Kaustubh Pandey

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Education

Manipal Institute of Technology **Aug 2022 – Present**

B.Tech in Electronics & Communication (VLSI) *Manipal, Karnataka*

- Current CGPA: 7.62 / 10 (as of 4th Semester)

Relevant Coursework

- VLSI Design
- Digital IC Design
- Analog Circuits
- FPGA System Design
- Semiconductor Physics
- Signals & Systems
- Verilog HDL
- Embedded Systems

Experience

VLSI System Design – PCB Design Intern **Feb 2025 – Mar 2025**

PCB Designer *Manipal, India*

- Designed and laid out the evaluation board for the Thejas32 (by Vega Processor & CDAC) using KiCad, including schematic capture and PCB layout.
- Applied high-speed routing and impedance control for Thejas32's .
- Generated manufacturing Gerber files .

Project MANAS – Hardware Subsystem, Autonomous UGV Team **June 2023 – Present**

Hardware Engineer *Manipal, India*

- Designed power distribution boards (PDB) for autonomous UGVs with robust thermal handling and high-current switching.
- Implemented precise current sensing using the INA226 current-sense IC to monitor load currents.
- Developed motor and microcontroller interface boards.
- Led PCB design using KiCad and coordinated manufacturing with Lion Circuits.
- Integrated CAN-bus communication using MCP2542FD transceivers for reliable subsystem messaging.

Projects

PID Motor Controller | *Verilog, Vivado, Icarus Verilog, GTKWave* **May 2025**

- Designed and implemented a digital PID controller in Verilog to regulate DC motor speed via encoder feedback.
- Synthesized the design with Vivado for deployment FPGA development board.
- Simulated the controller using Icarus Verilog and analyzed waveforms with GTKWave to validate functionality.

Technical Skills

Languages: Verilog, C, Python, Bash, LaTeX
Tools: KiCad, Vivado, Icarus Verilog, GTKWave, Cadence, LTSpice, Arduino IDE
Technologies: PCB Design, FPGA, Embedded Systems, Analog Design, Power Electronics

Leadership / Extracurricular

Project MANAS – Autonomous UGV Team **June 2023 – Present**

Hardware Engineer & R&D Contributor *Manipal Institute of Technology*

- Collaborated with AI and perception teams on sensor-fusion hardware design for real-time navigation.
- Mentored junior teammates on KiCad workflow, component selection, and design-for-manufacturability.
- **Secured 3rd place in the AutoNav Challenge at IGVC 2025**, representing MIT with a fully autonomous UGV platform.