MAHARAJA SURAJMAL INSTITUTE OF TECHNOLOGY
C-4 Janakpuri, New Delhi- 110058

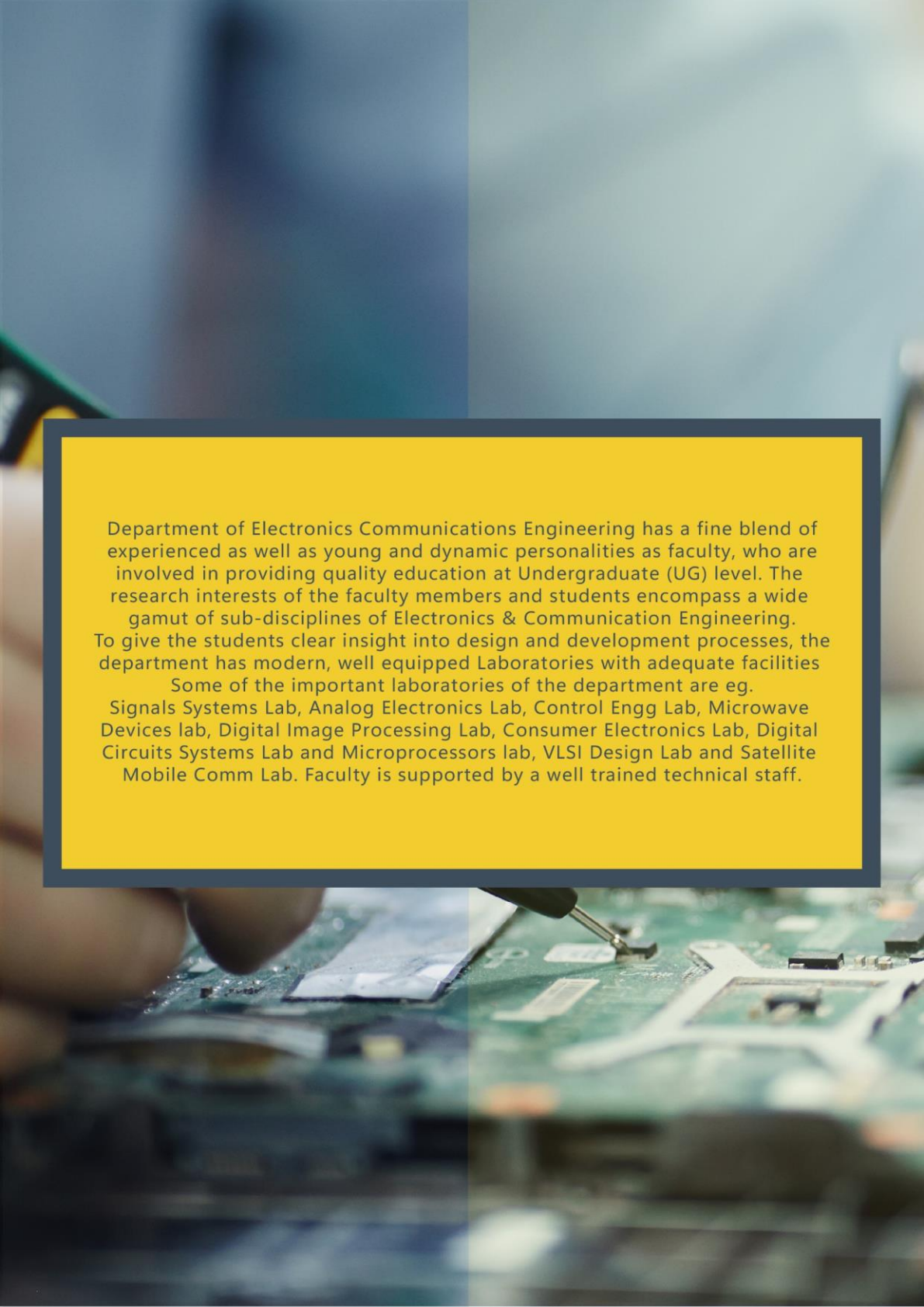
Maharaja Surajmal Institute of Technology established in 2001 is a NAAC Grade accredited, ISO 9001 2015 certified, NBA accredited Institute, affiliated to GGSIP University, located in JanakPuri New Delhi.

