantic parsing and then support it with data augmentation.



| <u>Student Name &amp;<br/>Roll no.</u><br>-                                                             | <u>Faculty Name</u><br>-                                             | <u>Title</u><br>-                                                                                                                                                | <u>Conference</u><br>-                                                                                | <u>Indexing</u><br>- | <u>ISSN/D OI</u><br>- | <u>Year</u><br>- |
|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------|-----------------------|------------------|
| Manav Kumar<br>(09114804919)<br>, Rahul das<br>(08914804919)<br>, Anurag Tiyaagi<br>(09614804919)       | Dr. Neelu Nagpal,<br>Dr.<br>Neelam Kessarw<br>ani, Ms. Neha<br>Gupta | Dignosis for parkison<br>diseases using Machine<br>learning<br>algorithms                                                                                        | SIGMAA                                                                                                | Springer             | Under<br>published    | Dec<br>2023      |
| Anmol Mani Tripathi<br>(20214804921)                                                                    | Mr. Lalit Agarwal<br>Mr.<br>Govind Gupta                             | A Device to develop depth<br>map using principles of<br>stereoscopic vision                                                                                      | SIGMAA                                                                                                | Springer             | Under<br>published    | Dec<br>2023      |
| Saksham<br>Budhwani<br>(02714804919)<br>Shivay Sharma<br>(01114804919)<br>Devansh Jain<br>(00914804919) | Mr. Lalit<br>Agarwal                                                 | Image Forgery detection<br>system using passive<br>techniques                                                                                                    | SIGMAA                                                                                                | Springer             | Under<br>published    | Dec<br>2023      |
| Yog Singh<br>(13614804919)<br>Aryan Saxena<br>(13114804919)<br>Riya Verma<br>(12514804919)              | Mr. Lalit<br>Agarwal                                                 | GUI Based diabetes<br>prediction using pipeline                                                                                                                  | SIGMAA                                                                                                | Springer             | Under<br>published    | Dec<br>2023      |
| Shubh Sharma<br>(9414804919)                                                                            | Dr. Neelu Nagpal                                                     | A Comparative Analysis of<br>Short-Term<br>Load Forecasting<br>Techniques: Conventional<br>Deep Learning Models vs.<br>Proposed<br>LSTM with Attention<br>Layers | “Recent<br>Developments<br>in Control,<br>Automation<br>and Power<br>Engineering”<br>(RDCAPE<br>2023) | Springer             | Under<br>published    | Oct<br>2023      |

|                                                                                                                    |                                                      |                                                                                                       |                                                                                                                       |                   |                                          |                |
|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------|----------------|
| Sanyam<br>jain<br>(04514804919)<br>, Harsh<br>Kaushik<br>(04014804919)                                             | Dr.<br>Neelu<br>Nagpal<br>&<br>Mr.<br>Ravi<br>Sharma | Design and<br>development of<br>solar based<br>wireless electric<br>vehicle charging<br>system        | Renewable<br>Power<br>(ICRP-<br>2023)                                                                                 | Springer          | View<br>article<br>(google.c<br>om)      | June<br>2023   |
| Almaas<br>Zafar<br>(10514804919)<br>, Vyom<br>Dev<br>Chhabra<br>(11314804919)<br>, Ayush<br>Kumar<br>(11114804919) | Ms.<br>Poonam<br>Juneja                              | Deep learning<br>algorithms to<br>identify stress in<br>humans by<br>monitoring<br>physiological data | 5th<br>International<br>Conference<br>on Recent<br>Innovations<br>in Science &<br>Technology<br>(RIST 2023)           | ISSET<br>research | ISBN:<br>978-81-<br>954872-<br>2-6       | April<br>2023  |
| Sanyam<br>jain<br>(04514804919)                                                                                    |                                                      | Semantic Parser<br>Using a Sequence-<br>to-<br>Sequence RNN<br>Model<br>to Generate<br>Logical Forms  | Proceedings<br>of Fourth<br>International<br>Conference<br>on<br>Computer<br>and<br>Communicat<br>ion<br>Technologies | Springer          | 10.1007/<br>978-981-<br>19-8563-<br>8_27 | Marc<br>h 2023 |

