

# Aswin M Kumar

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## SUMMARY

Third-year Electrical and Electronics Engineering student at College of Engineering Trivandrum with hands-on experience in AI, IoT, embedded systems, and PCB design. Top 10 Finalist at Satwa25 National Hackathon (133 teams); recognized at Allianz Risk Consulting Compass-360 Expo for applied research in Li-ion battery fault detection. Proven track record of delivering end-to-end technical projects across hardware and software domains.

## EDUCATION

**Bachelor of Technology – Electrical and Electronics Engineering** 2023 – Present  
College of Engineering Trivandrum, Kerala, India

*Relevant Coursework:* Circuit Design, Embedded Systems, IoT Applications, Signal Processing, Control Systems

## TECHNICAL SKILLS

**Programming Languages:** Python, C, JavaScript, Flutter  
**Tools & Platforms:** MATLAB, Simulink, Arduino, ESP32, KiCAD, SolidWorks, ANSYS, OpenCV, Git  
**Technical Areas:** Embedded Systems, PCB Design, IoT, Machine Learning, Computer Vision  
**Languages:** English (Fluent), Malayalam (Native), Hindi (Proficient)

## CERTIFICATIONS

- **Google AI Essentials** – Google
- **Cybersecurity Essentials** – Cisco
- **Industrial Automation & PLC Systems** – Bosch Training Program
- **PCB Design Workshop** – IET On Campus CET

## EXPERIENCE

**PR Coordinator** 2025 – Present  
*Internship Cell – College of Engineering Trivandrum*

- Manage communication between students, companies, and organizers for internship placements and recruitment drives.
- Promote internship opportunities and coordinate outreach events to connect students with industry partners.
- Create content for social media and promotional campaigns to improve student participation and engagement.
- Coordinate marketing campaigns and outreach initiatives, driving increased student involvement in internship programs.

**Membership Coordinator & Event Organizer** 2025 – 2026  
*SAEINDIA – College of Engineering Trivandrum*

- Coordinated SAEINDIA memberships for Herackles Racing CET and Zenith Motorsport CET; managed documentation and compliance for BAJA SAEINDIA 2026.
- Organized and conducted **CADClash**, a CAD design competition at Tech Rave (SAEINDIA CET Technical Fest); managed end-to-end event logistics and participant coordination.
- Organized **Biomimicry Competition**, a preliminary ideathon for a national-level SAE competition; facilitated concept pitching and evaluation rounds.
- Created and maintained 10+ Google Forms for event registrations and membership drives; tracked structured participant data in Excel sheets across SAEINDIA CET events.

**Technical Team Member – Suspension & Steering** 2023 – Present  
*EVolve Racing CET*

- Engineered and optimized vehicle suspension and steering components using SolidWorks.

- Collaborated cross-functionally with the technical team to improve vehicle performance.

## Participant – Drone/UAS Technologies Bootcamp

Jun 2025

*MeitY / SwaYaan (NIT Calicut × CET)*

- Performed **ANSYS** structural and CFD simulations on airfoil geometry (analyzing stress, deformation, velocity fields, and CL/CD extraction).
- Designed and fabricated a straight-wing glider, securing **3rd place** in a 40-hour long-distance flight competition (Team 5).
- Achieved an assessment score of **74%** in the Government of India funded intensive program.

## Trainee

2024

*Bosch Training Program*

- Gained hands-on exposure to industrial automation, PLC systems, and control systems.
- Strengthened fundamentals of industrial machinery operation and maintenance.

## Marketing & Publicity Team Member

2024

*Dhwani24 – College of Engineering Trivandrum*

- Led outreach campaigns across multiple colleges, boosting event visibility and participation.
- Strengthened communication, coordination, and inter-college networking skills.

## PROJECTS

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### Trash Nada – AI-Powered Waste Management System

[github.com/aswin-m-kumar](https://github.com/aswin-m-kumar)

- Developed an AI-based waste classification and price prediction system using Python.
- Integrated IoT components for real-time monitoring and hotspot mapping of waste collection areas.
- Ranked **Top 10 among 133 teams** at the Satwa25 National Hackathon (36-hour competition).

### Lithium Sense – Early Fault Detection for Li-ion Batteries

- Researched early fault detection techniques for Li-ion batteries using temperature, voltage, and resistance indicators.
- Presented findings at the Allianz Risk Consulting Compass-360 Expo; received trophy and certificate.

### Voice-Activated Smart Switch

[github.com/aswin-m-kumar](https://github.com/aswin-m-kumar)

- Developed a voice-controlled home automation switch using ESP32 and Python.
- Integrated real-time speech recognition for reliable device control.

### Gesture-Controlled Game Interface

[github.com/aswin-m-kumar](https://github.com/aswin-m-kumar)

- Architected a gesture-based control system using Arduino and OpenCV for real-time hand detection.
- Enabled hands-free interactive gameplay through computer vision algorithms.

### Browser-Based Mini Games Collection

[aswin-m-kumar.github.io](https://aswin-m-kumar.github.io)

- Developed multiple interactive browser games with HTML, CSS, and JavaScript.
- Authored game logic, event handling, and responsive UI; published on personal portfolio.

### Off-Grid Solar Power Plant Design – Power System Laboratory

College of Engineering

Trivandrum

- Designed a 545 kWp off-grid solar PV system with 5.2 MWh LiFePO<sub>4</sub> storage for 24×7 institutional load (93.17 kW).
- Performed end-to-end system design: load profiling, PV array sizing (1010 modules), battery optimization, and inverter configuration (150 kW, N+1 redundancy).
- Achieved Performance Ratio (PR) of 0.79 with 771 MWh/year energy yield; conducted techno-economic analysis (INR 9.94 Cr, 15-year payback).

### Optocoupler Circuit & LM386 Audio Amplifier

- Assembled an optocoupler circuit for electrical signal isolation and noise reduction.
- Constructed an LM386-based audio amplifier circuit for low-power signal amplification.

### Not\_KTU\_Results – Satirical University Portal

GitHub — Live

- Launched a satirical university e-governance portal parody using HTML5, CSS3, JavaScript, Tailwind CSS, and Tone.js; deployed on GitHub Pages.

- Programmed a progressive multi-rule password game with real-time audio feedback (success chimes, error buzzes) using Tone.js.
- Crafted a responsive, mobile-first UI/UX with deliberate UX dark patterns simulating real portal failure states (504 timeout, delayed loading).
- Selected for **TinkerHub Useless Projects 2.0** showcase; collaborated in a two-member team as lead for UI/UX design and content.

#### Portfolio Website

aswin-m-kumar.github.io

- Composed a personal portfolio using HTML, CSS, and JavaScript showcasing AI, IoT, and embedded systems projects.

#### ACHIEVEMENTS

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- **Top 10 Finalist** – Satwa25 National Hackathon, Saintgits College of Engineering (133 competing teams, 2025).
- **Trophy & Certificate** – Allianz Risk Consulting Compass-360 Expo for research on *Lithium Sense* (2025).
- **3rd Place** – Long-distance flight competition (straight-wing glider), Drone/UAS Technologies Bootcamp (2025).
- **TinkerHub Useless Projects 2.0** – Selected for Not\_KTU\_Results project showcase (2025).
- **PCB Design Workshop** – Completed workshop conducted by IET On Campus CET.