

# Pratham M. Ingale

Atlanta, GA | 704-431-7206 | pratham.ing49@gmail.com | US Citizen | linkedin.com/in/pratham-ingale

## Objective

---

Resourceful & analytical electrical engineering student with hands-on experience in PCB design soldering & debugging, & embedded programming in Rust, C, & C++. Looking for a fall/spring internship with PCB & electrical design, PCBA & debugging, & firmware dev.

## Education

---

**Georgia Institute of Technology | Atlanta, GA**

*Expected Graduation 2026*

*Bachelor of Science in Electrical Engineering, GPA: 4.0*

Relevant Coursework: Embedded Programs (C & ASM), Circuit Analysis, Signal Processing, Digital Circuit Design, OOP, Diff Eq, Lin Alg

## Skills

---

**Programming:** C, Rust, C++, Java, Python, MATLAB, Assembly, GlowScript, Jupyter Notebook,

**Software:** Altium, LTSpice, KiCAD, VSCode, GitHub, Quartus, Excel, Word, Outlook, Teams, Keil uVision, Arduino IDE

**Hardware:** PCB & PCBA, Soldering, Oscilloscopes, Multimeters, Waveform Generators, Spectrum Analyzers, Breadboard Prototyping

**Communication:** Verbal & Written Communication & Presentations, Team Management, Public Speaking (Large & Small Audiences)

## Research & Experience

---

**Yellowjacket Space Program Avionics | Georgia Institute of Technology**

*August 2024 – Present*

**Battery Management System (BMS) Responsible Engineer (RE)**

- Schematic & layout of 4-layer PCB for BMS of rocket w/  $\mu$ C, ADCs, LDOs, Buck/Boost Conv, Load Switches, MOSFETs, Op-Amps
- Analyzed IC datasheets & LTSpice simulations to manage component selection, test boards, & validate schematic design
- Write Rust firmware for  $\mu$ C of BMS board, managing ethernet comms with the flight computer, SPI comms with ADCs, data management & calculation from ADCs, & proper enabling & monitoring of 4 load switches to distribute power to other PCBs
- Assembly of BMS PCBs by soldering SMD components, verifying component placement for no bridging, & using a reflow oven
- Debug & identify PCB component errors using oscilloscopes, multimeters, continuity probe testing, & network analyzers
- Working on revising 6-layer PCB for BMS to add a load switch, remove unneeded components, & simplify traces/routing

**Umbilical & Rocket Harnessing RE**

- Design of two 4-layer PCBs to connect power, ethernet, & abort commands to the avionics system from ground control station
- Responsible for implementing harness for a rocket w/ 8 ethernet lines & 20+ valves, sensors (PTs, RTDs, TCs), and PCBs

**Thermocouple (TC) Module RE**

- Responsible for verifying schematic & layout of TC Module—receiving data from 12 TC sensors & comms w/ ground station
- Assembly of TC Module PCB, involving soldering SMD components, fixing solder bridges w/ flux, using heat gun to solder IC chips

**The HIVE Makerspace | Georgia Institute of Technology**

*December 2024 – Present*

**Embedded Systems Peer Instructor**

- Guide users on debugging embedded systems, including Arduino, Raspberry Pi, ESP32, & general sensors, motors, LCDs
- Help students with designing & improving PCB layouts & using PCB fabrication machines (ProtoMat & ProtoLaser, reflow oven)
- Assist & teach students how to use soldering irons, oscilloscopes, multimeters, waveform & signal generators, & breadboards

**Autonomous UAV Research | Georgia Institute of Technology**

*August 2024 - Present*

**Undergraduate Communications Researcher**

- Work w/ team to design & implement communication systems on an autonomous drone swarm to detects & extinguishes fires
- Conduct research of mesh comms protocols & review literature of FANET design, architecture, temporal & spatial mobility
- Send inquiries to companies with relevant products & set up communication links to review specifications & assess functionality

## Projects

---

**LED Chaser PCB**

*November 2024 – February 2025*

*Full end-to-end PCB design from component selection, BOM development, schematic design, layout design, prototyping, & assembly*

- Used Altium to design schematic & layout for PCB as per JLCPCB restrictions, using LEDs with NE555 timer & CD4017B decade counter. Used breadboard to test prototype & debug schematic. Ordered & assembled PCB using SMD & TH components

**Integrated Smart Belt**

*February 2024 – April 2024*

*Independent project to build a prototype embedded smart belt to detect obstacles & floor drop-offs for visually impaired users*

- R&D of smart belt using an Arduino & multiple IR & ultrasound sensors, vibration motors, voice modules, & C++ code in the IDE.
- Conducted calibration & experimental testing to ensure 85%+ detection accuracy of head, waist, foot obstacles & drop-offs