# PROJECTS

## 7<sup>EEEI23</sup> MINOR PROJECT STUDENT DETAILS (2023 -2024)

| S.NO. | GROUP ID   | Project Title                                                                                         | Hardware/ Software | Project Guide         | Team Member1 (Name)    | Roll No.    | Group No. | Team Member2 (Name) | Roll No.    | Group No. | Team Member3 (Name) | Roll No.    | Group No. |
|-------|------------|-------------------------------------------------------------------------------------------------------|--------------------|-----------------------|------------------------|-------------|-----------|---------------------|-------------|-----------|---------------------|-------------|-----------|
| 1     | 123-EEE-1  | Fault Detection in Power System Using Machine Learning                                                | Software           | Mr Ravi Sharma        | Amit Kumar Pandey      | 01314804920 | EEE-2     | Aditya Kumar Yadav  | 00714804920 | EEE-1     | Anmol Sharma        | 01814804920 | EEE-2     |
| 2     | 123-EEE-2  | ICE to Electric propulsion of two-wheeler conversion                                                  | hardware           | Dr Neelu Nagpal       | Lakshay                | 07114804920 | EEE-5     |                     |             |           |                     |             |           |
| 3     | 123-EEE-3  | IoT Enabled Monitoring System with Smart Safety Switch                                                | Software           | Dr Monika Gupta       | Anurag Sheoran         | 02114804920 | EEE-2     | Aryan Mishra        | 02614804920 | EEE-3     | Anuj Bhardwaj       | 01914804920 | EEE-2     |
| 4     | 123-EEE-4  | Artwork Galley                                                                                        | Software           | Mr UK Jha             | Anay Rastogi           | 01614804920 | EEE-2     | Ashwani Sharma      | 03014804920 | EEE-3     | Ashish Kumar        | 02814804920 | EEE-3     |
| 5     | 123-EEE-5  |                                                                                                       |                    | Mr Lalit              | Preeti Kumari          | 00814807821 | EEE-1     | Sukriti             | 00514807821 | EEE-1     | Aniket Jha          | 20714804920 | EEE-8     |
| 6     | 123-EEE-6  | Battery Management System                                                                             | Hardware +Software | Mr Ravi Sharma        | Anuj Dubey             | 01614807821 | EEE-2     | Kuldeep Singh       | 01714807821 | EEE-2     | Deepak Sharma       | 01914807821 | EEE-2     |
| 7     | 123-EEE-7  | Link Analyzer                                                                                         | Software           | Dr LP Singh           | Aryan Sindhav          | 02714804920 | EEE-3     |                     |             |           |                     |             |           |
| 8     | 123-EEE-8  | Fault Detection in Power System Using Machine Learning                                                | Software           | Dr Neelam Kassarwani  | Aditya Mohan Vashistha | 00814804920 | EEE-1     |                     |             |           |                     |             |           |
| 9     | 123-EEE-9  |                                                                                                       | Software           | Dr SK Pandey          | Aryan Chaudhary        | 02414804920 | EEE-3     | Abhash              | 00214804920 | EEE-1     | Chaitanya shah      | 03714804920 | EEE-3     |
| 10    | 123-EEE-10 | Automatic Load Sharing of Transformer using Microcontroller                                           | Hardware           | Dr Rajveer Mittal     | Mayank Prajapati       | 01414807821 | EEE-2     | Ashwani Kumar       | 02514807821 | EEE-3     | Faiz Raza           | 02614807821 | EEE-3     |
| 11    | 123-EEE-11 | Dual Axis Solar Tracker                                                                               | hardware           | Dr Laxya              | Shivam Bharti          | 01814807821 | EEE-2     | Neeraj              | 00314807821 | EEE-1     | Dheeraj             | 02414807821 | EEE-3     |
