# TECH TALK

COMPUTER DEPARTMENT NEWSLETTER


# About Domain Newsletter

The third edition of Tech Talk showcases various activities of each domain and highlighting some of the interesting projects done by our Final year students. It provides a pathway for the budding students to get aware of these developments and keep them abreast of the latest technology under these domains.

Dr. Harshali Patil

HOD, Computer Engineering Dept.

# Whats Inside?

1. Intelligent System Design and Development
2. Software Design and Information Management System
3. Communication and Web Engineering
4. Multimedia System Design
5. Computing and System Design

# Editorial Team

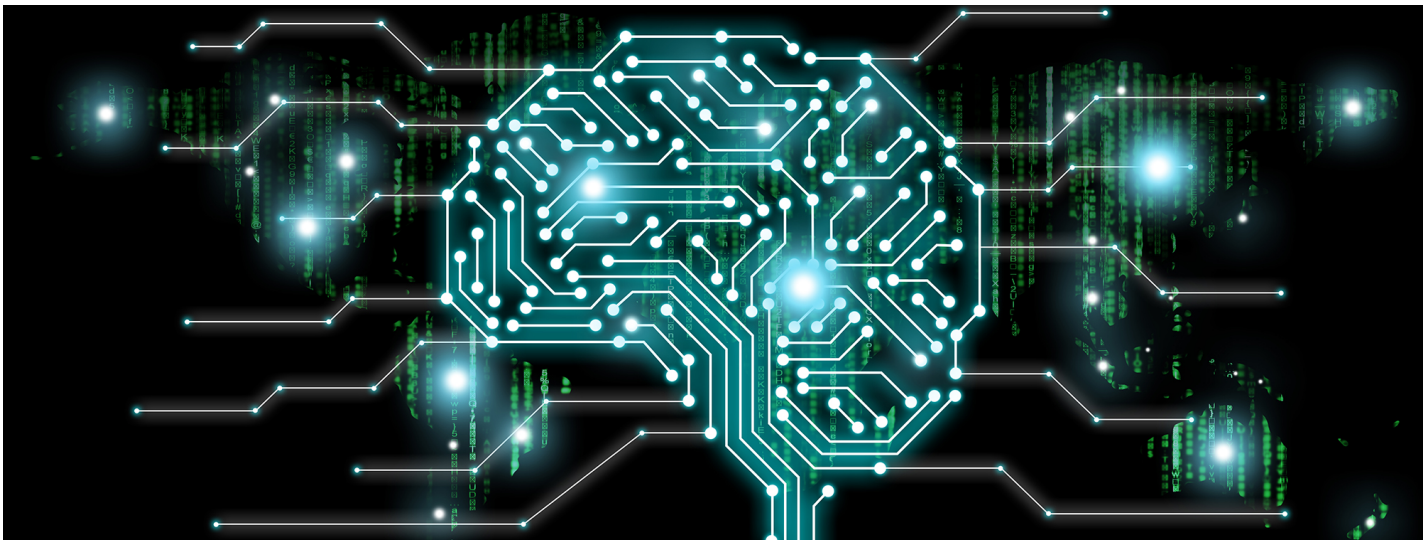
- Faculty Incharge: Dr. Rashmi Thakur
- Aman Syed
- Ankur Kulkarni
- Gaurav Padam
- Jatin Vishwakarma
- Saurabh Vishwakarma

2021-2022

# TECH TALK

Vol 3 Issue 1

*Computer Department Newsletter*



# INTELLIGENT SYSTEM DESIGN & DEVELOPMENT

## ABOUT DOMAIN

The domain of INTELLIGENT SYSTEM DESIGN AND DEVELOPMENT is driven by the vision of molding students into their best selves.

The domain focuses on:

- To understand basic knowledge representation, problem-solving, and learning methods of
- intelligent system
- To assess the applicability, strengths, and weaknesses of the basic knowledge representation,
- problem-solving, and learning methods in solving particular engineering problems.
- To develop intelligent systems by assembling solutions to concrete computational problems.

**DOMAIN IN-CHARGE:**

**DR. MEGHARANI PATIL**

## A.Y 21-22 FINAL YEAR PROJECT LIST

- Automated Healthcare System using Gamification and AI based Chatbot
- Semantic Similarity and Autonomous Tagging for Q&A Forums
- Disease prediction from medical reports using clustering followed by classification
- driveAI: Design and Development of a Dashboard for Testing and Deployment of Autonomous Driving Deep Learning Models

# DRIVE-AI: DESIGN AND DEVELOPMENT OF A DASHBOARD FOR TESTING AND DEPLOYMENT OF AUTONOMOUS DRIVING DEEP LEARNING MODELS

*By: Shivanshu Shrivastava, Anuja Somthankar, Vedant Pandya*
*Guided by:- Dr. Megharani Patil*

This project was divided into 2 parts: a web-based dashboard and an end-to-end framework for autonomous vehicle navigation. The Web-Dashboard is capable of automating the process of Training, Training-Deployment (Integration) and providing metrics for model performance on CARLA Simulator. It was developed, facilitating easy training for Deep Learning Models over hosted servers. The End-End framework was proposed for autonomous driving, which processes a given image, detects traffic signals in the given image, identifies the colour of the traffic lights and then using area of traffic signal, traffic light colour and the RGB image, predicts the steering angle, throttle and brake values.

# ROADMAP OF INTELLIGENT SYSTEM DESIGN AND DEVELOPMENT DOMAIN

The subjects are as mentioned below:

- Maths for ML,
- Machine learning,
- Soft computing,
- fuzzy logic,
- Deep learning,
- Natural language processing

# TOOLS AND TECHNOLOGIES

Specific expert system tool, Shells, Support tools, Hybrid environments
Programming Languages: R Programming, Python, Java, Internet/Web/Intranet-based Tools, etc.

Deep learning. Al replacing workers, Internet of Things (IoT), Breakthroughs in emotional understanding, Al in shopping and customer service, Ethical questions. .

# PROJECT AREAS

- Intelligent Chabot's, Search Engines, Robots
- Recommender Systems
- Smart Home Systems
- Smart Agriculture System
- Disaster management system Vehicle /Ambulance tracking system
- Medical wearable devices
- Intelligent traffic management
- Intelligent Tutoring/ Training
- system
- Intelligent Tourist Information System

# Project Competition: ArtIntelligence

| Project Title | Problem Definition | Team Members | Mentor | Company |
|---|---|---|---|---|
| AI based remote Placement Interview Bot | HiringTek provides an interview platform as a service for taking the technical interviews using AIBot without human involvement. | **Faraz Hussain, Suyog Gupta, Rohan Dalvi** | Dr. Megharani Patil | HiringTek Inc |
| Job board app | HiringTek provides a recruitment platform as a service and also building a jobs board public app to list out jobs posting. It will be accessed from all mobile platforms and desktop devices. | Umair Khan, Ranjan Gupta, Aryan Gaikwad | Dr. Megharani Patil | HiringTek Inc |
| ROI (Return of Investment) Calculator for Smart Hydroponics Farming System | HydroTek Farm provides end-end platform for monitoring and autonomously growing Hydroponics plants indoor and in control environment. | Narayan Jha,Rahul Jha,Vinayak Jha | Dr. Megharani Patil | HiringTek Inc |
| AI based voice and face recognition proctoring system | HiringTek provides an interview platform as a service for taking the technical interviews using AIBot without human involvement. | Sonali Rasal, Samkit Shah, Ankit Yadav | Dr. Megharani Patil | HiringTek Inc |

