JUI-HUNG (RAY) SUN

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EDUCATION

PhD **University of Southern California** | Los Angeles, CA — Expected May 2026
Electrical Engineering — MS expected May 2024
GPA: 4.0 / 4.0

BS **California Institute of Technology** | Pasadena, CA — June 2020
Electrical Engineering
GPA: 4.2 / 4.3

RESEARCH EXPERIENCE

Graduate Researcher — August 2020 – Present
USC Analog/RF ICs, Microsystems, and Electromagnetics Lab
Advisor: Dr. Constantine Sideris

- Designed 1.2-1.7 / 2.9-4 GHz concurrent dual-frequency drift-compensated magnetic spectrometer (65nm CMOS) enabling single-step and wash free magnetic label immunoassays on-chip. Presented at ESSCIRC 2022.
- Designed 14 GHz spectrometer (65nm CMOS) for novel wearable and point-of-care biomedical applications. Submitted to ISSCC 2024.

Student Team Member (Undergraduate) — April 2019 – June 2020
Caltech Mission Operations Center (CMOC)
Advisor: Dr. Bethany Ehlmann

- Member of student team of new small satellite operations center on Caltech campus.
- Provided support for CubeSats flight operations (downlinked data analysis) in collaboration with JPL and other universities.

Undergraduate Research Assistant — January 2017 – March 2018
Caltech Aerospace Robotics and Control Lab
Advisor: Dr. Soon-Jo Chung

- Assisted development of 6-DOF spacecraft simulator testbed robots.
- Collaborated on design of an androgynous docking mechanism for use on multi-agent simulator robots.
- Designed custom thruster controller PCB for spacecraft simulators.

PUBLICATIONS

Conference

- J. -H. Sun, B. Ling, M. A. -A. Kaiser and C. Sideris, "A Drift-Compensated Magnetic Spectrometer for Point-of-Care Wash-Free Immunoassays using a Concurrent Dual-Frequency Oscillator," ESSCIRC 2022- IEEE 48th European Solid State Circuits Conference (ESSCIRC), Milan, Italy, 2022, pp. 173-176, doi: 10.1109/ESSCIRC55480.2022.9911522.

WORK EXPERIENCE

Micro-Vu Corp., Windsor, CA June 2019 – August 2019
Electrical Engineering Intern

- Assisted development of FPGA firmware (Verilog) for precision non-contact, multi-sensor measurement machines.
- Designed low-latency, fault-robust Bluetooth wireless controller for non-contact optical measurement machines with Bluetooth, STM32, and Silicon Labs ARM Cortex-M4F wireless MCUs.

Ampaire Inc., Los Angeles, CA August 2018 – September 2018
Powertrain Intern

- Assembled and tested electric powertrain modules for ground testbed, flight aircraft.
- Designed and tested 15 Mbps isolated dual-channel transceiver for vehicle CANBus.
- Assisted with development of Simulink model of powertrain.

TEACHING EXPERIENCE

Teaching Assistant (Caltech) October 2018 – June 2020
Analog Electronics Project Laboratory (EE 90)
Embedded Systems Design Laboratory (EE 110ab)
Introduction to Digital Logic and Embedded Systems (EE/CS 10ab)
Introduction to Mechatronics (EE/ME 7)

CERTIFICATIONS

Amateur Radio License (General Class) February 2019
Federal Communications Commission

PROFESSIONAL AFFILIATIONS

IEEE Student Member 2018 – Present
IEEE Solid-State Circuits Society Member 2021 – Present
Tau Beta Pi Member 2019 – Present

EXTRACURRICULAR ACTIVITIES

USC IEEE Student Chapter August 2021 – Present
Member

USC Solar Car Team August 2021 – Present
Member

- Advising undergraduate solar vehicle competition team on low-voltage subsystem

Caltech IEEE Student Chapter January 2019 – June 2020
Chair

- Organized club excursion to IEEE 2019 Vision, Innovation, and Challenges Summit.
- Organized industry speaker panels

SKILLS

Design: Cadence Virtuoso, Ansys HFSS, Altium Designer, KiCAD, LTSpice, Autodesk Inventor, Solidworks

Programming: C/C++, Python, Assembly (AVR, ARM), Linux, MATLAB, VHDL, Verilog

Technologies: Arduino/AVR, STM32, Intel/Altera and Xilinx FPGA

Fabrication: 3D printing, laser cutting, machining

HONORS AND AWARDS

Ming Hsieh Department Fellowship (USC) 2020
Tau Beta Pi Stabile Scholarship 2019
Henry Ford II Scholar Award (Caltech) 2019
Chung Ip Wing-Wah Summer Undergraduate Research Fellowship (Caltech) 2017

LANGUAGES

English: Fluent
Mandarin: Intermediate listening/speaking, novice reading/writing
German: Novice listening/speaking, reading/writing
Japanese: Novice listening/speaking, reading/writing

REFERENCES

Constantine Sideris, Assistant Professor of Electrical Engineering
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