| 12    | 123-EEE-12 | Advance Foot-Step Power Generation                                                                    | Hardware           | Mr Sheersh            | Bhaskar Panday         | 02114807821 | EEE-2     | Deepak              | 01514807821 | EEE-2     | Vishal              | 01014807821 | EEE-1     |
| 13    | 123-EEE-13 | A time to failure evaluation of AlGaIn/GaN HEMT transistors for RF applications                       | Software           | Mr Jitender           | Ragib Equbal           | 02914807821 |           | BINU KUMARI         | 03614804920 | EEE-3     | Guddu Prasad        | 02714807821 | EEE-3     |
| 14    | 123-EEE-14 | Solar water Desalinator                                                                               | Hardware           | Dr LP Singh           | Aryamon Chattopadhyay  | 02314804920 | EEE-2     | Vicky Kumar         | 00614807821 | EEE-1     |                     |             |           |
| 15    | 123-EEE-15 | Three Phase Fault Analysis with Auto Reset for Temporary Fault and Permanent Trip for Permanent Fault |                    | Mr Govind Gupta       | Ashish Kumar Rai       | 02914804920 | EEE-3     | Anurag Yadav        | 02214804920 | EEE-2     | Amol Pratap Singh   | 01414804920 | EEE-2     |
| 16    | 123-EEE-16 | Solar wireless EV charging system                                                                     | Hardware           | Ms Poonam             | Bhupesh                | 00914807821 | EEE-1     | Kajal               | 01314807821 | EEE-2     | Rohan Kumar         | 20148078210 | EEE-8     |
| 17    | 123-EEE-17 | Analysis Of Energy Consumption In India Python Project                                                | Hardware           | Ms Poonam             | Abhay Kumar Upadhyay   | 00314804920 | EEE-1     | Azizur Rehman       | 03214804920 | EEE-3     | Ayush Kumar         | 03114804920 | EEE-3     |
| 18    | 123-EEE-18 | Electrical Load forecasting                                                                           | Software           | Ms Neha               | Akshat jain            | 01214804920 | EEE-2     | Bhumika Attri       | 03414804920 | EEE-3     | Bhumika Bansal      | 03514804920 | EEE-3     |
| 19    | 123-EEE-19 | Smart Headlights system of vehicles                                                                   | Hardware           | Mr Ashok Goyal        | Deepak saini           | 00214807821 | EEE-1     | Ruchi               | 0414807821  | EEE-4     | Laxman Bhandari     | 02214807821 | EEE-2     |
| 20    | 123-EEE-20 | Solar Energy Prediction Using Machine Learning                                                        | Software/ Hardware | Prof Satvir Deswal    | Supreety Saini         | 01114807822 | EEE-1     | Akshay Kumar        | 00914807221 | EEE-1     | Sourav Dagar        | 01214807821 | EEE-2     |
| 21    | 123-EEE-21 | Short Circuit Protection System For EV Safety                                                         | Hardware           | Mr Govind             | Aayshi Mishra          | 00114807820 | EEE-1     | Aadarsh Kr Jha      | 0414807822  |           | Aaditya Rawat       | 00914807822 | EEE-1     |
| 22    | 123-EEE-22 | Multicolor Filament Production from Petboat                                                           | Hardware           | Ms Shashibala         | Vishwajeet             | 00714807821 | EEE-1     |                     |             |           |                     |             |           |
| 23    | 123-EEE-23 | Laser Home Security Alarm                                                                             | Hardware           | Ms Monika Bhardwaj    |                        |             |           |                     |             |           |                     |             |           |
| 24    | 123-EEE-24 | Power Grid Failure Detection                                                                          | Hardware           | Dr Chandrakesh Shukla | Aditya Chaurasia       | 00614804920 | EEE-1     |                     |             |           |                     |             |           |