## Industries

- Brain
- Amazon
- Anki
- Apple
- Banjo,
- CloudMinds
- Facebook
- Google
- IBM
- Intel
- iCarbonx
- Iris Al
- Next IT
- Salesforce
- SoundHound
- Twitter
- ViSenze
- X.ai
- Zebra Medical

## KNOWLEDGE ROADMAP

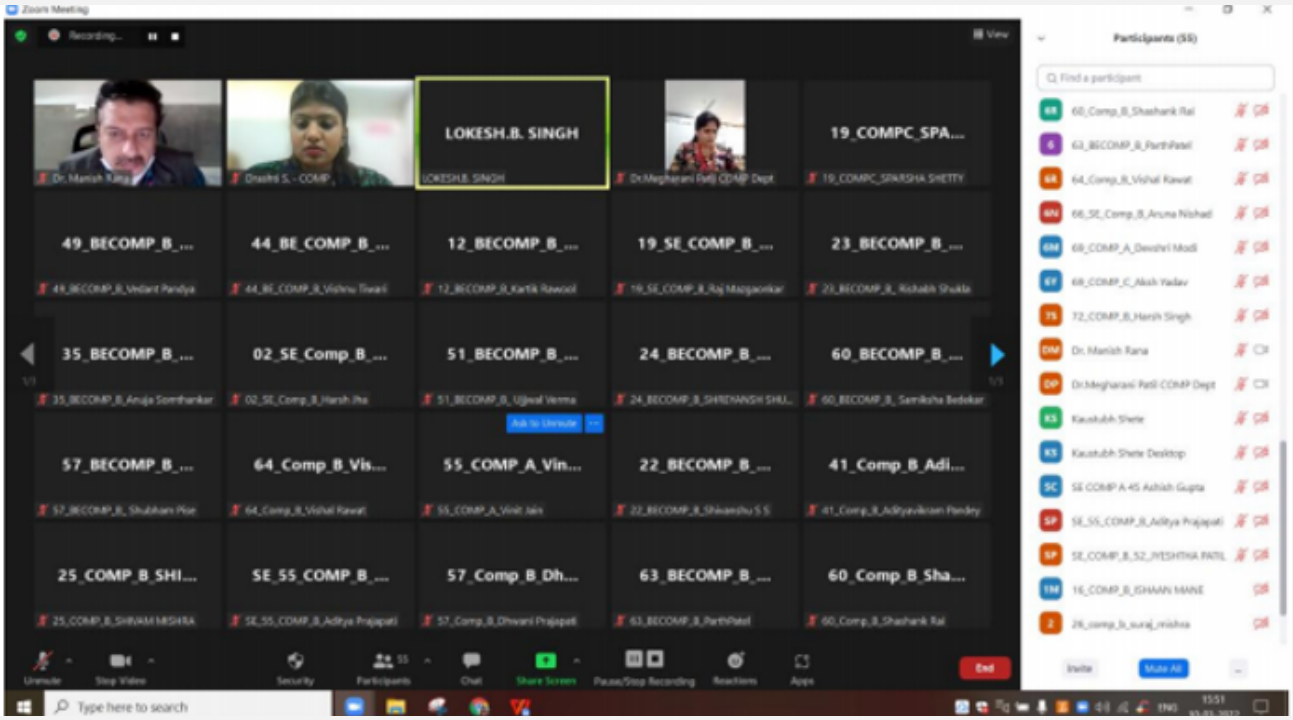
- Linear Algebra
- Calculus
- Probability and Information Theory

- Optimization methods
- Mathematical Functions
- Classification by Learning Behavior
- Broad classifications

- Machine Learning
- Deep Learning
- Supervised learning
- Unsupervised learning

- Computer Vision
- Natural Language Processing

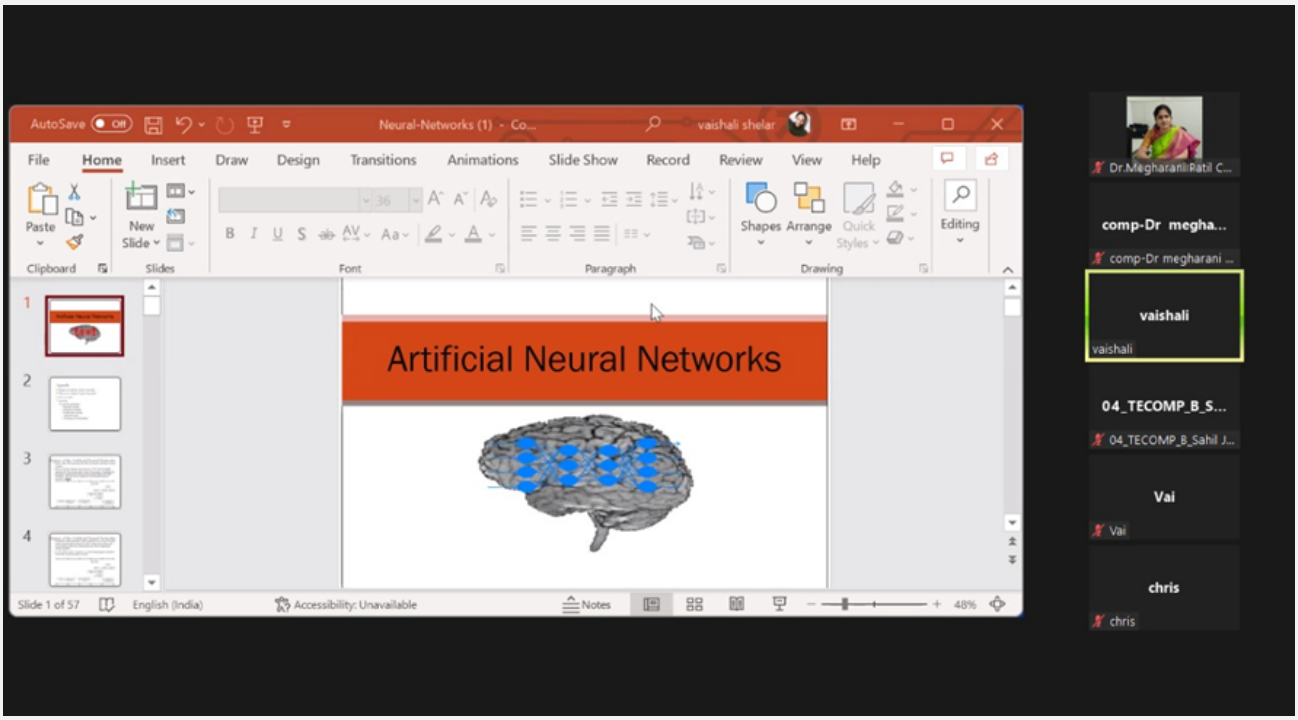
# DOMAIN ACTIVITIES




A) Group Discussion on: “Career Opportunities in AI"


B) Poster Making Activity

# DOMAIN ACTIVITIES




C) Guest Lecture on Soft Computing


D) Project Competition : ArtIntelligence

# STUDENT ACHIEVEMENTS IN DOMAIN:

Students received consultancy project under mentor-ship of Dr. Megharani Patil as per the request received from startup HydroTekFarm dated: 12th December, 2021. Their final year project is “driveAI: Deep Learning Dashboard” which allows for automation of Deep Learning Models and Frameworks for Autonomous Vehicles.