The Department of Electronics Communication Engineering, MSIT aims at unceasing commitment towards students, helping them learn, grow, and develop and achieve their goals. The department is performing outstandingly with the complete support of management of Surajmal Memorial Education Society and under leadership of our Director Col(Dr) Ranjit Singh. The department is headed by Prof. Dr. Archana Balyan with a young, experienced and dynamic team of 6 Associate Professors and 18 Assistant Professors.

Elektro News

Volume 3 Jan-Dec 2022

DEPARTMENT OF ELECTRONICS AND COMMUNICATION



Department of Electronics Communications Engineering has a fine blend of experienced as well as young and dynamic personalities as faculty, who are involved in providing quality education at Undergraduate (UG) level. The research interests of the faculty members and students encompass a wide gamut of sub-disciplines of Electronics & Communication Engineering.
To give the students clear insight into design and development processes, the department has modern, well equipped Laboratories with adequate facilities Some of the important laboratories of the department are eg.
Signals Systems Lab, Analog Electronics Lab, Control Engg Lab, Microwave Devices lab, Digital Image Processing Lab, Consumer Electronics Lab, Digital Circuits Systems Lab and Microprocessors lab, VLSI Design Lab and Satellite Mobile Comm Lab. Faculty is supported by a well trained technical staff.

From HOD's Desk

Prof. (Dr. Archana Balyan
B.E (Electronics Engineering) , M.E (ECE), Ph.D (CSE)

Experience -27 years 5 months

Greetings from the Department of Electronics and Communication Engineering at Maharaja Surajmal Institute of Technology, New Delhi. It gives me immense pleasure to lead the Department of Electronics and Communication Engineering which is striving towards the goal of imparting quality education to the students to achieve academic excellence.

Since its inception in the year 2001, the department has maintained an exemplary academic record. We have been accredited by the National Board of Technical Education (NBA) and also National Accreditation Assessment Council (NAAC). We are associated with professional bodies like ISTE.

The major strength of the ECE department is a team of well qualified and dedicated faculties who are continuously inspiring the students for their academic excellence. The department has well-equipped laboratories with modern instrumental facilities. As part of the development of Digital Logic and Computer Design (DLCD) Lab for the UG students, we have purchased 20 number of PCs with latest configuration DELL OPTIPLEX 5090, i7,12TH GEN processor etc. Also, a smart class with state- of - art audio video facilities, 86" interactive LCD display for the students has been developed. The department has arranged several industrial visits and workshops for our students in this semester.

The motto of the department is to provide quality technical education to make the students industry-ready. We promote teamwork among students through projects and co-curricular activities. The excellent infrastructure, dynamic teaching staff along with training and placement cell ensure a bright future to the students. The faculty members are involved in research and development activities and are pursuing their Ph.D., in their related domains.

We are assured that our students will rise as assets not only to the institution and to the organization they join, but to the society at large. With this, I would like to congratulate the students and staff for their brilliant achievements and wish them a great future.

"All the Best"

Prof. (Dr.) Archana Balyan
Head, Department of ECE

Vision

ECE department strives to become a centre of quality education to meet the global technological needs for the benefit of mankind.

Mission

M1: To impart high quality education in the field of electronics & communication engineering to meet the national and global challenges.

M2: To provide adequate facilities, infrastructure and environment to the students as well as faculty members thereby creating an ambience conducive for teaching-learning process.

M3: To empower the students by enhancing their soft skills and ethics to create social awareness and imbibe national values so as to become good citizen.

M4: Creating a thrust for life-long learning through interaction with outside world on contemporary issues and technological trends.