## 7EEE456 MINOR PROJECT STUDENT DETAILS (2023 -2024)

| S.NO. | GROUP ID   | Project Title                                                                           | Hardware/ Software  | Project Guide         | Team Member1 (Name) | Roll No.    | Group No. | Team Member2 (Name) | Roll No.    | Group No. | Team Member3 (Name)  | Roll No.    | GROUP No. | Team Member4 (Name) | Roll No.    | Group No. |
|-------|------------|-----------------------------------------------------------------------------------------|---------------------|-----------------------|---------------------|-------------|-----------|---------------------|-------------|-----------|----------------------|-------------|-----------|---------------------|-------------|-----------|
| 1     | 456-EEE-1  | Vending Machine                                                                         | Hardware & Software | Ms. Supriya           | Hrishank            | 00014804920 | EEE-4     | Narendra Deo        | 08814804920 | EEE-6     | Kinshuk Jha          | 06514804920 | EEE-5     | Milan Sood          | 07914804920 | EEE-5     |
| 2     | 456-EEE-2  | Air Quality Index                                                                       | Hardware            | Ms. Poonam Juntia     | Keshav Goyal        | 06414804920 | EEE-5     | Kistaya Gupta       | 06614804920 | EEE-5     | Krish Jain           | 06714804920 | EEE-5     |                     |             |           |
| 3     | 456-EEE-3  | Arduino Weather Station                                                                 | Hardware & Software | Mr Shoresh            | Honey Aggarwal      | 05914804920 | EEE-4     |                     |             |           |                      |             |           |                     |             |           |
| 4     | 456-EEE-4  | EV Motor Design                                                                         | Hardware            | Mr Lalit              | Mohit               | 06114804920 | EEE-5     | Mayank Singhal      | 07714804920 | EEE-5     | Dev Dahiya           | 03914804920 | EEE-4     |                     |             |           |
| 5     | 456-EEE-5  | Sentiment analysis                                                                      | software            | Dr Monika Gupta       | Manav Sharma        | 07514804920 | EEE-5     | Devinder Singh      | 04414804920 | EEE-4     |                      |             |           |                     |             |           |
| 6     | 456-EEE-6  | Arduino Password door lock system                                                       | software            | Ms Aaryushi           | Hiya Golesti        | 05814804920 | EEE-4     | Pranav Sharma       | 09014804920 | EEE-6     |                      |             |           |                     |             |           |
| 7     | 456-EEE-7  | Hand Gesture Dinosaur Game                                                              | Software            |                       | Dishant Nagpal      | 04814804920 | EEE-4     | Raghav Gupta        | 10114804920 | EEE-6     | Madiha Ahmed         | 07414804920 | EEE-5     |                     |             |           |
| 8     | 456-EEE-8  | Load Flow Analysis and Fault Detection                                                  | Hardware & Software | Dr. Neetu Nagpal      | Parth Gupta         | 09414804920 | EEE-6     | Piyush Singh        | 09614804920 | EEE-6     |                      |             |           |                     |             |           |
| 9     | 456-EEE-9  | Simulation on Effective standalone Microgrid                                            | Hardware & Software | Mr Shoresh            | Hardik Singh        | 05314804920 | EEE-4     | Pranav Gang         | 09714804920 | EEE-6     | Ritik Umang          | 10514804920 | EEE-6     | Navratan            | 08914804920 | EEE-6     |
| 10    | 456-EEE-10 | Vehicle Security System                                                                 | Hardware & Software | Mr Jitender           | kritik Bhatia       | 00914804920 | EEE-5     | Mansi Kumari roy    | 07614804920 | EEE-5     | Lokesh Mehani        | 07314804920 | EEE-5     | Lakshay goel        | 07214804920 | EEE-5     |
| 11    | 456-EEE-11 | IoT Based Fault Finder in Load Line                                                     | Hardware & Software | Mr Rahul              | Mridul Shukla       | 08314804920 | EEE-5     | Nikhtha Lakhapal    | 09014804920 | EEE-6     | Muskaan Mangla       | 06414804920 | EEE-5     |                     |             |           |