The problem statement asks the students to develop:

1. Improve the accuracy of Object Detection models to detect the pest/insect and fungal deceases.
2. Develop techniques to automate the building and training the model.
3. Automation of deployment on Kubernetes Auto Pilot Clusters on Docker.

The students that are collaboratively working on the project are:

| Sr. No. | Name | Roll No. | Class |
|---|---|---|---|
| 1. | Shivanshu Shrivastava | 22 | BE COMP B |
| 2. | Anuja Somthankar | 35 | BE COMP B |
| 3. | Vedant Pandya | 49 | BE COMP B |

The payment agreement specifies that they will provide Rs. 1, 00,000/- to the institution towards the services provided after completion of work.

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# TECH TALK

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# SOFTWARE DEVELOPMENT AND INFORMATION MANAGEMENT SYSTEM

## ABOUT DOMAIN

It infiltrates digital revolution among budding engineers with its prime objectives to-

- Focus on processing and managing the retrieval of data from databases
- Identifying areas where database can be used with various techniques to handle huge data
- To analyze and identify problems and design and choose relevant models and algorithms which can be applied.
- To study various algorithms to find patterns to predict and forecast so as to improve the performance

**Domain In-Charge:**
**DR RASHMI THAKUR**

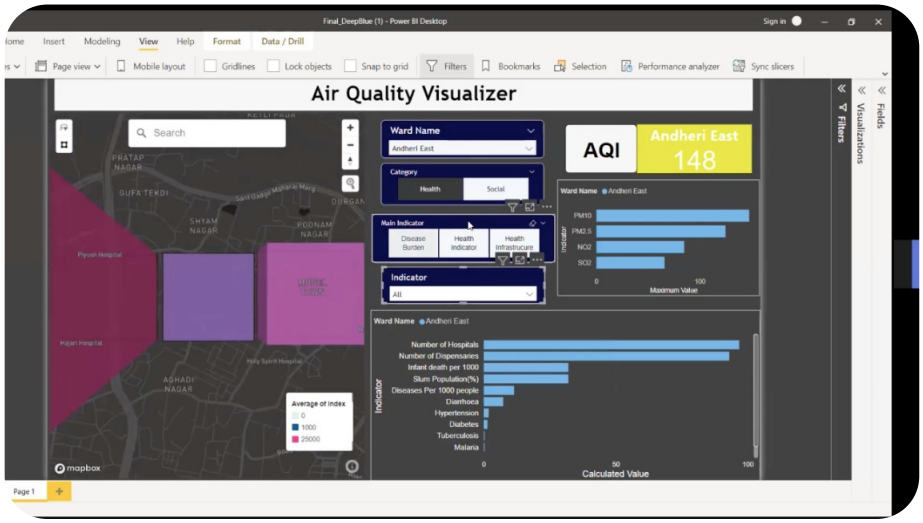
## A.Y 21-22 FINAL YEAR PROJECT LIST

- Meddaan - An Initiative to Distribute unused Medicine
- Performance Analysis of Crop Yield Prediction using Data Mining Techniques
- Training & Placement Module-A Review
- Machine Learning and Blockchain – An Emerging Technology for Credit Card Fraud Detection and Prevention

# PERFORMANCE ANALYSIS OF CROP YIELD PREDICTION USING DATA MINING TECHNIQUES

*By- Munazza Gaoher, Rutika Pawar, Asmita Gawde Guide: Mrs. Vaishali Nirgude*

This analysis principally focuses on anyhow farmers will profit by exploiting trendy data processing methodologies and thereby scale back prices, increase profits, acquire new farming techniques, retain current farmers, cultivate new crops. Data processing methodology regularly will improve upon ancient applied mathematics approaches to determination business solutions. As an example, data processing will usually improve existing models by finding further, vital variables, distinguishing interaction terms, and detective work nonlinear relationships. Models that predict relationships and behaviors additional accurately result in bigger profits and reduced prices. During this were used to compare the values of Root Mean Squared Error, Mean Absolute Error, and Relative Absolute Error. The lesser the value of error, the more accurate the algorithm will work. The outcome is based on a comparison among the classifiers.




## TOOLS AND TECHNOLOGIES

Microsoft SQL Server, Mongodb, mysql, Java, Php, C++. R, staruml, Github, Cloud era, VM ware etc.

Real Time Database Systems, Parallel and Distributed Databases, Database Security, Data Mining Distributed Data Mining, Big Data Analytics, Recommender System, Sentiment Analysis, Twitter Analytics, Predictive Analytics

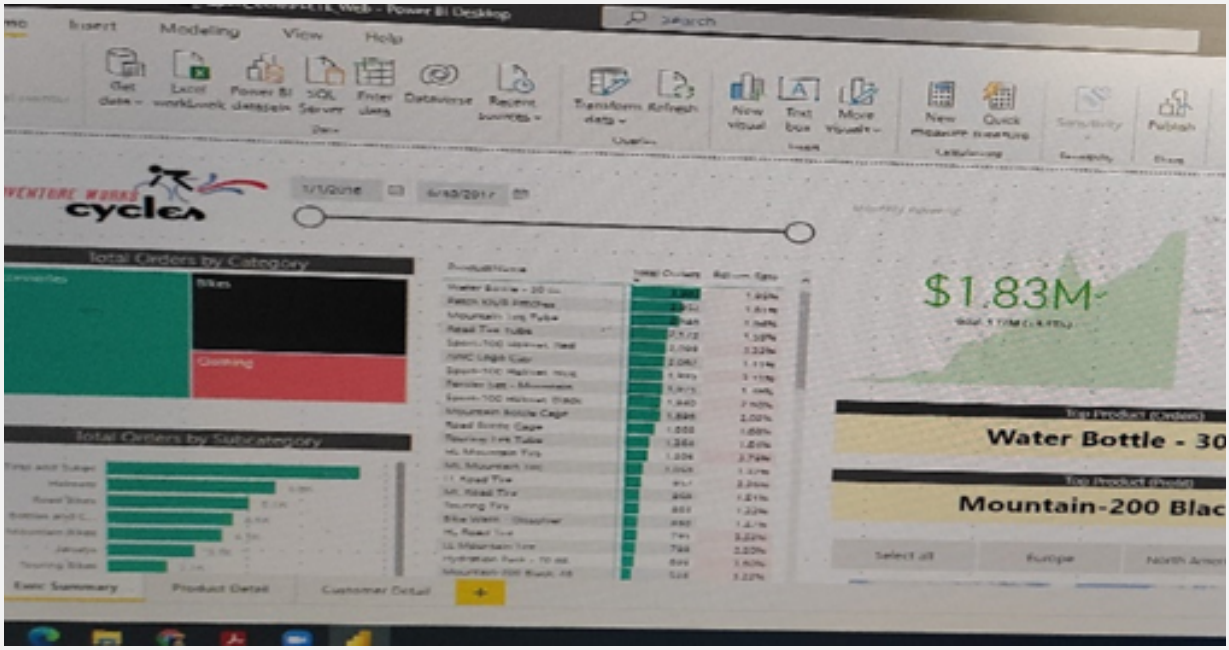
## PROJECT AREAS

- Automated Timetable Generator,
- Smart Delivery System,
- Online Canteen Management System using Payment Gateway
- Student Management System,
- Billing System using Raspberry-pi
- Roadways Safety Suggestions,
- Learning Management System,
- Smart Automated Computer things,
- Realtime monitoring and control in irrigation system