Program Educational Objectives (PEOs)

PEO1: To produce ECE graduates with strong foundation in engineering and technology for personal and professional growth.

PEO2: To prepare the graduates who will be able to serve/lead various organizations with acquired skills and knowledge.

PEO3: To prepare the graduates who would attain professional competence through life-long learning in higher studies, research work and other professional activities.

PEO4: To prepare the graduates who will practice their profession with ethics, integrity and social responsibility in global context.

Practices followed in the Department

MENTORING

A mentor guides a group of twenty students. The objective of mentoring is to improve the academic performance of the students. The mentors interact with students and identify if they have any learning barriers. Mentors work with students individually to help students to work through difficult issues so that they can stay focussed in the classroom and get the maximum benefit.

COURSE BASED PROJECTS

The students are driven to implement course based projects as an outcome of their laboratory course. This method intends creative imitation leading to research and innovation. Projects are developed for laboratory courses of every semester and are presented.

GUEST LECTURES

Guest speakers from industry/academics are invited to deliver lectures on emerging technologies. These lectures give students exposure to industry oriented technologies and perspective of the guest speaker's field of work or expertise. One important benefit that is derived from having a guest speaker is the enhancement of the students' educational experiences.

ONLINE RESOURCES

Various digital platforms like Coursera at the college provides e-learning opportunities through online courses in many fields, such as Programming in C, Data Structures and Algorithms using Python Programming, Introduction to DBMS etc.

AWARDS

Awards for Academic excellence are given to meritorious students, Gold medallists and to Branch Toppers with Prize money for first and second position.

Students Achievement

Garvit Virmani

- CodeForces round #780 (Div 3)- Certificate of completion
- Kickstart event- Certificate of completion
- Code Jam- Certificate of Qualifying

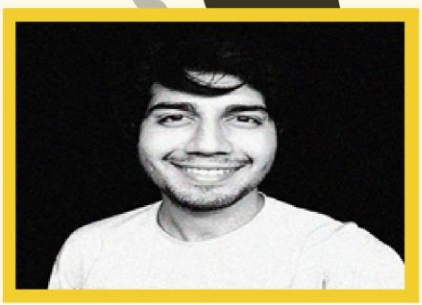
Sarvoch Gupta

- The Delta 2.0- Certificate of Appreciation

Placement

A 1.7Cr package is offered by Google by a student from the department while three other students secure 1.2Cr packages for themselves.

Placement Record 2022



Ms. Shreya Singh got selected at Google, with an annual package of 1.7Cr.
Mr. Arijit Kundu, Mr. Yatan Srivastava and Mr. Rahul Rana got selected in Amazon, Ireland at an annual package of 1.2Cr.
A student got placed in Microsoft for a package of 50LPA.

S. No.	Total no of Students	Total no of Students Placed	Average Package
1	180	154	6.75 LPA

Technological advancements in Labs

Smart TV Installed in Seminar Hall 206

A 75" LED Backlit, Touchscreen LED TV was installed in the seminar hall 206 recently. Powering a massive 3840x2160 (SSD) 4K display with inbuilt speakers, this i5 8GB RAM and 128GB SSD device is sure to bring smoother and better quality in lectures and workshops conducted there.

Digital Logic and Circuit Design lab gets new PCs

20 PCs were installed in the DLCD lab of the Electronics and Communication Department to aid the students in their programming practicals. The new i5 PC with 2GB RAM and 1TB HDD running on the new-gen Windows 10 are a crucial addition to the lab.

