

AKASH CHINTHAMANIPETA

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PROFESSIONAL SUMMARY

Automation & Robotics Engineer with an MSc from CU Boulder and hands-on industry experience in industrial embedded systems, ESP32/ESPHome firmware, Modbus RTU/RS485, and end-to-end machine automation. Proven track record delivering production automation systems at Algae Barn and robotics solutions at Emerson. VP of IEEE Denver Section (Region 5). Seeking full-time roles in automation, robotics, or embedded systems engineering.

WORK EXPERIENCE

Automation Engineer | Algae Barn — Colorado

May 2025 – Present

- Designed and built automated phytoplankton filling machine: dual ESP32 controllers (Kincony KC868-A16 & DevKit V1), FD-XA1 flow meters, XKC-Y26-V level sensors, Covna pneumatic actuators, and N4D8B08 Modbus RTU I/O with custom ESPHome firmware.
- Engineered multi-ESP32 water management system for algae cultivation — transfer pump scheduling, Keyence FD-XS20 flow metering, float-sensor debounce logic, and TP-Link Kasa/Sonoff integration via Home Assistant.
- Built automated labeling system eliminating manual bottle labeling; results published in Sakshi Education. Debugged 24V power supplies, OP71A04 level-shifters, and 41F-1Z-C4 relay wiring for full NPN sensor compatibility.

Research Assistant (PraiseLAB) + Teaching Assistant | University of Colorado Boulder

Fall 2024 – May 2025

- Customized Speedybee F705 Mini flight controller firmware for GPS-denied indoor drone navigation using optical flow sensors and TF Mini LiDAR sensor fusion; engineered sub-75g platform with MAVLink trajectory control.
- TA for MCEN 3047 (Data Analysis & Computational Methods): developed lab manuals, mentored students in sensor integration, experimental setup, and data analysis.

Robotics Intern | Emerson — Boulder, CO

May – Aug 2024

- Developed automated visual inspection system (Universal Robot arm + AI-enabled Cognex camera) using RRT path planning and supervised defect classification — 30% efficiency gain, 95% defect detection accuracy.
- Established Ethernet communication between robot and PC via I/O expansion module for seamless real-time data transfer and system control.

PROJECTS

- Phytoplankton Filling Machine (Algae Barn): Full industrial automation build with dual ESP32s, Modbus RTU I/O, pneumatic valves, flow meters, and level sensors — precise fill-cycle control in production.
- HelioNode v0002 (Akash Technologies): ESP32-S3 solar-powered agricultural IoT PCB with MQTT/InfluxDB/Grafana pipeline; diagnosed AMS1117 voltage headroom flaw, redesigning rev 0003.
- Multi-Modal Depth Estimation (CU Boulder, 2024): Stereo vision + structured light + IMU fusion with physics-based constraints; MAE 0.0117, RMSE 0.0241.
- Autonomous Robot Dog (CU Boulder, 2024): ROS2/LiDAR/Raspberry Pi 5 platform with SLAM, DC encoder odometry, owner recognition, and voice/wake-word interaction.

TECHNICAL SKILLS

- Embedded & Firmware: ESP32, ESPHome, Modbus RTU/RS485, MAVLink, I2C/SPI/UART, PCB design (ESP32-S3)
- Industrial Automation: Relay/solenoid control, pneumatic actuators, flow metering, level sensing, 24V wiring, Home Assistant/PLC logic
- Robotics & Control: ROS2, SLAM, sensor fusion (LiDAR, IMU, optical flow), motor control (servo/DC encoders), MATLAB/Simulink, state-space modeling
- Programming & Tools: Python (ML/DL), C/C++, LabVIEW; SolidWorks, CATIA, AutoCAD; ANSYS FEA; Computer Vision (CNNs, stereo, SfM, Gaussian Splatting)

EDUCATION

MSc, Mechanical Engineering (Robotics & Control) | University of Colorado Boulder

Fall 2023 – May 2025

GPA: 3.7 / 4.0

B.Tech, Mechanical Engineering | Jawaharlal Nehru Technological University, India

2019 – 2023

GPA: 7.98 / 10 • Most Versatile Outgoing Student

LEADERSHIP & ACHIEVEMENTS

- Vice President, IEEE Denver Section (Region 5) — organizing technical workshops, industry events, and networking for engineering professionals across the Denver metro.
- Founder, Akash Technologies — building HelioNode (solar-powered agricultural IoT) and FactorySense (predictive maintenance SaaS for industrial SMEs).
- Published: Automated labeling system cost-benefit study, Sakshi Education (2024).