

Abhijit karji

B.Tech Computer Science Engineering (Artificial Intelligence & Machine Learning | 2027)

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PROFESSIONAL SUMMARY OR OBJECTIVE

Highly skilled programmer with will to learn and improve. Efficient in Frontend Development. Possess strong problem-solving skills, ability to work in fast paced environment, and good communication skills.

Hard Skills

(Technical / Domain / Industry-Specific / Technical)

- ✓ Java
- ✓ DBMS
- ✓ Python
- ✓ C/C++
- ✓ Git
- ✓ Javascript
- ✓ HTML/CSS
- ✓ R Language
- ✓ DSA
- ✓ Photo/Video Editing

Soft Skills

(Interpersonal / Behavioral / People / Emotional)

- ✓ Communication Skills
- ✓ Quick Learner
- ✓ Team Player
- ✓ Problem Solving
- ✓ Adaptive
- ✓ Leadership Quality
- ✓ Project Management

PROJECTS AND COURSEWORK

High Payload Drone

Vishwakarma University

March 2024-
Present

Position: Hardware Team Lead

*This project was developed as part of a competition hosted by the Regional Technology Node (RTN), HQ, Southern Command, focusing on designing and deploying a high payload drone. As the Hardware Lead, I was responsible for designing and integrating critical hardware systems to ensure the drone's **efficiency, stability, and payload capacity.***

- **Power Distribution System Design:** Engineered a custom power distribution board to efficiently manage high-power requirements. Ensured stable power delivery to all onboard components, including motors, ESCs, avionics, and sensors, while incorporating safety features like overcurrent protection and voltage regulation.
- **Motor and Propulsion System Optimization:** Selected high-efficiency brushless motors and propellers optimized for payload lifting. Conducted thrust and efficiency calculations to maximize flight endurance while ensuring safe power margins. Fine-tuned ESC configurations for smooth motor operation and minimal power loss.
- **Structural and Chassis Design:** Designed a lightweight yet highly durable chassis capable of withstanding heavy payloads. Chose carbon fibre and aluminium composites for optimal strength-to-weight ratio and vibration damping. Optimized component placement for weight distribution and aerodynamics.
- **Battery Selection & Management:** Led the selection and integration of a custom-built high-capacity 6S LiPo battery to meet endurance requirements. Designed a battery management system (BMS) to monitor voltage, current, and temperature, ensuring safe operation and prolonged battery life.
- **Payload Mounting System:** Engineered a modular payload mounting system to securely attach different payloads while maintaining the drone's centre of gravity. Designed vibration isolation mechanisms to protect sensitive electronic components and improve stability during flight.
- **Sensor and Telemetry Integration:** Integrated GPS, IMU, LiDAR, and telemetry modules for real-time flight monitoring and navigation. Developed a robust wiring and shielding system to minimize electromagnetic interference (EMI) and enhance data reliability.
- **Cooling and Thermal Management:** Designed a passive and active cooling system for onboard electronics, ensuring optimal thermal performance under heavy loads. Implemented heat sinks and cooling fans for high-power components such as the Raspberry Pi and AI processing units.
- **Flight Testing & Performance Optimization:** Led multiple flight tests to fine-tune hardware configurations. Analysed flight data to optimize thrust-to-weight ratio, power efficiency, and flight stability. Iterated designs based on test results to improve overall performance.

Securing Access: A Multi-Modal Biometric Door Lock System

March 2023 -
June 2024

Position: Embedded Systems Engineer

As part of our capstone project, we developed a **multi-modal biometric smart door lock system** integrating **fingerprint recognition, facial recognition, and keypad authentication** using **Arduino and ESP32-CAM**. This system enhances security by requiring users to pass all three authentication factors to gain access.

- Designed and implemented fingerprint and facial recognition authentication using **AS608 fingerprint sensor and ESP32-CAM**.
- Developed a **real-time authentication process** with an average response time of 0.5 seconds, ensuring high security and usability.
- Optimized system accuracy: **98.5% fingerprint recognition, 97.3% facial recognition, and 99.5% PIN authentication precision rates**.
- Conducted extensive testing under varying illumination and user conditions to evaluate reliability and response times.

Our research paper on this project, "**Securing Access: A Multi-Modal Biometric Door Lock System with Arduino and Three-Factor Authentication**," was presented at the **International Conference on Intelligent Computing and Communication Techniques (ICICCT), JNU, New Delhi (June 2024)** and is currently in **proceedings**.

Stroke Set Monitoring System

June 2024 -
December 2024

Position: Team Lead and Hardware

This project was developed based on a problem statement provided by **Bajaj** to monitor and track the stroke count of dies in a manufacturing setup. The system ensures timely maintenance, reduces downtime, and enhances production efficiency by digitally recording die usage and performance.

- **Real-time stroke monitoring:** An IR sensor-based system detects stroke counts, ensuring accurate tracking of die usage.
- **Automated data logging:** Stroke count, timestamps, and operational status are recorded and sent to a centralized server for analysis.
- **Failure recovery mechanism:** In case of unexpected shutdowns, the system retains the latest data and transmits it upon restart.
- **Server integration:** JSON-formatted data is sent to a Django-based backend, enabling storage and analysis in a database.
- **Manufacturing insights:** The system helps track die performance, ensuring timely maintenance and extending die lifespan.

The project was implemented using **Raspberry Pi** for hardware interfacing, **Python** for data processing, and **MongoDB** for database management, ensuring efficient and reliable performance in an industrial environment.

EDUCATION

Qualification	Stream / Specialization	University / Institute	Start – End	CGPA / %
UG	Artificial intelligence & Machine Learning	Vishwakarma University	2023-2027	8.18
HSC	Computer Science	Vishwakarma College of Art, Commerce & Science (VCACS)	2022-2023	61.33%
SSC	Regular	Villoo Poonwallah Eng. Med. School	2020-2021	93.2%

PROFESSIONAL CERTIFICATIONS

- Project Management | Linkedin Learner | 2025

ACTIVITIES AND ACHIEVEMENTS

- Currently a Leading Cadet in Sea Cadet Corps, Pune Unit.

PERSONAL DETAILS

- Languages: Hindi, English, Marathi, Bengali, Odia, German
- Date of Birth: 10th January, 2006
- Gender: Male
- Nationality: Indian
- Interests: Sports, Movies, Web series, Tech, Gaming

CONTACT INFORMATION

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