

# GAURAV TIWARI

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## EDUCATION

- **Indian Institute of Technology, Mandi** Himachal Pradesh, India  
*B.Tech in Microelectronics and VLSI; CGPA: 8.64/10* August 2024 – July 2028
  - **Relevant Coursework:** Digital System Design, Network Theory, Signals and Systems, Control Systems, Device Electronics for ICs, Analog Circuit Design, Computer Organisation, Machine Learning, Deep Learning
- **St. Francis School, Lucknow** Uttar Pradesh, India  
*ISC Class XII; Percentage: 93.8%; ICSE Class X; Percentage: 96%* April 2014 – March 2024

## TECHNICAL SKILLS

- **Languages:** C, Python, Verilog, SystemVerilog
- **Hardware Design:** RTL Design, FPGA Design, Digital Design, Computer Architecture, AXI4, SoC Design
- **Machine Learning & AI:** Deep Learning, PyTorch, State Space Models(Mamba)
- **Tools:** Vivado, OpenROAD, MATLAB, Git, Linux

## PROJECTS

- **Heterogeneous Dual-Core RISC-V System-on-Chip** [Github](#)  
*SystemVerilog, Vivado, AXI4, FPGA Design, RISC-V* May 2026 – June 2026
  - Designed a heterogeneous dual-core RV32I RISC-V SoC featuring 5-stage pipelined processors with hazard mitigation, forwarding, tightly coupled memories, and a sparse AXI4 interconnect with round-robin arbitration and skid buffers.
  - Integrated hardware mutex synchronization, CLINT interrupts, DMA-enabled INT8 MVM accelerator, memory-mapped peripherals, and interrupt-driven execution for heterogeneous computing.
- **High-Resolution  $\Sigma$ - $\Delta$  ADC for Space Applications(Inter-IIT Tech Meet 14)** [Github](#)  
*MATLAB, Simulink, Verilog, Cadence Genus, Cadence Innovus* Nov 2025
  - Designed a high-resolution 4th-order DT-CIFF  $\Sigma$ - $\Delta$  ADC for low-bandwidth space-grade sensing, achieving 17.92-bit ENOB and 109.63 dB SNDR at 2 ksps under the ISRO Inter-IIT challenge.
  - Developed a fixed-point CIC-Halfband-FIR decimation chain and completed ASIC implementation using Cadence Genus and Innovus, achieving timing closure with 2.57 mW power and 0.16677 mm<sup>2</sup> area.
- **MambaGround: Bi-Mamba Natural Language Query Localization** [Github](#)  
*Python, PyTorch, Mamba SSM, NLP, Computer Vision* March 2026 – May 2026
  - Designed a Bi-Mamba architecture for temporal grounding of natural-language queries in egocentric videos using the Ego4D NLQ v2 benchmark with multi-scale localization and cross-modal fusion.
  - Incorporated temporal pyramids, hard-negative mining, and contrastive learning, improving validation performance from 16.07% to 24.77% R1@0.3, within 1.3 percentage points of the reported state of the art.

## ACHIEVEMENTS

- **Inter-IIT Tech Meet 14:** Represented IIT Mandi and designed a high-resolution  $\Sigma$ - $\Delta$  ADC for space applications in the problem statement given by ISRO, securing **10th place overall**.
- **Anatolian Rover Challenge 2026:** Qualified for the international finals as a member of Team Deimos, IIT Mandi, and secured **12th place globally** in the qualification round among participating rover teams.

## POSITIONS OF RESPONSIBILITY

- **Robotronics Club, IIT Mandi – Core Member** Dec 2024 – Jul 2026  
Contributing to the development of autonomous robotic systems for national and international competitions.
- **Team Deimos, IIT Mandi – Electrical Member** Aug 2025 – Jul 2026  
Designing embedded electronics, power distribution, and hardware interfaces for the team's autonomous rover.
- **Career & Placement Cell, IIT Mandi – Student Representative** May 2026 – Present  
Assisting in placement activities by coordinating with recruiters, student volunteers, and the placement team.
- **UG Academic Council, IIT Mandi – Branch Councillor(MEVLSI)** Jul 2026 – Present  
Coordinating with the Academic Council and Professors to formulate and structure the courses.