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Areas of Interest

- PCB Design
- Embedded System Development
- Digital Circuit Design
- Physical Design
- Hardware Security

Technical Skills

VLSI Design

- Verilog | Physical Design
- Xshem | Magic | netgen | yosys
- OpenLANE | Cadence I F4PGA

PCB Design

- Altium | Eagle | KiCad
- Footprint Design | DFM analysis

Embedded Systems

- Atmel Studio | STM32 Cube IDE
- PX4 | Ardupilot
- RISC-V ISA

Coursework

Graduate

- Digital System Design Automation
- Advanced VLSI Design
- Computer Architecture
- MOS VLSI Design
- IC Fabrication Laboratory
- Machine Learning in Cloud Computing

Undergraduate (Extra Credit)

- Analog & RF VLSI
- CMOS Mixed Signal Design
- Semiconductor Process Tech.

Certifications

- Cadence RTL-to-GDSII Flow
- DAC 2024 Young Fellow

Extra Curriculars

AAINA Dramatics

- Performed award winning Street and Centre stage plays.

National Cadet Corps

- Lance Corporal in the youth wing of the Indian Armed Forces.

Yatharth Agarwal

Graduate Research Assistant, Purdue University

An inquisitive engineer passionate about innovating solutions in the fields of Physical Design, PCB Design, and Robotics. With excellent communication and collaborative skills, I am seeking a career that will challenge me to develop and implement products with a focus on impactful, innovative solutions.

Education

MS in Electrical & Computer Engineering   *May 2025*
Purdue University | CGPA 3.75

BTech in Electronics & Communication Eng.   *May 2023*
Manipal Institute of Technology | CGPA 8.94

Work Experience

Graduate Research Assistant   *October 2023 - Present*
Embedded System Laboratory

- Designing a secure platform for device Authentication, Firmware verification, and runtime monitoring of Unmanned Ariel Vehicles.
- Researched a novel Processing in Pixel & Compute in Memory architecture demonstrating 40x improvement in power consumption.

Hardware Engineering Intern   *January 2023 - June 2023*
Cisco

- Learned the design architecture and performed DFM analysis for PCBs integrated into Cisco access space routers.
- Adopted an Agile Product development methodology and proposed Value engineering ideas for reducing BOM cost by 4%.

Technical Head   *May 2021 - July 2022*
Project Manas

- Conceptualized End-to-End detailed Technical Architecture for Unmanned Aerial vehicles capable of autonomous navigation and perception.
- Supervised a team of 50+ undergraduates to develop the entire UAV system, including hardware and software components.
- Manufactured onboard power distribution system PCBs for high-power propulsion and sensitive low-voltage control electronics.

Projects

RISCV32I Core - RTL2GDSII

- Implemented RTL for a RISCV32I core with SPI and UART interface on the Artix7 FPGA utilizing open-source F4PGA toolchain.
- Performed step-by-step modeling and understood the Physical design flow for generating a GDSII based on SKY130 PDK and OpenLANE.

VSDSquadron - RISCV Development Board

- Worked on bring-up of Skywater chips and developed a family of RISC-V development boards aimed at education, with 1,000 + units sold.
- Conducted multiple workshops for 500+ B.Tech students covering RISCV design, physical design, and embedded systems using VSDSquadron.

Physical Verification SKY130 & OpenROAD 7nm Contest

- Gained an understanding of Physical Verification & and various DRC/LVS violations and related mitigation strategies utilizing Netgen and Xschem.
- Implemented DRC for ASAP7 PDK and won the outstanding contribution award for enhancing OpenROAD Flow Scripts Physical design tool.

Swadeshi Microprocessor challenge

- Semifinalists across teams worldwide to demonstrate a functional prototype for warehouse automation powered by Shakti Microprocessor.
- Pitched a business model and commercialization roadmap for taking the product to market and received funding of 100K INR.