## INDUSTRIES

- IBM
- Google
- Apple
- Oracle

# DOMAIN ACTIVITIES




A) Guest Lecture on Business Intelligence


B) Poster Making Competition

C) Project Competition

# ROADMAP OF SOFTWARE DEVELOPMENT AND INFORMATION MANAGEMENT SYSTEM

The domain Software Development and Information Management System offers students a plethora of subjects to expand their knowledge and become capable engineers. The subjects are as mentioned below

- DBMS (Database Management System)
- Advanced DBMS
- Software Engineering
- Data Warehousing and Mining
- Data Analytics
- Enterprise resource planning
- Information Retrieval
- Data Science

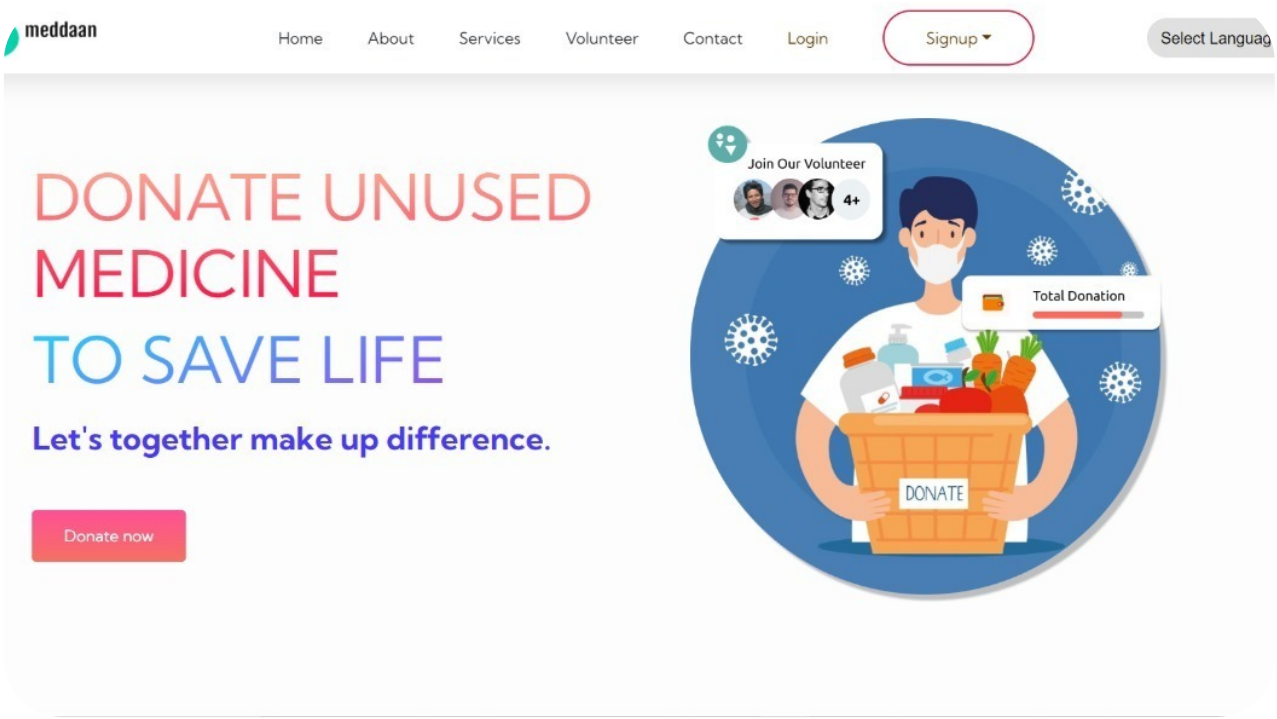
# GOOD ONGOING PROJECTS FROM DOMAIN

## MEDDAAN - AN INITIATIVE TO DISTRIBUTE UNUSED MEDICINE USING MACHINE LEARNING

*By Deepak Gupta,Chandan Mishra,Nitesh Mishra*
*Guided by: Dr. Rashmi Thakur*

*Received First Prize in Mind's Eye Competition*

Reusing and/or Recycling are the words everyone is aware of but unfortunately, the global implementation of these words is poor. Extending this idea to medicines, this Idea provides an economical yet beneficial way of reusing and recycling medicines using "Medicine Banks." Reusing medicines will not just save a lot of lives, but will also prevent the need for measures like "Pharmaceutical Waste Management". In this Project a platform is developed where individuals can donate their unwanted medicines which can be helpful for the needy ones.



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# TECH TALK

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# COMMUNICATION NETWORKING AND WEB ENGINEERING

## ABOUT THE DOMAIN

The domain of Communication Networking and Web engineering is driven by vision of molding students into their best selves. The domain focuses on to:

- Build an understanding of the fundamental concepts of data communication.
- Build an understanding of the fundamental concepts of computer networking.
- Allow the student to gain expertise in some specific areas of networking, wireless communication.
- Allow the student to gain expertise in overall security of computer.
- To gain knowledge in web development. To gain knowledge in Mobile development.
- To create and deploy applications in cloud.

**Domain In-Charge:**

**DR. ANAND KHANDARE**

## A.Y 21-22 FINAL YEAR PROJECT LIST:

1. Raktseva-Blood donor App
2. Smart Weighing machine for farmer
3. A portal to connect vagrants to employers
4. Advancedmarketing system
5. IOT based energy usage analysis using deep learning techniques

# RAKTASEVA – AN APP FOR CIVILIANS AND BLOOD BANKS

*By: Akash Singh, Vidhi Punjabi , Samiksha Bedekar*
*Guided by:Dr. Anand Khandare*

RaktaSeva is a website that facilitates the process of blood donation by automating the process of helping a person connects with the potential blood donors in a particular vicinity without the need of contacting every person individually. They can also connect with the nearby blood banks by accessing the data provided. The use of GPS tracking makes it more accessible. Finally, it also enables the functionality for blood banks and service organizations to use the platform to broadcast their blood donation drives, and camps, for raising awareness about blood donation and its need.

# ROADMAP OF COMMUNICATION NETWORKING AND WEB ENGINEERING DOMAIN

The domain of CNWE offers students a plethora of subjects to expand their knowledge and become capable engineers. The subjects are as mentioned below:

- Computer Network
- Network Security
- Mobile Computing
- Web technology, Internet technologies
- Cloud Computing
- Wireless communication
- IOT
- Network Programming
- Software Defined Network

# PROJECT AREAS

Wireless Security & App development, Software defined network, Internet of things and Mobile Communication are some the area the domain on CNWE urges its students to develop their expertise in.