| 12    | 456-EEE-12 | Solar powered autonomous multipurpose agricultural robot using Bluetooth or Android app | Hardware & Software | Mr Ashok Goyal        | Ravi kumar          | 10314804920 | EEE-6     | Paras khurana       | 09314804920 | EEE-6     | Priyamvada pandey    | 08914804920 | EEE-6     |                     |             |           |
| 13    | 456-EEE-13 | Wireless Power Theft Monitoring System                                                  | Hardware & Software | Dr Laxya              | Devyansh Pandey     | 04514804920 | EEE-4     | Harsh Baisoya       | 05514804920 | EEE-4     | Ritik Jain           | 10414804920 | EEE-6     |                     |             |           |
| 14    | 456-EEE-14 | Fault Detection and classification using artificial neural network                      | Software            | Dr. Neslam Kassarwani | Priyanshu Jha       | 10014804920 | EEE-6     |                     |             |           |                      |             |           |                     |             |           |
| 15    | 456-EEE-15 | Women and Child Security System                                                         | Hardware            | Ms Supriya            | Hanish Kumar Kandol | 05214804920 | EEE-4     | Harsh Anand         | 05414804920 | EEE-4     | Kanishk Awast        | 06314804920 | EEE-5     |                     |             |           |
| 16    | 456-EEE-16 |                                                                                         |                     | Dr Sunil Pandey       | Dharam Raj Verma    | 04614804920 | EEE-4     | Dev Joshi           | 04014804920 | EEE-4     | Dev Varot Bali       | 04114804920 | EEE-4     |                     |             |           |
| 17    | 456-EEE-17 | Prediction of energy consumption using Machine learning                                 | Software            | Dr Neetu Nagpal       | Harsh Goswami       | 05614804920 | EEE-4     | Hitesh Gaba         | 05714804920 | EEE-4     | Kunal Malhotra       | 07014804920 | EEE-5     |                     |             |           |
| 18    | 456-EEE-18 | Real-time Data Acquisition of Solar Panel Using Arduino                                 | Hardware & Software | Ms Shashibala         | Gautam Goyal        | 05114804920 | EEE-4     | Dipansh Gupta       | 04714804920 | EEE-4     | Draun Mehta          | 04714804920 | EEE-4     |                     |             |           |
| 19    | 456-EEE-19 | Classification & Localization of Cable Fault                                            | Software            | Mr UK Jha             | Nitesh Tiwari       | 09114804920 | EEE-6     | Rajnish kumar       | 10214804920 | EEE-6     | Narendra singh bisht | 06714804920 | EEE-6     |                     |             |           |
| 20    | 456-EEE-20 | Autonomous holonomic drive robot with object detection                                  | Hardware            | Ms Neha               | Parth Sharma        |             |           |                     |             |           |                      |             |           |                     |             |           |
| 21    | 456-EEE-21 | Benchmarking of Electric Utilities                                                      | Hardware            | Dr LP Singh           | Ishta Jain          | 06114804920 | EEE-5     | Mehak Goel          | 07814804920 | EEE-4     | Gaurav Pandey        | 05814804920 | EEE-4     |                     |             |           |
| 22    | 456-EEE-22 | Development of Li-Fi                                                                    | Hardware            | Prof Rajveer Mittal   | Kriti Sighal        | 06814804920 | EEE-5     |                     |             |           |                      |             |           |                     |             |           |
| 23    | 456-EEE-23 | Power Grid Failure Detection                                                            | Hardware            | Dr Chadrakash Shukla  | Pamohul Singh Kaim  | 09214804920 | EEE-6     |                     |             |           |                      |             |           |                     |             |           |
| 24    | 456-EEE-24 | Cellphone Signal Booster                                                                | Hardware            | Dr. Monika Gupta      | Naman Acharya       | 08514804920 | EEE-6     | Naman Kashyap       | 08614804920 | EEE-6     |                      |             |           |                     |             |           |