Department Publications

S. No.	Title of paper	Faculty name	Journal name	Index
1	Economic analysis of lithium ion battery recycling in india	Dr. Deepti Deshwal, Dr. Pradeep Sangwan, Dr. Naveen Dhaiya	Wireless Personal Communications	SCI
2	A comprehensive approach for performance evaluation of Indian language identification system	Dr. Deepti Deshwal, Dr. Pradeep Sangwan, Ms. Neelam Nehra, Dr. Aman Dhaiya	Journal of Intelligence and Fuzzy system	SCI
3	An efficient machine learning based MDD Detection System in IoMT Framework	Ms. Geetanjali Sharma	SN Computer science	ESCI
4	High -Performance 32 bit parallel Hybrid Adder design using RNS and hybrid PTL/CMOS Logic	Ms. Geetanjali Sharma	Journal of Circuit system and Computer	SCI
5	Waste management model for covid-19 recommendations for future threats	Ms. Deepshikha Yadav, Suman Mann, Dr. Archana Balyan	IJEST	SCIE
6	Artificial Intelligence based blockchain technology for skin cancer investigation complemented with dietary assessment and recommendation using co-relation	Dr. Archana Balyan	Journal of Food quality	SCIE
7	A review of Piezoelecric energy harvesting tiles: available designs and future perspective	Dr. Puneet Azad	Energy Conversation and Management	SCI

S. No.	Title of paper	Faculty name	Journal name	Index
8	Modularized hypergraph clustering scheme model for stable VANET	Mr. Parveen Kumar	Concurrency and Computation:Practice and Experience 2022, Wiley	SCI
9	Evaluating Uncertainty of Measurement While Predicting Location in Smart Vehicles	Dr. Sudesh Pahal , Dr Neeru Rathee	MAPAN	SCI
10	Evaluating the Uncertainty of Classification Due to Image Resizing Techniques for Satellite Image Classification)	Dr Neeru Rathee, Dr. Sudesh Pahal	MAPAN	SCI
11	Robust Digital Watermarking Techniques for Copyright Protection of Digital Data: A Survey	Dr. Poonam Dhaiya, Dr. Shaifali Madan Arora	Wireless Personal Communication	SCI
12	Tunable terahertz circularly polarized dielectric resonator antenna	Dr. Richa Gupta	Optik	SCI
13	How will COVID-19 impact renewable energyin India? Exploring challenges, lessons and emerging opportunities	Dr. Deepti Deshwal	Energy Research and Social Science	SCI
14	Performance of a Language Identification System using hybrid features and ANN learning algorithms	Dr. Deepti Deshwal	Applied Acoustics, Elsevier	SCI
15	Design and Construction of a Low Loss Substrate Integrated Waveguide (SIW) for S Band and C Band Applications. MAPAN, pp.1- 9.	Dr. Aman Dhaiya, Dr. Deepti Deshwal	MAPAN	SCI
16	Evaluating the Uncertainty of Classification Due to Image Resizing Techniques for Satellite Image Classification)	Dr. Dinesh Sheoron	MAPAN	SCI

Faculty Development Program

Dr. Archana Balyan (HOD), Dr. Puneet Azad, Dr. Sudesh Pahal, Dr. Meena Rao, Dr. Shailfali M. Arora,Dr. Neeru Rathi, Mr. Deepak, Dr. Dinesh Sheoran, Dr. Deepshika Yadav, Dr. Poonam Dahiya, Dr. Aman Dahiya, Ms. Anshul Pareek, Ms. Neelam Nehra, Dr. Sakshi Rajput, Ms. Vishakha Tomar, Ms. Himani, Ms. Suman Lata, Ms. Sonia attended an Industrial training programme on Deep Learning from **31 November 2022 to 3 December 2022** conducted by **Brain Mentors Pvt. Ltd.**

Dr. Dinesh Sheoran also attended a seminar on **Stress Management** from **20 June 2022 to 22 June 2022** conducted by **ITC Academy/ Gargi College.**

Faculty Acievements

Dr. Puneet Azad, Associate professor

Conducted research under **INSA Visiting Scientist Fellowship** at Smart Materials and Structures Lab, **IIT Mandi** during 2022-23.
He won the **INSA Vising Scientist Award** for the year.

