

Salsabeel Kobattey

Embedded Systems · FPGA & Digital Design · Robotics & IoT

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Summary

Final-year ECE student who builds hardware end to end: sensor, schematic, firmware and host software. Strongest in embedded systems and IoT (AVR, ESP32), with hands-on FPGA design, vision-based robotics and machine learning. Research intern at MIT Manipal; co-founder of Hubzero. Seeking internships and graduate roles in embedded systems, digital design and robotics.

Education

B.E., Electronics and Communication Engineering

2023 – Expected Jul 2027

Anjuman Institute of Technology and Management, Bhatkal (VTU) · CGPA 8.48/10 · Minor: Business Administration

Experience

President — IoT Club, Anjuman Institute of Technology and Management

Sep 2026 – Present

- Named first president when the ECE department launched the club. Main coordinator of its first workshop, Arduino 101: two batches of about 30 first-year students building sensor circuits; rated 4.48/5 overall across 56 responses.

Research Intern — Manipal Institute of Technology (MIT Manipal)

Jul 2026 – Present

- Leading a team of six modelling a jacketed stirred-tank reactor: ANN, LSTM and CNN models compared against persistence, linear and ARX baselines on three lab recordings.
- Showed that predicting no change already reaches R^2 0.98 on this data and that no network beat a linear fit by more than about 0.002 °C, so judged every model against the baseline rather than the raw score.
- Surveying deployment of physics-informed neural networks to FPGA: fixed-point quantisation, tensor compression within resource budgets, and the HLS path to RTL.

Embedded / IoT Intern — Adsafe Solutions Pvt. Ltd., Bengaluru

Jun – Jul 2026

- Built an ESP8266 grow-box controller (hysteresis setpoint control, OLED readout, Wi-Fi dashboard); bench-tested firmware prototype in a 14-day sprint.

Freelance Electronics Repair and PC Building

2024 – Present

- Repaired 10+ devices at board level (PCs, controllers, displays); upgraded an Xbox Series X controller to TMR joysticks.

Projects

5-DOF Vision-Guided Robotic Arm

Team lead, 4 members · 2025

- Python/OpenCV ArUco pipeline mapping a 610×450 mm workspace to millimetres; custom inverse-kinematics solver with reachability checks; serial protocol and Arduino firmware driving six servos.

Crop Advisory System (ESP32 + FastAPI + SMS)

Team of 2 · 2026

- ESP32 node with four sensors posting every 15s to a FastAPI/SQLite backend that SMSes paddy farmers in English, Hindi or Kannada. Alerts fire on state change with hysteresis; failed sensors reported as faults; 280+ tests. Thresholds not yet field-validated.

Verilog HD44780 LCD Driver on Spartan-6

Solo · 2025

- Processor-free eleven-state FSM taken from RTL to hardware. Found and fixed a datasheet timing violation (Clear Display needs 1.52 ms), verified by a self-checking testbench.

EEG Working-Memory Spectral Analysis

Final-year project, 4 members · 2026

- Spectral biomarker from 32-channel, 500 Hz n-back EEG: 384 band-power features per epoch, validated with SVM, KNN and a 2D-CNN under leave-one-subject-out cross-validation.

Ultrasonic Water-Level Controller

Team lead, 4 members · 2024

- HC-SR04 pump control with a 10%/90% dual-threshold law; overflow plumbed away from the electronics as a non-software failsafe.

6-Lane Quiz Buzzer

Solo, commissioned · 2025

- First-press lockout buzzer, commissioned by the ECE department and used live by five teams.

Seed2Store: Seed-to-Storage Crop Monitor

Hackathon, 4 members · 2026

- Offline Arduino Uno covering germination, irrigation and grain storage; pump/vent actions verified against sensor response, not assumed. 56/56 tests passed, 44/44 injected faults caught. 4th, YEN NOVA 1.0 Build-a-thon.

Technical Skills

Languages C, C++, Python, Verilog, MATLAB · **Embedded** Arduino (AVR), ESP8266, ESP32, I2C, UART, PWM, ADC

FPGA Verilog RTL, FSM design, testbenches, Xilinx ISE, Spartan-6 · **Robotics and ML** OpenCV, ROS2, Gazebo, PyTorch, scikit-learn, FastAPI

Hardware Soldering and rework, oscilloscope, 3D printing · **Tools** Linux, Git, Keil, Multisim, Solid Edge, LaTeX

Leadership and Achievements

- Team lead on three team projects, including a six-person research team; Secretary of Innovation, ECE student forum; represented the department at an inter-college tech fest.
- Placed in inter-college robotics, sustainability, debate and interview competitions; 89/100 in the first stage of a national robotics competition. PCB design and fabrication certified.