Neelesh Ramachandran

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EDUCATION

University of California, Berkeley: College of Engineering Expected Graduation: May 2022
B.S. Electrical Engineering & Computer Sciences (EECS) GPA: 3.96

<u>Selected Coursework</u>: Digital Design and IC (EECS 151)[†], Analog IC (EE 140)[†], Convex Optimization (EE 127)[†], OS and Systems Programming (CS 162), Microelectronic Circuits (EE 105)[*], IC Device Physics (EE 130)[*], Computer Architecture (CS 61C)[*], Signals and Systems (EE 120), Optical Engineering (EE 118)[*], Devices and Systems I/II (EECS 16A/B), Data Structures and Algorithm (CS 61B)

 †: Currently Taking in Fall 2020. *: Received Grade of A+

WORK EXPERIENCE

MuMec Inc. | *Electrical Engineering Intern (Project Lead) (11 weeks)* May - August 2020
- Built, programmed, and tested a functional hearing aid with custom firmware and DSP algorithms.
- Fine-tuned DSP parameters to ensure optimal performance, validated the core chipset extensively using test equipment.
- Measured and optimized RF signal strength, designed custom impedance matching network on development board receiver.
- Incorporated Bluetooth Speech-To-Text functionality using CMU Pocketsphinx open-source firmware.
- Performed precision hand-soldering (0402 components) and learned reflow soldering for 0201 components.

4-time TA/uGSI for Devices and Systems I and II (EECS 16A/B) / *Content, Discussion, Software* August 2019 — Present
- Independently authored a ~130 page textbook with content and practice problems + solutions. Deployed mid-summer 2020.
- Writing algorithms with a team to intelligently form student study-groups based on survey responses, to help remote learning.
- Developed 7 engaging Jupyter (iPython) Notebooks (16 A+B) for students to visualize linear algebra and circuits concepts.
- Coordinate all 16A software (Website, Piazza, Gradescope assignment submission, etc.) and 16B content/software.

ATX Networks | *Engineering Intern (14 weeks)* May - September 2017
- Optimized an optical network performance model to create client-specific designs.
- Dramatically improved efficiency by reducing design cycle time from several days to just minutes.
- Streamlined communication between Operations and Sales, decreasing lead times by up to 3 weeks..

CLUB/PROJECT EXPERIENCE

Berkeley Formula Racing (FSAE) / *Electrical Subsystem Co-Lead* August 2018 - May 2020
- Designed custom PCBs (brake thermocouple board, combined accelerometer/gyroscope board, and others).
- Integrated new developments seamlessly into existing Electrical infrastructure.
- Optimized routing and manufacturing of 3 modular wire harnesses (ECU (engine), ADL (sensors), Power).
- Oversaw live telemetry, shifting-lights PCB, ECU/ADL Validity Checker, automated wire-routing, and others.

UC Berkeley IEEE Student Branch / *Director of Professional Development* August 2018 — December 2019
- Organized events such as Resume Workshops, Graduate Research Mixers, Interview Workshops, and more.
- Worked closely in the Engineering community to help students present their best self to industry professionals.

RESEARCH EXPERIENCE

LEED Lab | *Undergraduate Student Researcher* August 2020 - Present
- Designing a next-generation memory device exploiting negative differential capacitance Sentaurus Workbench (TCAD).
- Simulating ferroelectric gate layers for increased hysteresis (memory window) and efficient transistor read/write operations.

SWARM Lab / *Undergraduate Student Researcher* January 2019 — December 2019
- MRI/EEG integration project: Conceptualized hardware design for ongoing MRI/EEG project. Collecting performance data to establish ideal layout of electrodes and Bluetooth chips.
- Investigated merits of a functional, portable "earth's field" MRI machine concept by constructing and analyzing analog-filtering circuit simulations and performing test scans to tune performance.

SKILLS

Hardware: Analog Circuit Design, Schematic Capture, Device Design, TCAD, Prototype, PCB Design & Manufacturing, Chip/Board Testing, Validation, Precision Hand-Soldering, Reflow Soldering, Hardware QA, Digital Signal Processing (basics), FPGA (IP)

Software: Python, Java, C, RISC-V, Data Structures, Algorithms, Operating Systems, Data Analysis, Debugging (GDB)

Other: LaTeX, Git, Technical Writing, Applied Research, Teaching, Mathematica