Dr. Neeru Rathee

Delivered a lecture on **"Meta learning for automatic pain intensity detection"** on 21.01.2022 for the online Short Term Course on **"Biomedical Image and Signal Processing"** by **NITTTR** from 17.01.2022 to 21.01.2022.

Ms. Geetanjali Sharma

Delivered an expert talk **"Artificial Inteliigence in Healthcare"** in **Academy Training Program** organised by **E&ICT academy** on **"Smart Healthcare Technologies: Opportunities and Challenges"**, on 25th July 2022 held at **Malaviya National Institute of Technology, Jaipur.**

Ms. Vishakha Tomar

Organised **plantation drive** under **Unnat Bharat Abhiyan** in **Asalatpur village** on 28th April 2022.

Dr. Aman Dahiya, Assistant Professor

Won best paper presentation in national conference **ASTEP- 2022** held at **BSSITM, Lucknow** on 16-17th September 2022.

EVENTS ORGANISED

1. Entrepreneurship Awareness Programme

An expert lecture cum Entrepreneurship Awareness Programme was organized by Department of ECE-2 nd Shift in collaboration with Ministry of Micro, Small and Medium Enterprises (MSME) on March 3rd, 2022 in the seminar hall of Maharaja Surajmal Institute of Technology. The session started by Mr. Manoj Sharma, Assistant Director, MSME

2. Sensor Technology: Design and Implementation

Expert Lecture on "Sensor Technology: Design and Implementation of sensors for various applications" was organized by ECE department on 5th April 2022 from 1:00-2:30 pm in online mode. Prof. (Dr.) Rajveer Singh Yaduvanshi, Professor, Deptt. of ECE, NSUT, delivered the lecture for the faculty members of ECE and other departments as well.

EVENTS ORGANISED

3. Start it up with Internet of things

An expert talk on "Start it up with Internet of things (IOT" was organized by Department of Electronics & Communication Engg. on April 19th, 2022 from 10:00-11:00 am in seminar Hall 206. Mr. Rakshit Satija, Founder and CEO at SKYWARE and Mentor for Industrial Training at IIT Chennai delivered the talk for the students of ECE and other departments as well. Mr. Rakshit Satija enlightened the attendees with the information regarding sensors and implementation in IOTs and wearables, which are revolutionising electronics industry.

4. IOT and Tactile Communication in 5G Networks

An expert lecture on "IOT and Tactile Communication in 5G Networks: A path to low latency and high Reliability" was organized by ECE department on 17th November 2022 from 11:30 am to 1:00 pm. Prof. (Dr.) Brejesh Lall, Department of Electronics and Communication, IIT Delhi delivered the lecture for faculty members of the institute and students. He talked about 5G and beyond requirements, tactile internet: Vision and Requirements, Architecture and Technology Components, Enhancements in wireless access for TI, AI capabilities for TI, TI with MEC sensors and relate technology.

EVENTS ORGANISED

5. Depression and Anxiety: How to identify and Treat

The department of Electronics and Communication Engineering has organized an expert lecture on "Depression and Anxiety: How to identify and Treat" for faculty and students on November 24, 2022 from 9:00 am-10:00 am. Dr. Apala Aggarwal Tuteja, Consultant Psychiatrist and a De-addiction Specialist, was the expert for lecture. She has a rich clinical experience in diagnosing and treating persons with mental illnesses.

6. Career opportunities after Engineering by BYJUS

1. Seminar was conducted by BYJU'S on 7th November 2022 to increase awareness amongst the students about the career opportunities after engineering. The session started at 10:30 am. Students were informed about competitive examinations like CAT, GATE etc.

