Luke T. Rooney

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Education

University of California, Berkeley | Berkeley, CA — GPA: 3.61 — *Graduation: May 2020*
B.S. *Electrical Engineering & Computer Science*

College of the Canyons | Valencia, CA — GPA: 4.0 — *July 2015 - May 2018*
A.S. *Physics,* A.S *Mathematics*

Relevant Coursework

- Computer Architecture • Algorithms • Data Structures • Artificial Intelligence • Robotics • Design of Information Devices & Systems I/II (Circuits, Control, Signal Processing) • Discrete Math & Probability Theory • Computer Vision • Python, C, and Java Programming
- Spring 2020: Operating Systems • Computer Security • Signals and Systems

Experience

NASA Jet Propulsion Laboratory | Pasadena, CA — *September 2016 - July 2018 & Summer 2019*
Electrical Systems Engineering Intern - Mars 2020 & NISAR Observatory

- Employed as a year-round intern for 2 years totaling over 2000 hours of on-site job experience
- Responsible for maintaining over 700 pages of drawings and 1200 spacecraft electrical functionalities for the NISAR and Mars 2020 flight projects
- Utilized ICDs, block diagrams, and requirements documents to perform system-wide verification of electrical interfaces
- Modeled flight system harnesses for robustness against signal noise, off-nominal voltage/current, thermal faults, and EMI/EMC interference
- Designer of over 30 engineering drawings and 100 Visio circuit drawings for power, telemetry, pyrotechnic, guidance, RF, and instrument subsystems
- Wrote a Python script to check revision differences for a large document that models flight system electrical interfaces

RockSat-X Interim Software Team Lead — *February 2018 - May 2018*

- Nominated as subteam lead to assist in development of proof-of-concept payload launched on NASA Sounding Rocket
- Performed various cross-functional tasks to facilitate work sessions, project reviews, fundraising, and outreach

Projects

Autonomous Quadcopter | github.com/ltrooney/quadcopter — *July 2017 - June 2019*

- Designed power, sensor, motor, and microcontroller electronics configuration
- Wrote custom Arduino C++ flight computer code to send motor commands, establish RC controller communication, monitor battery voltage, and interpret sensor data
- Implemented and manually tuned a 250 Hz PID feedback control loop to achieve dynamic stability
- Performed end-to-end testing and added software fault protection for human and system safety
- Modeled quadcopter dynamics and controller response with MATLAB

Voice Controlled Robotic Car — *March 2019 - May 2019*

- Architected a feedback control system for straight-line driving given motor encoder data
- Utilized k-means clustering and principal component analysis to identify voice commands

Hack Computer — *April 2016 - August 2016*

- Designed RAM/ROM and CPU in a hardware description language with modules including sequential chips, an ALU, control logic, and I/O memory mapping
- Integrated and tested a hardware/software underlying a 16-bit instruction set architecture
- Constructed a fully functional assembler, virtual machine, compiler, and operating system in Java

Skills

Most proficient with: Java, Python, C/C++, MATLAB, HTML/CSS, Mentor Graphics Capital Logic, Microsoft Office Suite
Some experience with: Bash, NumPy, Scheme, JavaScript, Jupyter Notebook, MagicDraw (SysML)
Dabbled with: Ruby, Swift, Django, SQL

Awards and Honors

Recipient of the "Most Inspirational" Award | *Varsity Football, West Ranch High School* — *December 2014*

- Awarded for demonstrated leadership ability as team captain of varsity team of over 50 players