Tanisha Rakshit

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EDUCATION

Vellore Institute of Technology, Vellore — **Vellore, India**
*B. Tech in Electronics and Communications Engineering [CGPA: **9.06/10**]* — *July'18-July'22*

Delhi Public School, Ruby Park, Kolkata — **Kolkata, India**
*AISSCE [Grade: **93.4%**, Marks obtained: **467/500**]* — *July'16-June'18*

Delhi Public School, Megacity, Kolkata — **Kolkata, India**
*ICSE [Grade: **97.6%**, Marks obtained: **488/500**]* — *2004-2016*

RESEARCH INTERESTS

Internet of Things | *Artificial Intelligence* | *Machine Learning* | *Neural Networks* | *Microcontrollers*

RESEARCH EXPERIENCE

Heart Stroke Prediction using Various Machine Learning Techniques — **VIT University**
Supervisor: Dr Pradheep T. | *[Github]* — *May'21-July'21*

- Studied about various supervised and unsupervised algorithms.
- Implemented data pre-processing and data visualization methods.
- Compared and analyzed different machine learning algorithms to predict heart stroke.
- Obtained the accuracies of each algorithm along with the confusion matrix.

Detection based Web Application for Ride Sharing Cabs — **VIT University**
Supervisor: Dr Sumit Kumar Jindal — *Feb'21-April'21*

- Implemented the research using Deep Learning and Internet of Things.
- The web app consists of three major detections of the driver in the ride share.
- First is face recognition implemented using computer vision and SVM, second is face mask detection implemented using MobileNet and third is drowsiness detection implemented using Histogram of Oriented Gradients by measuring the eye aspect ratio of the driver.
- Node MCU coupled with GPS module is used for the vehicle tracking using Blynk app.
- Alerts are sent to the company in case the driver does not wear mask or is drowsy.

Exam Hall Authentication System with Temperature Sensing of the Student — **VIT University**
Supervisor: Dr Sumit Kumar Jindal — *Aug'20-Nov'20*

- Implemented using Internet of Things and Atmega microcontroller.
- Fingerprint based registration and authentication is done and only authorized student is allowed to enter the exam hall.
- Temperature is recorded using LM35 Temperature sensor and sent to the Thingspeak platform for further analysis.
- Email alert service is created using the Webhooks applet of Thingspeak in case the temperature of the student is higher than normal.

PUBLICATIONS

Experimental Implementation of Covid'19 Safety Measures in Ride Sharing Cabs using Deep Learning and Internet of Things, **Tanisha Rakshit**, Aayush Shrestha, Sakshi Chhabra, Dr Sumit Kumar Jindal

- *Submitted to Springer Cognitive Computation Journal on April 15, 2021.*

Comparative Analysis and Implementation of Heart Stroke Prediction using Various Machine Learning Techniques, **Tanisha Rakshit**, Aayush Shrestha

- *Published by International Journal of Engineering Research and Technology (IJERT); Volume 10, Issue 6 (June 2021) | [Paper]*

Experimental Design and Implementation of Fingerprint based Exam Hall Authentication system with Temperature sensing and analysis using Internet of Things, Aayush Shrestha, **Tanisha Rakshit**, Ritayan Patra, Dr Sumit Kumar Jindal

- *Presented at IEEE International Conference on Interdisciplinary Cyber Physical Systems (ICPS) organized by ACRS, IIT Madras on December 28, 2020 and published successfully in IEEE Xplore | [Paper]*

INTERNSHIPS

Tata Steel Private Limited **Jamshedpur, India**
Supervisor: Dr Manoj Kumar *June'21-Aug'21*

- Completed E-learning modules on Induction Motors, PLCs, Instrument and Control Systems and Power Systems.
- Also worked on a project, "Study of battery 8&9 Level 1 System" of the Coke plant at Tata Steel.

Suven Consultants Private Limited **Mumbai, India**
Oct'20-Nov'20

- *Performing Analysis of Meteorological Data | [Project]*
- *Recognition of Handwritten Digits using scikit-learn | [Project]*

ACADEMIC PROJECTS

Cryptographic algorithms used in the defence sector | *[Description]* **VIT University**
Supervisor: Dr Ilanthenral KPSK | Department of Computer Science *Aug'20-Nov'20*

- Detailed comparison between AES and DES and also performing file encryption and image encryption using the best algorithm obtained.

3D Modelling of Sentinel Robot Using ROS, Gazebo and Blender | *[Description]* **VIT University**
Supervisor: Dr Abraham Sampson | Department of Electronics Engineering *Aug'20-Nov'20*

- Made our very own levitating sentinel robot from the movie Matrix with auto regenerating tentacles using ROS and Gazebo simulator. Also used Blender app for the 3D modelling of the robot to give it a more realistic view.

Experimental Design of Configurable Password based Door lock System using 8051 Microcontroller | *[Description]* **VIT University**
Supervisor: Dr Sumit Kumar Jindal | Department of Electronics Engineering *Aug'20-Nov'20*

- Based on providing security using configurable password system to the traditional mechanical door lock systems which are used.

