



RISHABH SINGH

STUDENT | A.I ENTHUSIAST

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EDUCATION

2021 - 2025

PRESIDENCY UNIVERSITY

- BTECH IN COMPUTER SCIENCE AND ENGINEERING

SKILLS

- Programming: Python, JavaScript, C/C++, Java
- AI/ML: YOLOv5, SVM, CNN, Transfer Learning, etc.
- Web Development: React.js, Node.js, Express.js, HTML, CSS, MongoDB
- IoT & Embedded Systems: Arduino, ESP32, Raspberry Pi, Jetson Nano, ROS
- Cloud & Deployment: Firebase, Vercel, Heroku, AWS

HACKATHONS

- Winner, Smart India Hackathon (Hardware Edition)
- Runner-Up, Prajwalan 2k24 Hackathon
- Runner-Up, SCIMIT Mega Science Expo 2k24
- 2nd Runner-Up, Hacktonix 2k24
- Most Innovative Idea Award, InnovateX, IISc Bangalore

PROFILE

Computer Science under graduate student skilled in full-stack web development, AI/ML, and IoT automation, with research and R&D experience across CCU Taiwan, ISI Kolkata, and IASYNT Global.

WORK EXPERIENCE

National Chung Cheng University, Taiwan (ONSITE)

A.I INTERN

SEPT 2024- NOV 2024

- Developed and fine-tuned **CNN (ResNet, EfficientNet)** and **SVM** models for cancer prediction using a custom medical imaging dataset, applying image preprocessing, data augmentation, and transfer learning with **Python, TensorFlow/Keras, and OpenCV** to improve accuracy and generalization.
- Integrated AI models with PACS for real-time **medical image** management, and built a full-stack web application (**React.js, Node.js, MongoDB**) enabling seamless user access to prediction results via **RESTful APIs**.

Indian statistical institute, Kolkata, India (HYBRID)

AI & DATA SCIENCE INTERN

JUL 2024 - OCT 2024

- Developed and fine-tuned a **Generative AI** model using **Ollama 3.1** with Python backend, incorporating on-device inference techniques for an offline-capable educational app. Utilized **NLP libraries**, local model deployment, and optimized resource management to enable seamless, internet-independent learning experiences for students.
- Performed data preprocessing, exploratory analysis, and model evaluation to enhance the performance and reliability of the Generative AI-powered educational application built with Ollama 3.1.

IASYNT GLOBAL Pvt. Ltd. (ONSITE)

WEB DEVELOPER INTERN

AUG 2023 - MAR 2024

- Part of development of a responsive flagship website using React.js, Redux, and Node.js/Express RESTful APIs. Optimized **UX with component reusability, lazy loading, and responsive design**. Contributed to **CI/CD pipelines**, ensuring **cross-browser compatibility** and **accessibility compliance**.

PROJECTS

AI Based Automatic Drone Surveillance & alert System

- Developed an AI-powered autonomous drone surveillance system leveraging **YOLOv5** for real-time anomaly detection using **RGB & thermal cameras, LiDAR, and GPS Modules**. Integrated with **ROS** for multi-sensor data fusion and navigation control. Deployed low-latency inference on **NVIDIA Jetson Nano** with **MQTT** for real-time alerts. Built a React.js + Node.js dashboard for live monitoring and incident management.

AI Powered PACS based Cancer detection System

- Cancer prediction models are being developed using CNN model (**accuracy: 97%**) alongside a web application that integrates seamlessly with a medical image management system. This platform leverages AI-driven analysis and PACS to enable real-time access, storage, and retrieval of medical images. By providing an intuitive web-based interface, the system enhances diagnostic accuracy, optimizes workflow efficiency, and ensures secure data management for healthcare professionals.

Accident Detection and Rapid Alert System

- Designed a smart accident detection and alert system leveraging **Arduino, Raspberry Pi, and ESP32** microcontrollers integrated with **accelerometer, GPS, and gas sensors** for real-time incident detection. Utilized **HTTP/MQTT** protocols to transmit alerts to a home base, triggering autonomous drone deployment for site monitoring, with onboard cameras providing real-time visual feedback.

KHET-SAT

- Developed an AI-driven IoT solution for precision agriculture, integrating **NPK soil sensors, moisture sensors, and automated irrigation** using ESP32 microcontrollers. Leveraged Firebase for cloud-based real-time data storage and access via a React.js web platform. Incorporated AI models for predicting crop growth patterns, optimal watering schedules, and fertilizer recommendations based on real-time soil health and environmental data, helping farmers improve yield, reduce resource wastage, and enhance sustainability.

Smart Wheel Chair Powered with AI

- Developed a smart wheelchair integrating gesture-based control via **MPU6050** (accelerometer + gyroscope) and real-time obstacle detection using **ultrasonic sensors** and **Intel RealSense D435 depth camera**. Implemented AI-powered navigation and collision avoidance on **NVIDIA Jetson Nano**, utilizing Bluetooth and **serial communication** for seamless control and enhanced user safety in dynamic environments.

AI Based Plant disease identification system

- This user-friendly website and mobile app leverage the power of image recognition. Simply snap a picture of your plant with your camera or upload an existing photo. The intelligent system analyzes the image to identify the plant species and assess its health. If it detects a potential disease, the app provides you with detailed information about the issue, including recommended treatment options.

RESEARCH WORK

CellInsight: AI-Powered Web Solution for Cervical Cancer Classification

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UNDER DEVELOPMENT WORK

- **IDENTIFICATION OF INDIAN MEDICINAL PLANTS USING AI (PLANIX-HELP)** – *Publishing*
- **Automatic D(Drone)-Rover Rescue(ADR) System**– *preparing paper and patent filing is under process*

EXTRA COCURRICULAR ACTIVITIES

Club Tech Lead (AI CLUB)

- Led the Tech Team of the AI Club, spearheading the development and execution of engaging workshops, seminars, projects, and learning initiatives that demystified AI concepts for junior members of varying technical backgrounds. Fostered a collaborative and inclusive environment, empowering team members to contribute their expertise and develop their own AI knowledge.

Team Lead in multiple National-level Hackathons

- Led teams to success in various hackathons, including Smart India Hackathon (Hardware Edition), Prajwalan 2k24, and SCIMIT MEGA SCIENCE EXPO 2k24. Demonstrated exceptional leadership and technical skills, guiding teams to develop highly innovative solutions and secure top positions within tight deadlines.