

# KAUSTUBH PANDEY

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## Education

### Manipal Institute of Technology

Aug 2022 – Present

*B.Tech in Electronics & Communication (VLSI)*

*Manipal, Karnataka*

- Current CGPA: 7.84 / 10 (as of 3rd Semester)

## Relevant Coursework

- VLSI Design
- Analog Circuits
- Semiconductor Physics
- Verilog HDL
- Digital IC Design
- FPGA System Design
- Signals & Systems
- 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,  $\text{\LaTeX}$

**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 3<sup>rd</sup> place in the AutoNav Challenge at IGVC 2025**, representing MIT with a fully autonomous UGV platform.