7. Industry Visit - CSIR-National Physical Laboratory

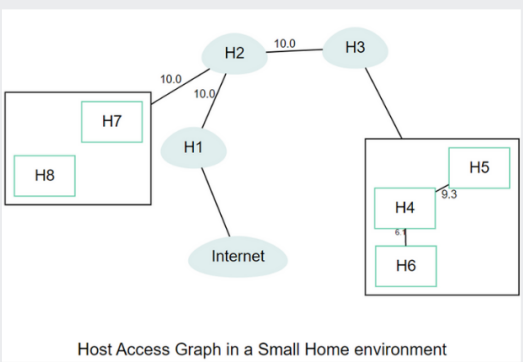
On 28th September, the students of Maharaja Surajmal Institute of Technology, ECE Department went on one-day industrial trip to the CSIR-National Physical Laboratory, Pusa Road, New Delhi

PROJECTS

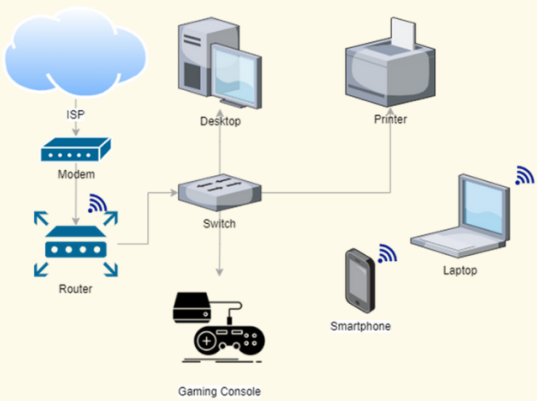
CVSS Based Statistical Analysis Of Network Security

A network is a collection of devices that share resources via communication protocols. Nearly every business is now partially or totally reliant on computer networks for its key operations. Every piece of technology, while useful, comes with its set of vulnerabilities - i.e. weaknesses in the system which allow attackers to compromise its security. The Common Vulnerability Scoring System (CVSS) is a tool for determining how easy a target certain software is. The CVSS base score is widely used by cybersecurity professionals as a fundamental metric for determining the severity of an exploitable issue.

While calculating this score for large organisations, network administrators must consider not only a single vulnerability exploit, but also multi-stage and multi-host vulnerability attacks. To account for this, an attack graph is created to determine the logical link between various attacks. However, as the network's size and complexity grow, two key issues arise. First, as the size of the network and method complexity expand, the attack graph grows exponentially. Second, it becomes difficult to interpret the information presented by the graph. It is also error-prone as most Red Teams create these graphs manually. This project aims to propose a model to determine which nodes in the host access graph of a network are most likely to be targeted by attackers.



Host Access Graph in a Small Home environment



AUTOMATIC FLOOR CLEANING ROBOT

The main objective of this project is to design and implement a vacuum robot prototype by using Arduino Mega, Arduino Shield, LDR Sensor, Real Time Clock, Motor Shield L293D, Ultrasonic Sensor, and IR Sensor and to achieve the goal of this project. Vacuum Robot will have several criteria that are user-friendly.

Based on the command given by user from developed android application to the system, Arduino direct servo motor to make the brush up or down, pumper to pour out the water to the floor hear we use water spray motor to spray a water to the floor, the wheels of the robot to move forward, back ward, left, right, stop and mopper to do mopping or not. It is simple, portable, modern house holding device everyone can operate it easily with safety. Generally, this floor cleaning robot is very important one for our health and reduce the man power requirement.

Group Member :

1. Vyomika Madan
2. Mohit Mohan
3. Kinshuk Singh

Mentor:

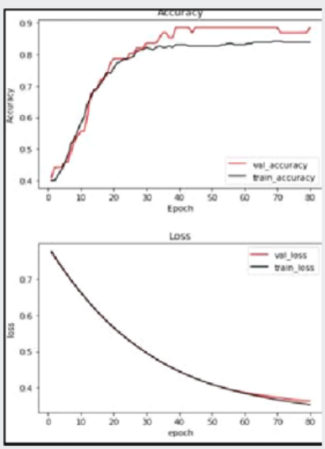
Dr. Puneet Azad

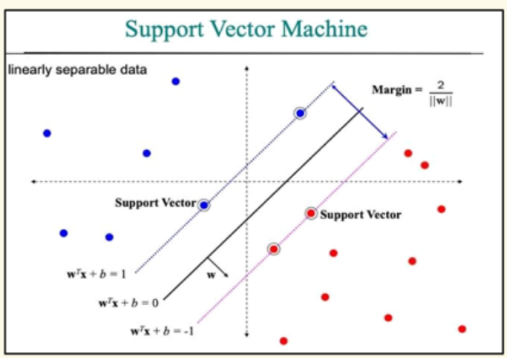
Heart Disease Prediction Using Machine Learning