# TOOLS AND TECHNOLOGIES

- Amazon Web Services
- Cloud Computing and Security
- Energy Harvesting Wireless Networking
- Mobile Networking
- Internet of Things
- Software Defined Networking
- Machine Learning and Networking
- Anti-Drone System (ADS)

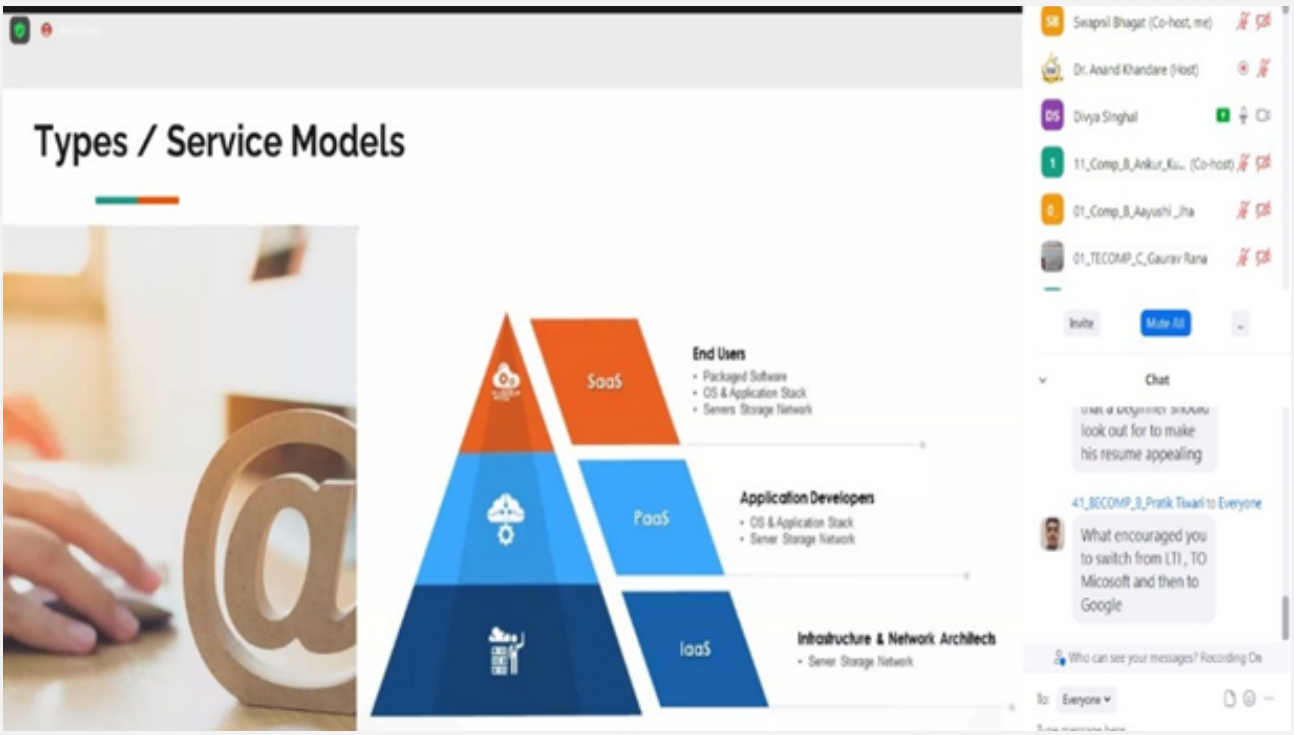
# INDUSTRIES

- Google
- Capgemini, India
- Reliance JIO
- CISCO
- D-Link
- Microsoft
- Amazon
- IBM security

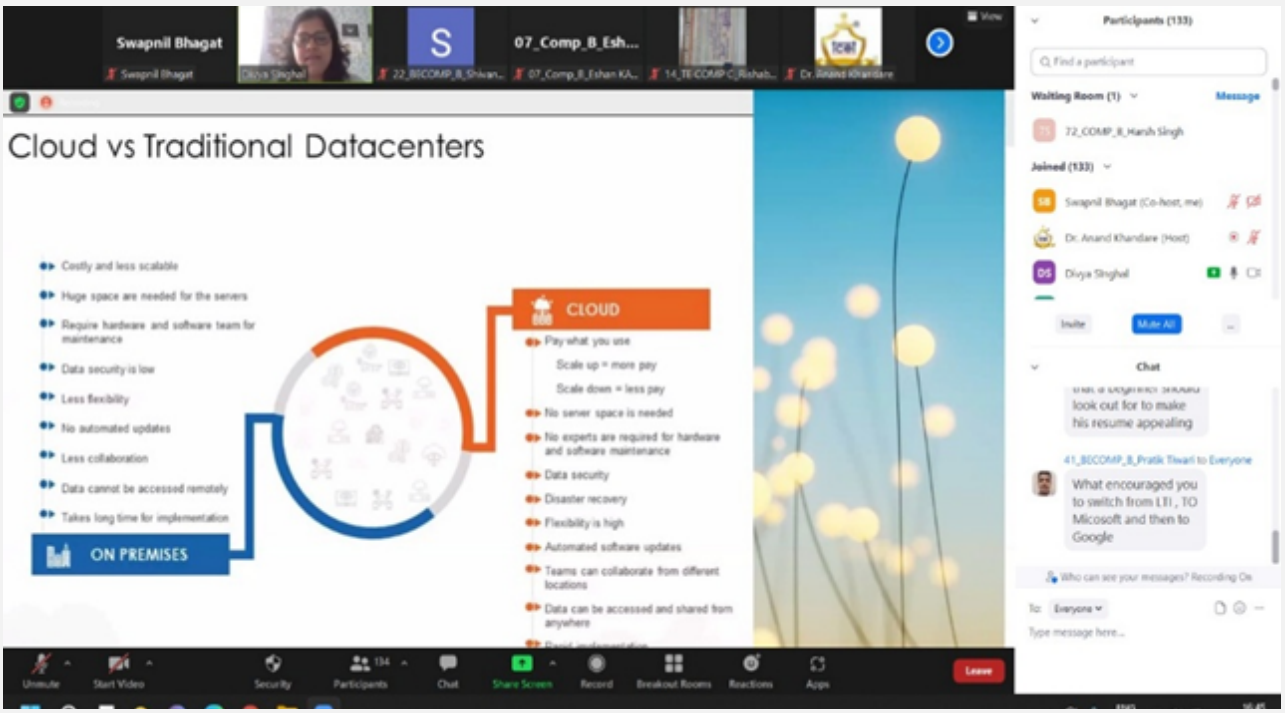
# JOURNALS IDENTIFIED

- LNNS –Springer
- Journal of computer networking-Elsevier
- International Journal of Web Engineering and Technology
- Int. J. of Wireless and Mobile Computing
- Int. J. of Mobile Communications