## 7EEE456 MINOR PROJECT STUDENT DETAILS (2023-2024)

| S.NO. | GROUP ID   | Project Title                                                          | Hardware/ Software  | Project Guide          | Team Member1 (Name) | Roll No.    | Group No. | Team Member2 (Name) | Roll No.    | Group No. | Team Member3 (Name) | Roll No.    | Group No. | Team Member4(Name) | Roll No.    | Group No. |
|-------|------------|------------------------------------------------------------------------|---------------------|------------------------|---------------------|-------------|-----------|---------------------|-------------|-----------|---------------------|-------------|-----------|--------------------|-------------|-----------|
| 1     | 789-EEE-1  |                                                                        |                     | Ms Neha Aggarwal       | Madhav Parashar     | 36114804920 | EEE-9     | Manish Das          | 35914804920 | EEE-9     | Amrit Choudhary     | 35214804920 | EEE-9     |                    |             |           |
| 2     | 789-EEE-2  | Agribot                                                                |                     | Dr Rahul Garg          | Harsh goyal         | 36814804920 | EEE-9     | Anmol madan         | 35814804920 | EEE-9     | Naman pathwa        | 36014804920 | EEE-9     |                    |             |           |
| 3     | 789-EEE-3  |                                                                        |                     | Dr Sunil Pandey        | sadab ali           | 10914804920 | EEE-7     |                     |             |           |                     |             |           |                    |             |           |
| 4     | 789-EEE-4  |                                                                        |                     | Ms Aayushi Gupta       | Saksham Goyal       | 11114804920 | EEE-7     | Simran              | 1234804920  | EEE-7     |                     |             |           |                    |             |           |
| 5     | 789-EEE-5  | Automatic rain sensing wiper                                           | Hardware            | Ms Monika Bhardwaj     | Sarang              | 11514804920 | EEE-7     | Siddharth Jha       | 12114804920 | EEE-7     |                     |             |           |                    |             |           |
| 6     | 789-EEE-6  | Self driving car using deep learning                                   | Hardware & Software | Dr Neelam Kassarwani   | Manish Mandal       | 20514804920 | EEE-8     | Prince Pundir       | 20214804920 | EEE-8     | Valbhav Jha         | 13814804920 | EEE-8     | Tushar Bhardwaj    | 13414804920 | EEE-8     |
| 7     | 789-EEE-7  | OT connectivity for remote monitoring of 3-phase generator             | Hardware & Software | Dr Neelu Nagpal        | Krishna Prajapati   | 20714804920 | EEE-8     | Valbhav Dixit       | 20814804920 | EEE-8     | Udit Kumar Sharma   | 13614804920 | EEE-8     |                    |             |           |
| 8     | 789-EEE-8  | Overspeed Detection with speed breaker                                 |                     | Mr Jitender Lather     | Rituresh Kumar Rai  | 10614804920 | EEE-7     | Saurabh Sharma      | 11814804920 | EEE-7     | Bhawna Bisht        | 50714804920 | EEE-9     |                    |             |           |
| 9     | 789-EEE-9  |                                                                        |                     | Ms Jyoti Gupta         | Stuti Kapoor        | 12514804920 | EEE-7     | Vrinda Gupta        | 14214804920 | EEE-8     | Chanchal Aggarwal   | 36614804920 | EEE-9     |                    |             |           |
| 10    | 789-EEE-10 | Working of Electromagnetic Railgun                                     | Hardware            | Mr UK Jha              | Aryan Arora         | 21214804920 | EEE-9     |                     |             |           |                     |             |           |                    |             |           |
| 11    | 789-EEE-11 | Personal robot using A.I.                                              | Hardware & Software | Mr Ashok Goyal         | Prateek Saini       | 50514804920 | EEE-9     |                     |             |           |                     |             |           |                    |             |           |
| 12    | 789-EEE-12 | Arduino based Fire management system                                   | Hardware & Software | Mr Lalit Aggarwal      | Yash Jain           | 14314804920 | EEE-8     | Vidhi Mago          | 51014804920 | EEE-9     | Valbhav Jaiswal     | 13714804920 | EEE-8     |                    |             |           |
| 13    | 789-EEE-13 |                                                                        |                     | Ms Shashibala Aggarwal | Zamirul Haque       | 14414804920 | EEE-8     | Toukeer Khan        | 13314804920 | EEE-7     | Uday Singh Mawri    | 20914804920 | EEE-8     |                    |             |           |
| 14    | 789-EEE-14 | Design Analysis of Signal Processing Using Analog Building Block       |                     | Dr Laxya Singla        | Sunny Kumar         | 12714804920 | EEE-7     | Udit Dixit          | 13514804920 | EEE-8     | Vinayak Bhardwaj    | 14114804920 | EEE-8     |                    |             |           |
| 15    | 789-EEE-15 | Web Pulse Meter                                                        | Software            | Mr Govind Gupta        | Shreya              | 12014804920 | EEE-7     | Anjali Gupta        | 20314804920 | EEE-8     | Rohan Singh         | 10714804920 | EEE-7     |                    |             |           |
| 16    | 789-EEE-16 |                                                                        |                     | Pro Rajveer Mittal     | Shrutika Garg       | 36214804920 | EEE-9     | Aditya Gupta        |             |           | Jyoti Sharma        | 50914804920 | EEE-9     |                    |             |           |
| 17    | 789-EEE-17 | Automatic Water Pump Switcher                                          | Hardware            | Mr Sheersh             | Vaishnavi Sharma    | 13914804920 | EEE-8     | Aryan Agrawal       | 21314804920 | EEE-9     | Lakshya             | 20414804920 | EEE-8     |                    |             |           |
| 18    | 789-EEE-18 | Car Speed Checker with LCD Display                                     | Hardware & Software | Ms Monika Bhardwaj     | Anish Sharma        | 21014804920 | EEE-8     |                     |             |           |                     |             |           |                    |             |           |
| 19    | 789-EEE-19 | IOT based health monitoring system                                     | Hardware & Software |                        | Shiv kumar mishra   | 11914804920 | EEE-7     | Sahil adhikari      | 11014804920 | EEE-7     | Tanishq jain        | 12914804920 | EEE-7     |                    |             |           |
| 20    | 789-EEE-20 |                                                                        |                     | Mr Ravi Sharma         | Shivam Gulati       | 35514804920 | EEE-9     | Tarun Kumar         | 50614804920 | EEE-8     | Ayush Choudhary     | 35414804920 | EEE-9     |                    |             |           |
| 21    | 789-EEE-21 | Transmission line faults detection system using temperature protection |                     | Ms Supriya Sharma      | Sanmay Prakash      | 11314804920 | EEE-7     | Sanskar             | 11414804920 | EEE-7     | Serthak             | 11614804920 | EEE-7     |                    |             |           |
| 22    | 789-EEE-22 |                                                                        |                     |                        | Tushar Sreekumar    | 21114804920 | EEE-8     |                     |             |           |                     |             |           |                    |             |           |

# ALUMNI CORNER

## DOCR- CAPTCHA: OCR Classifier based Deep Learning Technique for CAPTCHA Recognition

19th OITS International Conference on Information Technology (OCIT)