Our problem is that we want to predict whether patients have heart disease by some given features of users. This is important to medical fields. If such prediction is accurate enough, we can not only avoid wrong diagnosis but also save human resources.

We use some libraries provided by Python to implement this project. After the experiments, the algorithm of Random Forest gives us the best test accuracy, which is 91.8%.Though we get a good result of 91.8% accuracy, that is not enough because it cannot guarantee that no wrong diagnosis happens. To improve accuracy, we hope to require more dataset because 300 instances of dataset are not sufficient to do an excellent job. In the future, to predict disease we want to try different diseases such as lung cancer by using image detection. The motivation for the study was to find the most efficient ML algorithm for detection of heart diseases. This study compares the accuracy score of Decision Tree, Logistic Regression, Random Forest and Naive Bayes algorithms for predicting heart disease using UCI machine learning repository dataset. The result of this study indicates that the Random Forest algorithm is the most efficient algorithm with accuracy score of 90.16% for prediction of heart disease. In future the work can be enhanced by developing a web application based on the Random Forest algorithm as well as using a larger dataset as compared to the one used in this analysis which will help to provide better results and help health professionals in predicting the heart disease effectively and efficiently.

Group Members:
Anshul Dharmshaktu
Kanupriya
Shivam Azad
Mentor: **Dr. Richa Gupta**



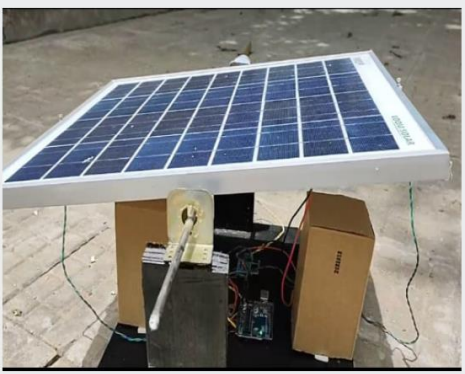


Sun Tracking Solar Panel

Your paraTrack the intensity of the sunlight and recalibrate the position of the solar panel for maximum generation of electricity.The Sun tracking solar panel consists of two LDRs, a solar panel, a dc geared motor, and an Arduino UNO board. Two light-dependent resistors are arranged on the edges of the solar panel. Light-dependent resistors produce low resistance when light falls on them. The dc geared motor connected to the panel rotates the panel in the direction of the Sun. Solar Panel is arranged in such a way that light on two LDRs is compared and the panel is rotated towards LDR which have high intensity i.e., low resistance compared to other. The Servo motor rotates the panel at a certain angle.

When the intensity of the light falling on the right LDR is more, the panel slowly moves toward the right and if the intensity on the left LDR is more, the panel slowly moves toward the left. In the noon time. Sun is ahead and the intensity of light on both the panels is same. In such cases, the panel is constant and there is no rotation.When designing and installing a solar power system for your property, you have several unique ways to choose from. But if you prefer to have a ground-mounted solar panel installation, it would be better to consider a solar tracking system so you can get the maximum amount of sunlight to power your house.

Group Members:
Vanshika Singh
Varun Jain
Vishal Dutta
Mentor: Dr. Puneet Azad



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EVENTS GALLERY

EVENTS GALLERY

EVENTS GALLERY

JANAKPURI

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Chief Editor: Ms. Vishakha Tomar

Student Editor: Yash Mani Prakash (4th Sem ECE)