

Emily Huynh

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EDUCATION

University of California, Berkeley

Berkeley, CA

Bachelor of Science, Bioengineering; Minor, Electrical Engineering & Computer Science

Expected Grad: May 2020

Cumulative GPA: 3.34

Relevant Coursework: Interactive Device Design, Signals & Systems, Digital Signal Processing, Microelectronic Devices & Circuits, Microfabrication Technology, Data Structures & Algorithms, Global Product Development, Designing for the Human Body, Instrumentation in Biology & Medicine, Organic Chemistry Laboratory

SKILLS

Languages

Proficient: Python • Java • HTML/CSS

Familiar: LaTeX • MATLAB

Tools

SolidWorks/CAD • Cadence • Eagle

COMSOL • NumPy/SciPy

Technical

Schematic Capture + PCB Layout/Milling • Signal Processing

SMT/THT Soldering • Rapid Prototyping • Microfabrication

PROJECTS

Fractal Ongoing

- Prototyped end-to-end low-cost Bluetooth device with actuator and sensor to diagnose bone fractures acoustically, without imaging
- Leveraging signal processing theory to create and test different signals to extract maximal time/frequency information in minimal time
- Implemented signal processing methods including frequency, and time-frequency domain analysis and feature extraction on sensor data
- Co-leading IRB-approved study at UCSF providing clinical operations manual and aiding in optimal data workflow

Video Transmission Over Radio

April 2019

- Utilized various video compression techniques including sparse transforms, color transformations, resampling, filtering, motion compensation, and entropy encoding to reconstruct video and maximize PICSNR after sending video to remote host via radio
- Implemented different comm. protocols to increase bitrate and minimize BER, e.g. AFSK1200/2400 modulated packets, OFDM

NMOS Wafer Fabrication

December 2018

- Fabricated $>6\mu\text{m}$ resolution NMOS silicon wafer containing contact resistors, MOSFETs, cantilevers, diodes, BJTs, etc.
- Utilized alignment, photolithography, oxidation, etching, and metallization (physical vapor deposition) steps to process masks
- Characterized devices using four point probes and compared theoretical calculations to measured data

Leg Orientation Sensing Brace

December 2018

- Analyzed inertial measurement unit (IMU) parameters necessary to characterize leg movements throughout gait cycle
- Designed and milled custom board using Eagle + Othermill to solder switch and SMT (0603) LED indicators to enhance user experience

Robot Voice-Controlled Car

November 2017

- Built front-end microphone circuits and motor circuits for car and empirically tested it for optimal velocity and angled turns
- Trained voice classifier using principle component analysis and k-means clustering to have car recognize and execute external commands
- Implemented closed-loop feedback controller in Launchpad to internally address model mismatch and have car drive route as expected

PROFESSIONAL EXPERIENCE

Electrical Engineering Intern

Present

Thermo Fisher Scientific

San Jose, CA

- Will design improvements for low noise amplifier circuit to increase signal from analytical instrumentation by six orders of magnitude
- Will test schematic designs using LTSpice for circuit simulation

Undergraduate Researcher

February 2018 - Present

Shuvo Roy Laboratory; University of California, San Francisco

San Francisco, CA

- Conducted comprehensive literature review to survey current acoustic methods of pulmonary diagnosis for publishing (see Publications)
- Designed CAD enclosure for acoustic blood pressure cuff to safe keep components and minimize noise during clinical data collection
- Engineered best approach to detect fractures across simulated fractures on animal model with acoustic signals (see Projects: Fractal)

Junior Research Associate

January 2017—May 2018

Dascena, Inc.

Hayward, CA

- Worked on team to publish manuscripts for predictive software using multidimensional analyses of physiologic inputs for early sepsis alerts
- Performed data collection tasks; writing/reviewing for manuscripts and NIH/NSF grants; and completed literature reviews

AWARDS AND HONORS

Regents' and Chancellor's Fellow

Big Ideas @ Berkeley 2019 Winner — Hardware for Good Category

Thermo-Fisher Scientific Scholarship

CA Interstate Federation-Southern Section Div. 4 Long Jump Champion

PUBLICATIONS

Rao A, **Huynh E**, Royston TJ, et al. Acoustic methods for pulmonary diagnosis. *IEEE RBME*. 2018, doi: 10.1109/RBME.2018.2874353