# DOMAIN ACTIVITIES

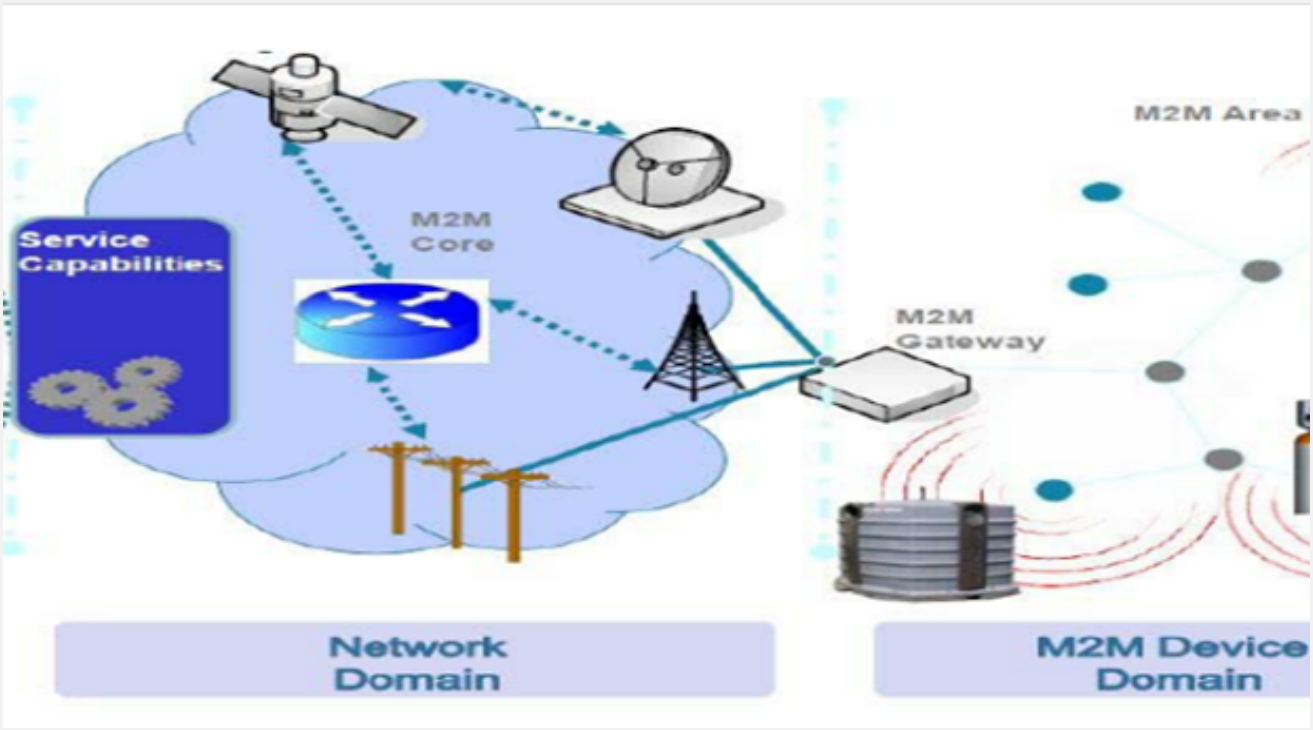



A) Getting started with Google Cloud-143 Participants (11th March 22)

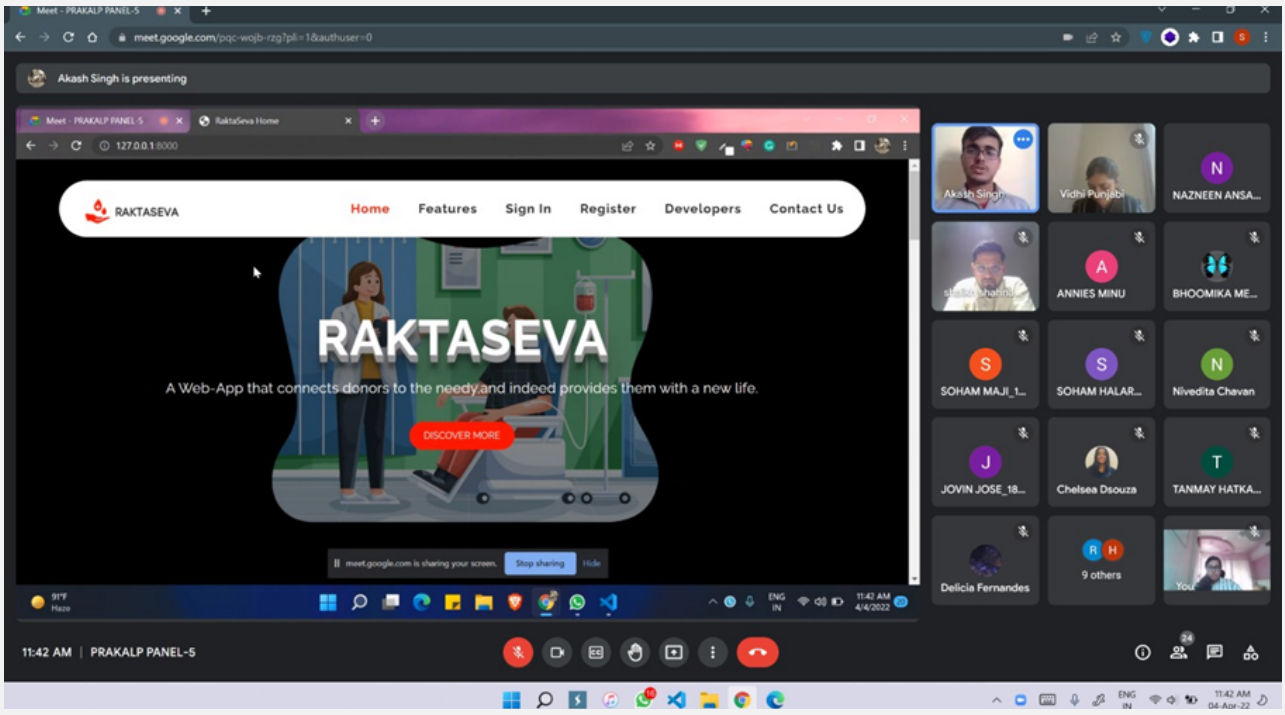



B) Group Discussion on Opportunities on Google Cloud - 143 Participants (11th March 22)

# DOMAIN ACTIVITIES




C) Poster making Competition - 6 Participants (6th April 22)




D) Project Competition in Cloud Program - 6 Participants (25th March 22)

# GOOD ONGOING PROJECTS FROM DOMAIN

## DESIGNING AN APP FOR SCREENING THE POSSIBLE MENTAL HEALTH ISSUES IN ADOLESCENTS AND PWDS.

*By: Apeksha Kamath, Shreya Kakade, Yumna Khan, Payal Kunwar, Prerak Khandelwal, Deep Kothari*
*Guided by: Dr. Anand Khandare*

Department of Empowerment of Persons with Disabilities (DEPwD) under Ministry of Social Justice and Empowerment, Govt. Of India has already initiated a 24*7 Mental health Rehabilitation Helpline (KIRAN) for addressing the mental health issues within the population. It is now needed that an app (KIRAN app) is formulated to improve the accessibility of this services specially to adolescents across the country. Not only will this help in self registration but also in providing services to clients from the comfort of their home even if they are not ready to talk about it.

## DOMAIN OUTCOME:

Students will able to

- Understand concepts of data communication and computer networking and wireless communication.
- ·Manage overall security of computer.
- ·Design and develop web applications and its hosting in cloud.
- ·Design and develop Mobile applications.
- ·To identify research problems and create its optimal solutions.