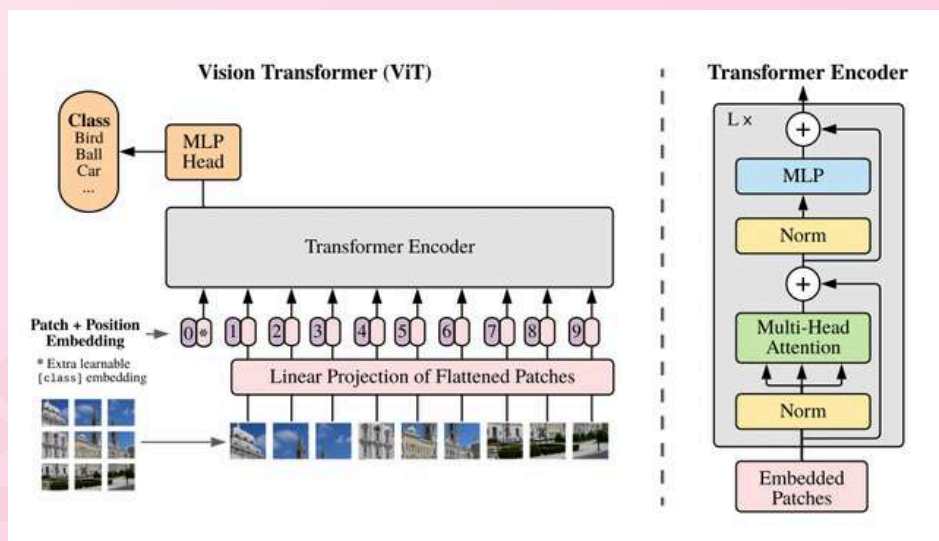
IEEE Xplore

*Shreecanant Bharadwaj (44614804918)*

*March 2022*

### Abstract:

The objective of this research is to analyze the security flaws of CAPTCHA generating model in order to build more resilient CAPTCHAs without such risks associated with human attempt and fail attempts. In this work, a more efficient DOCR-CAPTCHA model has presented which is deep learning approach based on an optical character recognition (OCR) to address the concerns of lower efficiency and inadequate performance of existing CAPTCHA detection algorithms. First, the DOCR-CAPTCHA model preprocesses the images to enhance the quality by following gray scale conversion, cropping and resizing the image. Second, it extracts the character to create a dictionary and mapping each character with labeling. Next, it performs classification using OCR technique and train the model. It also performed the validation on the same data. The simulation has done on the CAPTCHA images dataset. The recognition rate of this simulated model results achieved a high accuracy rate of 99.98 percent and minimized error rate of 0.0051 for the CAPTCHA train dataset. It has also compared with the existing YOLO technique and found that it has outperformed than YOLO.





# Smart IOT based Indoor Farming Analysis and Monitoring using Fuzzy logic Expert systems

2021 Fifth International Conference on I- SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC)

IEEE Xplore

*Shreeanant Bharadwaj (44614804918)*

*December 2021*

## Abstract:

This project presents the design of smart IOT based indoor farming analysis and monitoring using fuzzy logic techniques. Since climatic parameters of indoor farming are dependent on each other therefore, it is bit difficult to control them for this reason a system is designed which will monitor and analyse all the parameters on the basis of fuzzy logic algorithm. The main purpose of designed system is to monitor and to control parameters with the help of actuators present in the system to produce special quality vegetables at a faster rate and by revoking the necessity of the arduous activities generally associated with farming. Apart from that, remote monitoring and controlling of the artificial environment to eliminate the dependency on the natural habitat to ensure year-round availability of all plants and vegetables is one of the main objectives of this project. Environmental factors included air temperature, air humidity, illumination, soil moisture, and CO<sub>2</sub> concentration. The sensor layer is IOT based consisting of Soil Moisture Sensor, Humidity and Temperature Sensor and LDR sensor. The whole system was identified on an application with a static IP and a domain name. The recorded temperature and humidity are stored in a cloud database (ThingSpeak), and the results are displayed in a webpage, from where the user can view them directly. So this project is to implement the automation in Farming system, where it increases the efficiency in farming effective water irrigation, motion monitor around the indoor field and fertility of soil.





Design Simulation and Assessment of EEG Based Expert System for  
Classification and Detection of Epileptic Seizure  
Fifth International Conference on I- SMAC (IoT in Social, Mobile,  
Analytics and Cloud) (I-SMAC)

IEEE Xplore

*Shreeanant Bharadwaj (44614804918)*

*December 2021*

Abstract:

Epilepsy is a neurological illness of around 1-2 percent world population prevalence. The feature of epilepsy is repeated seizures known as "epileptic seizures." The human brain is also the most outstanding and sophisticated organ of any system of human body. It has great space-time dynamics. The electroencephalographic signal is the spontaneous electrical activity recorded in the brain during a short period of time. The word EEG refers to a signal from the head that is obtained from the brain. The neuronal bombardment in the brain causes it. The EEG signal provides useful information on brain function and neurobiological illnesses, as it provides visual indications of the recorded waveform and enables approaches for computer-supporting signal processing to be characterized. This is why the most advanced digital signal processing techniques for EEG signal analysis are being used. Our research focuses on analyzing and classifying the signals received by EEG employing signals, such as waves. The EEG characteristics are taken from the statistical analysis of wavelet transformation. The second aim is to enhance classification accuracy once the feature has been extracted. A total of 300 EEG data subjects were analyzed. These data have been classified into three categories: normal, epileptic, epileptic and non-seizure. For this purpose, this research work has employed a back-propagation-based neural network classifier. The second aim is to enhance classification accuracy once the feature has been extracted. 100 subjects from the set and from the data dividing the proposed algorithm for training, testing and validation were assessed for extraction and categorization of functions.

