

Jaideep Damle

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EDUCATION

University of Michigan, Ann Arbor, MI (Expected May 2025)

- Master of Science: Electrical and Computer Engineering (Concentration: Integrated Circuits and VLSI) (GPA 3.5/4.0)

Purdue University, West Lafayette, IN (May 2023)

- Bachelor of Science: Electrical Engineering (GPA 3.85/4.0)

Relevant Coursework: VLSI Design, ASIC Design, Integrated Circuit Engineering (Analog and Digital), Digital Design, Advanced C Programming, Microprocessor Systems and Interfacing, Python for Data Science, Machine Learning, Signals and Systems, Semiconductor Devices, Probabilistic Methods, Electromagnetics

SKILLS

- Programming (Verilog, SystemVerilog, C, Python, Embedded C, ARM Assembly, Matlab, VHDL, Perl), PCB Design (KiCad and Xpedition), Schematic Design, Layout, and Simulation with Cadence Virtuoso and LTSpice, Synthesis and APR with Cadence Innovus, Communication (Technical Writing, Presentation)

WORK EXPERIENCE

University of Michigan

- Graduate Student Instructor (EECS 312: Digital Integrated Circuits), Aug 23 to Dec 23

Northrop Grumman Mission Systems, Hardware Engineering Intern (May 22-Aug 22, May 23-Aug 23)

- Ran simulations and synthesis of RTL designs written in VHDL meant for digital core of RF chips using Cadence tools
- Used Xpedition and NX CAD softwares to make training video for new hires to view detailed interior of PCB in 3D
- Wrote Python code to simplify modeling and simulation of Ball Grid Arrays used in integrated circuit packaging
- Used Vector Network Analyzer to collect data on gain, noise figure, and other S-parameters that helped analyze functionality of RF packages
- Wrote Matlab app to enable engineers to perform Principal Component Analysis (PCA) on large RF test datasets

Purdue University

- Undergraduate Researcher Hybrid MEMS Lab (Dr. Dana Weinstein), May 21-Aug 21
 - Developed Python/C code to automate measurements on radio frequency micro-electromechanical systems (RF MEMS) which reduced testing time from days to a few hours. Used code to perform dual DC biasing and collect data on separately controlling gain and phase shift of RF waves. Wrote technical paper and presented results at Undergraduate Research Symposium
- Undergraduate Researcher Bio-Electronics Lab (Dr. Robert Nawrocki), Aug 20-May 21
 - Worked to develop circuitry for chemical sensors that can detect methane concentrations in cows, Researched role of cyclic voltammetry (CV) to characterize chemical sensors and identified components of potentiostat device key to making CV measurements. Developed LTSpice model of potentiostat circuit as well as breadboard model to test against typical CV readings
- Undergraduate Teaching Assistant (ECE 20875: Python for Data Science), Jan 21 to May 21

ACADEMIC PROJECTS

- **RISC Processor:** Worked on schematic, hand layout, and verification for RISC Processor designed in Cadence Virtuoso (schematic and layout). Included Register File, ALU, Shifter, Program Counter, and Controller as well as full custom block capable of encryption and decryption of data according to Data Encryption Standard (DES)
- **Movie Recommendation System:** Built in Python and utilizes Collaborative Filtering with Matrix Factorization
- **Smart Water Bottle:** Designed and constructed water bottle that can keep track of how much water user is drinking per day and control temperature of water. Worked on developing code for STM32 microcontroller which had to take in data from sensors (using SPI and GPIO) and send to OLED display and web app for user via Bluetooth (using UART)
- **Wallace-Tree Digital Multiplier:** Used Cadence Virtuoso to design 12x4 bit Wallace-Tree Multiplier on CMOS transistor level (45nm technology). Ran simulations to determine functionality, delay, and power dissipation
- **RTL Design of USB Receiver:** Developed RTL design of receiver portion of USB using block diagrams and SystemVerilog. Simulated design using QuestaSim, analyzed functionality with waveforms, integrated with transmitter and AHB-slave portions
- **Differential Folded Cascode Amplifier:** Used Cadence Virtuoso to design fully differential folded cascode operational amplifier on CMOS transistor level (45nm technology). Ran simulations to determine gain, noise figure, and power dissipation
- **Digital Pill Alarm Clock:** Used STM32 microcontroller along with TFT LCD display and keypad to create interface where user can set timer to notify when to take up to 3 different types of medication (created on breadboard and designed on PCB). Utilized external interrupts and outlet signal to synchronize clock and timers

AWARDS, HONORS & LEADERSHIP

- Dean's List and Semester Honors Recipient (All semesters)
- Office of Undergraduate Research Scholarship Recipient and Summer Stays Scholarship Recipient
- Member of Eta Kappa Nu and Tau Beta Pi Honor Societies
- Internal Affairs Chair, Corresponding Secretary for Tau Beta Pi Engineering Honor Society (01/2022 to 05/2023)