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# MULTIMEDIA SYSTEM DESIGN

## ABOUT DOMAIN

The Multimedia System Design and Development domain focuses on developing students' skills towards the emerging future of Multimedia. A Multimedia System is a system capable of processing multimedia data and applications. It is characterized by the processing, storage, generation, manipulation, and rendition of Multimedia information. With this in mind, the Multimedia System domain focuses on:

- The students will be able to create graphics-based animation for their presentation.
- They will be able to apply various images and video processing technique.

**Domain In-Charge:**
**DR. VIDYADHARI SINGH**

## A.Y 21-22 FINAL YEAR PROJECT LIST

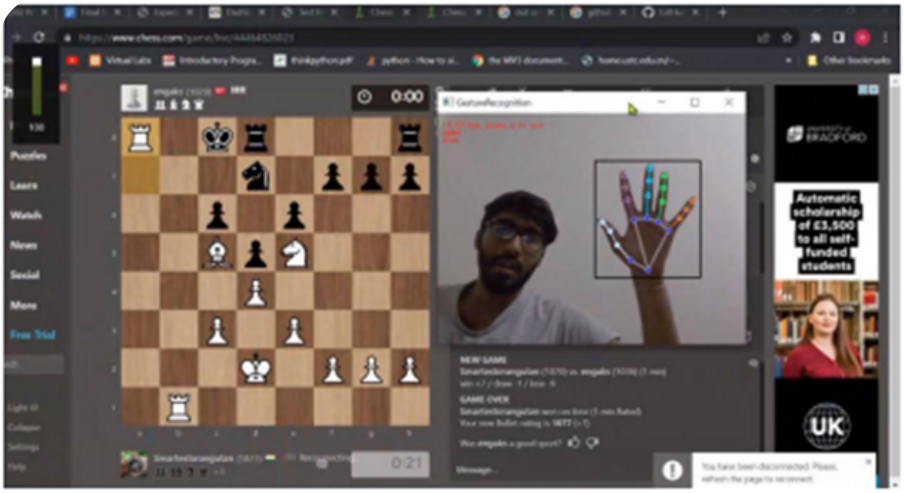
1. Remote File Sharing System
2. Gifted: An Educare Webapp for Special Children
3. Bon appetite - Dish Recommendation

CONTINUED

# AIR MOUSE 2.0

*By: Dinesh Choudhary, Rohan Dalvi, Harshit Daga, Dimple Choudhary*
*Guide: Mrs. Vidyadhari Singh*

It is a gesture-based device control system, where one can custom defines their own gestures / action, and define the shortcuts/task to map with those gestures/action. The user can then control their pc / system with the help of gestures.




controlling Increase volume setting using Air Mouse 2.0

# ROADMAP OF MULTIMEDIA SYSTEM DESIGN

The domain offers interesting subjects which help students build their interests and skills in the multimedia domain. these subjects include:

1. Computer Graphics
2. Multimedia System
3. Digital Signal Processing
4. Image Processing
5. Human-Machine Interaction
6. Augmented and Virtual Reality
7. Game Theory

## TECHNOLOGIES AND UPCOMING TREND

As we move on to a very modernized era the domain of multimedia system has flourished with new and engaging trends of Digital Spherical Display, Digital Spokesperson (Live Actor), Multicast Backbone, SMIL (Synchronized Multimedia Language), Animation, android Application, MIDI, Hyper Media Documents, HDTV & UDTV, 3D Technologies & Holography.

Students can build these projects with the help of technologies like Unity, Unreal, CryEngine, Blender, Photoshop, CorelDraw, InDesign, MatLab.

## PROJECT AREAS

- Speaker Identification
- 3D modelling of objects
- Video Compression
- Image Processing
- Game Development

## INDUSTRIES

- NVDIA
- AMD
- Red Chili VFX
- CreatFX
- Adobe
- Ubisoft
- Gameloft
- Electronic Arts
- PlayStation
- Xbox

# DOMAIN ACTIVITIES

## "VIRTUAL INDUSTRIAL VISIT"

## FOR

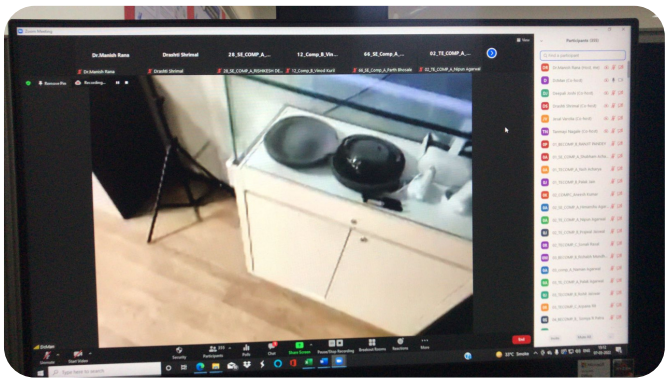
## A.Y. 2021-22 ON 7TH MARCH 2022

**Participants**: All Class In-Charges of S.E, T.E & B.E

**Resource Person:**
Ms. Numaan Khan
Senior Unity Game Developer,
VG Simulations – Thakur Group of Companies,
Development & Designing of Various VR/AR/XR projects, games and simulation
Kandivali (East) , Mumbai-400101

**Industrial Visit Details:**

Computer engineering department has organized Virtual Industrial Visit. The IV was scheduled on 7th march 2022 from 3:00 pm to 4:00 pm. The Virtual Industrial Visit started with the welcome speech about speaker Ms.Numaan Khan
Next, Ms.Numaan Khan, Senior Unity Game Developer ,VG Simulations – Thakur Group of Companies, Development & Designing of Various VR/AR/XR projects, games and simulation introduced about the company, Vighnesh Inc. is a Virtual Reality & Augmented Reality Content and Software Development company based out of Mumbai, India. Vighnesh has initially founded keeping in mind the growing VR and AR applications in different sectors such as Education, Real Estate, Aviation, Aerospace & Defense, Manufacturing, etc. We are also into Post-Production Activities such as Visual Effects (VFX), 2D & 3D Animations & Computer Graphics (CG).

