Aayush Rai

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Education

Guru Tegh Bahadur Institute Of Technology   July 2021 – May 2025

B.Tech in Electronics and Communication, CGPA - 8.39/10   *Rajouri Garden, New Delhi*

Scholastic Achievements

Minor Area in Computer Science Minor degree by Department of Computer Science and Engineering, GTBIT

Letter Of Recommendation by Scientist 'G', **Solid State Physics Laboratory, DRDO**, Timarpur, Delhi

Patent Pending Application on "IOT Enabled Carrier Lift System for Delivery and Retrieval of essentials"

Experience

Robotics Engineer   June 2025 - Present

DSI Robotics   *Noida, India*

· **QGIS-Based Mapping & Inspection Software for Pipeline Infrastructure**
· Developing a 3-portal GIS desktop application using Python, QGIS, and Qt5 for a pipeline inspection firm, handling 10,000+ manhole records
· Enables real-time spatial data manipulation, manhole mapping, re-centering, polygon drawing with area/perimeter calculations, and shapefile export
· Visualizes full pipeline networks using US/DS manhole linkages and embedded physical attributes
· Improved spatial mapping accuracy by 35% and reduced field reporting time by 50%
· **Custom PCB Design for Camera Control and Signal Conversion**
· Designed two custom PCBs using DipTrace:
  • A camera tilt-angle measurement system for precise camera module control
  • A general-purpose signal interface board supporting RS-485, RS-232, and TTL conversions via jumper logic and DIP switch configuration
· Implemented using MAX1480B, MAX232, and 74HC136 for robust, fault-tolerant communication
· **Windows Productivity Automation Tool for Workspace Management**
· Developed personalized multitasking utility for Windows 10/11 using Python, pyQt5, win32gui, pyvda, and pyinstaller
· Allows users to save and restore folder windows in their exact positions and geometries across active workspaces
· Supports seamless task resumption and boosts operational efficiency for management teams

Industrial Trainee   July 2024 – August 2024

Sofcon India Private Limited   *Delhi, India*

· Developed and integrated **IIoT solutions using Raspberry Pi, Node-RED, and Blynk** for real-time data processing, automation, and remote monitoring improving process efficiency by 15%.
· Synthesised innovative IIoT solutions incorporating Raspberry Pi, Node-RED, and Blynk to automate processes; achieved a **reduction of manual monitoring tasks by 10 hours per week** through effective remote management techniques.

Research Intern   March 2024 – May 2024

Solid State Physics Laboratory, DRDO   *Delhi, India*

· Gained **expertise in MIS capacitors**, focusing on working principles, parameter extraction, and optimisation techniques and reduced complexity by 20%.
· Automated device analysis with C programming and **visualised C-V characteristics using Origin Labs** for insightful data interpretation and.

Projects

IOT Enabled Carrier Lift System | *Arduino C* | *Dr. Gagandeep Kaur and Dr. Deepali Sharma*   January - April 2025

· Invented and filed a patent for an **IoT-enabled vertical carrier lift** system for secure parcel delivery in multi-storey buildings, featuring Alexa and Blynk integration, real-time status feedback, and software-based position tracking
· Designed for energy efficiency and autonomous control using an **ESP8266**, solar-powered 3S Li-ion battery system, and relay-driven motor logic with built-in safety and emergency stop features

Hand Gesture ML Model | *Python* | *Prof. Neetu Setia*   **June 2024**
- Utilised **OpenCV and Mediapipe** to train ML models, including a hand gesture recognition system with **Scikit-Learn and Mediapipe**.
- Proposed **deployment on Raspberry Pi** for applications in home automation and sign language interpretation for differently-abled users reaching 95% accuracy rates.

RFID based Fuel Dispensing System | *Arduino* | *Dr. Gagandeep Kaur*   **May 2024**
- Designed an **RFID-based fuel dispensing system**, automating the entire process using **SPI for communication** between **AtMega328p** and **PN532**.
- Integrated advanced sensors for fuel level indication, supply cutoff, and fuel type detection and improving efficiency by 30%.

Sound-O-Metre | *Arduino* | *Prof. RP Singh*   **August 2023**
- Devised a **noise-based game for GTBIT Tech-Fest**, using an **LM393 microphone sensor** to capture sound frequencies and control relays and LEDs.
- The game was a success, Generating sales of over **500 tickets** in the first phase.

Technical Skills

Programming Languages and Libraries: C++, C, OpenCV, Sensor Technology, Python, QGIS, PyQT5, win32gui, pyvda
Software and Tools: Origin, Arduino, Raspberry-Pi, Node-Red, Blynk IOT, Proteus, Canva, DipTrace
Languages: English, Hindi, Punjabi, German

Leadership / Experience

Society president, G#: Elected as society president of the music society G# of GTBIT.
Client Handling Executive, Plastasia: Served as a client handling executive at an international event "Plastasia".
Event Lead at the In-House Tech-Fest: Event Lead for "Sanchaar" at GTBIT Tech-Fest; awarded Best Event Head for "Robowars" and "Gamomania" boosting engagement by 40%.

References

- **Dr. Raghvendra Sahai Saxena(Scientist 'G')**

  Senior Scientist(R&D), Defence, Research and Development Organisation, Timarpur, Delhi

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