PRANEETH TADEPALLI

University of Minnesota Twin Cities, Minneapolis • +1 (763) 321-7907 •
tadepallipraneeth23@gmail.com

LinkedIn • Research Site

SUMMARY

Engineering graduate interested in analog VLSI design and analog neuromorphic computing research. Interested in advancing research in low-power circuit design, brain-inspired hardware, and emerging analog/mixed-signal systems.

PROJECTS

Neuromorphic and synapse circuits using Cadence Virtuoso

- Learnt and simulated Neuron circuits like Axon Hillock, Voltage Amplifier Integrate and Fire, Low Power Integrate Fire and Adaptive exponential integrate-and-fire models.
- Worked on Analog Implementation of Synaptic Plasticity/learning rules with circuits like Pair and Triplet based Spike Timing Dependent Plasticity.
- Worked on different memristor models along with Pair and Triplet based Spike Timing Dependent Plasticity using Time Division Multiplexing.
- Worked on a BCM - Based ECG Signal Classifier application via Triplet based Spike Timing Dependent Plasticity with memristor circuit.

Hardware Implementation of Universal Active Filter

- Built Universal Active Filter with LM 741 IC (OPAMP) that can give Low Pass, High Pass and Band Reject Pass responses in the same circuit.
- Simulated the Universal Active Filter circuit in NI Multisim.

Charging circuit for Raspberry Pi 4 present in An Energy Efficient Fog-Based IoT Framework to Combat Wildlife Poaching

- Designed a reliable charging circuit for a Raspberry Pi 4 with solar panel, battery pack, solar charge controller, voltage step up regulator , USB-C breakout board and for safety of this circuit capacitor, poly-fuse and a switch.

Assisted for segmentation of bacterial colonies in petri dish environment using python

- Implemented a segmentation algorithm that combined Watershed and Fuzzy C-Means approaches to precisely identify bacterial colonies in a Petri dish setting.
- Incorporated the Watershed algorithm for fine-grained segmentation after using Fuzzy C-Means for initial clustering to account for inherent ambiguity.

Laser turret using arduino controlled via joystick

- Designed a laser turret system with servo motors, an Arduino, and a joystick for accurate control and targeting.
- Facilitated the combination of software and hardware to improve security protocols, exhibiting expertise in creative problem-solving in a cross-functional environment.

EDUCATION

Masters of Science in Electronics and computer engineering **Sep 2025**

University of Minnesota Twin Cities, Minneapolis

Bachelor of Technology in Electronics and communication engineering **Dec 2021 - May 2025**

IIITDM Kancheepuram, Chennai

- Specialization in Microelectronics and VLSI
- CGPA: 8.98

ADDITIONAL INFORMATION

- **Technical Skills:** MATLAB, C, Python, Verilog, Verilog A, System Verilog, LT Spice, Cadence Virtuoso, NI LabView, NI Multisim, Embedded C, Analog IC Design, Digital IC Design
- **Interpersonal Skills:** Design thinking, Highly motivated and eager to learn, Goal Oriented
- **Languages:** English, Hindi, Telugu
- **Certifications:** The Joy of Computing using Python - NPTEL (IIT Ropar), Introduction To Internet Of Things - NPTEL (IIT Kharagpur), VLSI Signal Processing - NPTEL (IIT Kharagpur)