# Next-Generation Smart Electric Vehicles Cyber Physical System for Charging Slots Booking in Charging Stations

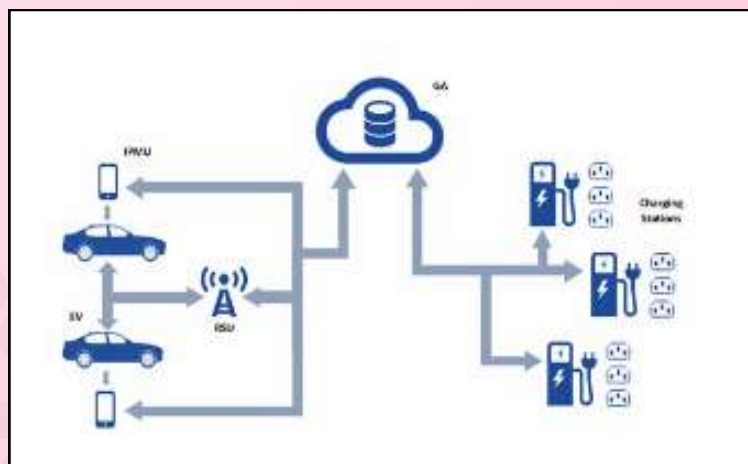
IEEE Xplore

*Nikhil Dubey (05414804918), Abhinav Lal (00314804918), Dev Khetan (03314804918)*

*August 2022*

## Abstract:

Owing to the increased worldwide awareness regarding pollution caused by the consumption of fossil fuels, Battery-powered vehicles are bound to take over the conventional Internal Combustion Engine. Keeping the difficulties faced by the economy of the city and the populace of adapting to an entirely grid-run charging infrastructure in mind, a framework incorporating electric vehicles to everything (EV2X) communication and Charge Slot booking based on data got from a survey conducted has been developed in this literature. The conclusions drawn from the survey develop key insights into developing statisticorating the use of LTE to support the conventional OCPP and promote user controlal models that are further explored in this context. Algorithms and strategies to implement next-generation efficient EV2X communications have been implemented and developed for the city. Further, we have established a priority order for slot booking and incorp over charge-cycles. Introducing IPMUs using an LTE connection to act as a supplement to the conventional OCPP is explored in this context. Besides that, we have built the M/M/m queuing model of EVs in the charging station and its optimisation. We have done the exhaustive evaluation of the robustness of the proposed system in a fairly large-scale network in a discrete-time event simulator. The proposed system's results (simulation, analytical, and comparison) show the reduction of waiting time, good accuracy, and saving of charging time and costs. These performances measures improve shows the real-time applicability of the proposed system.



Solar Powered Hybrid Lawn Mower based on Arduino  
International Journal of Scientific and Research Publications,  
Volume II, Issue 12,

*Dev Khetan (03314804918), Komal Rajput (04514804918), Hritik Mittal (04114804918)*  
*December 2021*

**Abstract:**

Owing to the fact that grass cutter machines are getting increasingly common in today's society. Pollution is human -made, which we can be seen in our daily life. Because the IC engine was employed in older models of lawn cutters, pollutant levels increased as a result of its environmental effect. A cutter powered by an IC engine is more expensive. The cost of maintaining a traditional machine is higher. To address these issues, we want to design a new type of grass cutter that works on solar energy and is more cost-effective than the previous model. Our project's goal is to create a solar-powered lawn cutter, which will save electricity and reduce the labor workforce.





# आविष्कार



## FACULTY OF EEE DEPARTMENT

### Vision

TO PRODUCE TECHNICALLY COMPETENT HUMAN RESOURCES FOR THE ELECTRICAL AND ELECTRONICS INDUSTRY WITH HIGH MORALS AND ETHICAL VALUES.

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**MAHATMA GANDHI BLOCK , BLOCK NO. 6**

**MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY**

**PSP AREA , PLOT NO. 1 , SECTOR 22 , ROHINI , DELHI - 110086 PH. : 01165647741**