Experimental design of Home Automation using IOT | *[Description]* **VIT University**
Supervisor: Dr Pradheep T | Department of Electronics Engineering *Aug'20-Nov'20*

- Automation of home appliances using our smartphone through WiFi and the Blynk App.

Electromyogram Signal Analysis Using Matlab | *[Description]* **VIT University**
Supervisor: Dr Sweta B Thomas| Department of Electronics Engineering *Aug'20-Nov'20*

- EMG signal analysis is used for the detection of any disorder in the skeletal muscles. In this project, we pass the EMG signals of 3 patients, healthy patient, myopathic patient and

neuropathic patient and observe the change in the signals produced for identifying the type of disorder.

Self-Stabilizing platform Using Arduino and Kalman filter | *[Description]* **VIT University**
Supervisor: Dr Malay Kumar Hota | Department of Electronics Engineering *Dec'19-May'20*

- This platform will help old aged people to get a firm grip on objects. It is also used in surgery and camera stabilizing platforms.

ACADEMIC ACHIEVEMENTS

Quanta Hacks, Stem for Fem *January'21*

- Won the second overall and an amazon gift card of $140 among 300 international participants.

Holiday Hacks, Major League Hacking *December'20*

- Won the third overall and recognized by VIT as Special Achiever for the achievement in the hackathon as well as for maintaining good academic record.

IEEE RAS Reboot 2.0, VIT University *March'20*

- Won the best girls' team among 120 shortlisted participants.

JEE Mains 2018 Qualified *April'18*

- Among the top 6.5% eligible candidates out of 11 lakhs candidates from across the country.

Merit in AISSCE, Delhi Public School, Ruby Park *June'18*

- Among the top 100 students in school out of 1000 students to be awarded as Scholar Badge Holder for getting above 90% in AISSCE with 95% in PCB.

Merit Scholarship in ICSE, Delhi Public School, Megacity *June'16*

- Second overall in entire school from Science Stream and awarded with a cash prize of Rs 5000 along with Rs 2000 gift vouchers for getting the highest in individual subjects- Computer Science (100%) and Humanities (98%).

TECHNICAL SKILLS

Programming – JAVA, Python, C/C++, MATLAB, HTML, Arduino IDE
Softwares/Tools – VMWare Horizon View, Simulink, Cisco Packet Tracer, Node-RED, Verilog HDL, NI Multisim, Cadence Virtuoso
Libraries – NumPy, Scikit-learn, Matplotlib, Keras, Tensorflow, OpenCV, Streamlit, Pillow, Pygame

RELEVANT COURSEWORK

Programme Core- Microcontrollers, Semiconductors, Probability Theory and Random Processes, VLSI, Analog Circuits, Digital Communications, Analog Communications, Applications of Derivatives, Problem Solving, Object Oriented Programming, Fundamentals of Electric Circuits, Network Theory, Sensors, Engineering Physics, Chemistry, Calculus

Programme Electives- Data Structures and Algorithms, Computer Communication, Linear Integrated Circuits, IoT Fundamentals, IoT Domain Analyst, Nanotechnology, Neural Networks and Fuzzy Control, Control Systems, Computer Architecture and Organization, Cryptography Fundamentals, Robotics and Automation

POSITIONS OF RESPONSIBILITY AND EXTRA-CURRICULUR ACTIVITIES

Coordinator and Student Volunteer **VIT University**
SEDS VIT- Student Chapter *Jan'19-April'21*

- As the Student Volunteer of SEDS VIT, I have helped my fellow teammates to organize the national Hackathon of our chapter, ASTRA. The theme of the hackathon was based on "Rover making". Many teams from across the country and also from other countries like Sri Lanka were selected to participate in this space hackathon. Based on the various problem statements made by us, the best team was selected to be the winner.
- As the coordinator of SEDS VIT, I have worked with the other members to organize our event "Antariksh".
- Also organized and managed the constellation part and mythology part for our Gravitas' event, Star Party which was a great success.
- Was also responsible for gathering sponsors for the various events that took place.

Campus Ambassador | *[LOR]* **Hamari Pahchan NGO**
Hamari Pahchan is a Delhi Based NGO *Sept'20-Oct'20*

- Worked by spreading awareness on women empowerment, human rights through posters, social media marketing, etc and helped in raising funds for the NGO.

Participant of several hackathons organized by Major League Hacking.
[Local Hack Day] | *[Hack SRM]* | *[Hack Off V3.0]* | *[GovTechThon]*
Won the Bengali Creative Writing Competition among 100 students at school.
Participated in many dance and art competitions at school.
Participated in Sports, Swimming Competitions.

CERTIFICATIONS

- **IBM Python for Data Science and AI | *[Badge]***
- **IBM Databases and SQL for Data Science | *[Badge]***
- **IBM Machine Learning with Python | *[Badge]***
- **IBM Data Analysis with Python | *[Badge]***
- **Programming Foundations with JavaScript, HTML and CSS | *[Certificate]***
- **Google Crash Course on Python | *[Certificate]***