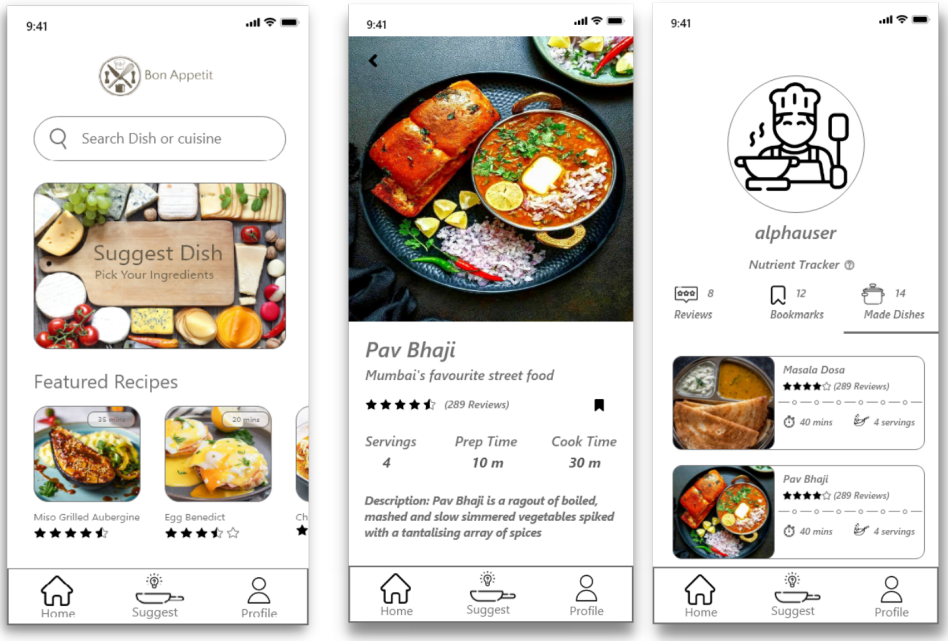



# GOOD ONGOING PROJECTS FROM DOMAIN

## BON APPETITE - DISH RECOMMENDATION

*By: Abhinav Agarwal,Chirag bangera, Gaurang Beli , Ameya kharkar*
*Guide: Mrs. Vidyadhari Singh*

A Dish Recommendation Application which does that based on input ingredients provided by user. Output - Dishes which can be prepared using these ingredients. Also includes recipe for the recommended dishes.




## IMLG IMAGE LEGOFIER

*By: Khushi Bhoj, Palak Agarwal, Kuldeep Choksi, Aayush Dani*
*Guide: Mrs. Vidyadhari Singh*

A python-based software that can convert images into pixelated legofied3 form for creating artistic designs

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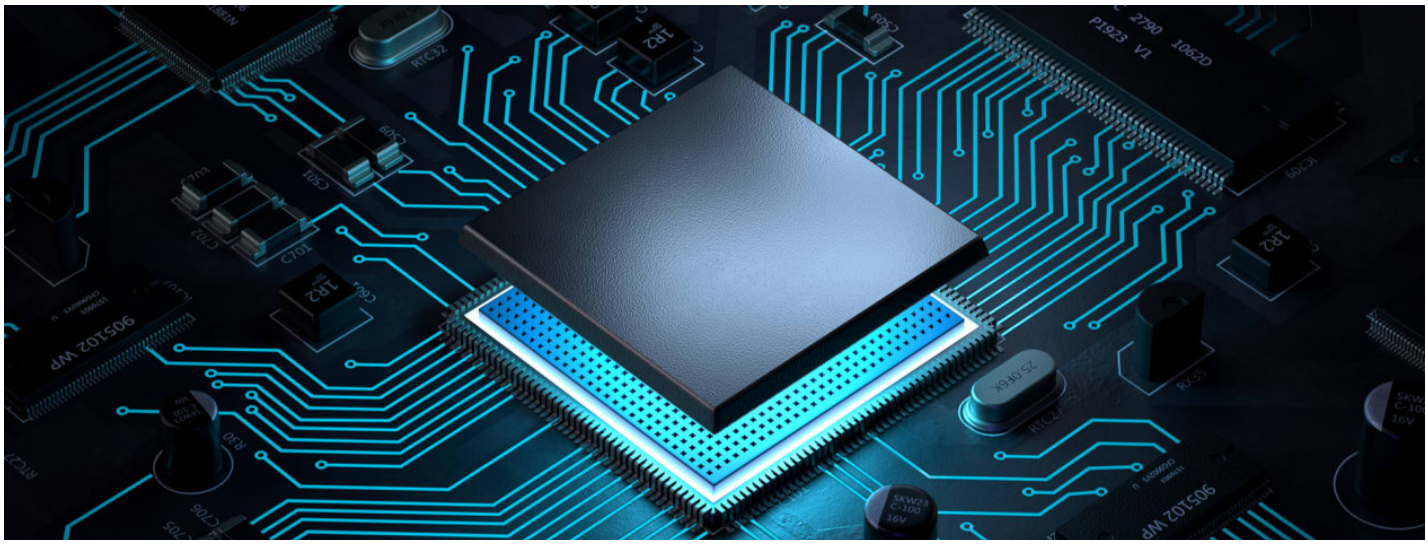

# COMPUTING AND SYSTEM DESIGN

## ABOUT DOMAIN

The domain of Computing and System Design is driven by vision of molding students into their best selves.
The domain focuses on:

- To understand fundamental concepts of computer Organization and Architecture. To design and develop system software.
- To design computing based systems and
- To develop applications useful for society.
- To develop logical and creative thinking for problem solving.
- To enhance the performance of hardware/software.

**Domain In-Charge:**
**DR. REKHA SHARMA**

## A.Y 21-22 FINAL YEAR PROJECT LIST

- License controlled smart vehicle

# DESIGN AND DEVELOPMENT OF STUBBLE SELLING AND DISPOSAL SYSTEM

*By: Rohini Yadav, Neha Desai, Dhriti Shah*
*Guided by: Mr. Vikas Singh*

The paper proposes a system which aims at solving the major problem of road accidents caused because of under-age driving and car theft by means of RFID-Card based access control which supports entry of only authorized License owners, along with GSM module to send SMS to the car owners on the scanning of any RFID-Card with the details of the person accessing the car and GPS module to track the location of the car at timely intervals. Children today don't look out for permission before driving their personal vehicle.
Rash driving and underage driving thus sum up to the major reasons of deaths caused in India in road accident. The only requirement of the project is that the user should have a license that is authorized and registered at RTO and the user can successfully validate into the system.


## TECHNOLOGIES AND UPCOMING TREND

Adruino kit, Rasberry Pi Kit, Android OS, Net frame work.

Programming Languages: C/C++, Java, Go, R programming, Python etc.

Data Analytics, OT, High Performance Computing, Real Time CS and Embedded System, Quantum Computing, Ubiquitous Computing etc.

## PROJECT AREAS

- Mobile Based Applications
- Localization of Linux
- Robotics
- Parallel Programming
- IOT Based Application
- Virtualization System Programming.
- Optimization of Compiler
- Home Automation System

## INDUSTRIES

- Intel
- IBM
- Google
- Apple
- Oracle

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# DOMAIN ACTIVITIES

## Coding Competition conducted
## Code Bin-2022

Duration: 45 Minutes
Number of participants: 10
Venue: Online Mode

Code Bin 2022 was a coding competition organized by the Computer department under the guidance of Prof. Ashwini Patil and Dr. Rekha Sharma. The event was held on 24th of April 2022 at 4:00 PM. The question for the event was circulated in all the official groups of the Computer Branch for the following year: SE, TE, BE. The question was circulated in the form of a PDF file. Later students were given 45 minutes for solving the question and 15 additional minutes for uploading it over the drive link provided to the students with the message.

## ROADMAP OF COMPUTING AND SYSTEM DESIGN DOMAIN

The domain of CSD offers students a plethora of subjects to expand their knowledge and become capable engineers. The subjects are as mentioned below:

- Digital Logic Design and Analysis
- Computer Organization and Architecture
- Operating System
- Advanced Operating System
- Design and Analysis of Algorithms
- Advanced Algorithm
- Parallel Computing
- Graph Theory
- Internet of Things
- Distributed Computing
- System Programming and Compiler Construction