# Luke T. Rooney

Berkeley, CA & Valencia, CA
ltrooney@berkeley.edu
Website: thelukerooney.com | Github: github.com/ltrooney

## Education

**University of California, Berkeley |** Berkeley, CA — GPA: 3.7 — *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 (Honors Student)*

## 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
- Current: Operating Systems • Computer Security • Mechatronics Design Lab

## Experience

**Undergraduate Research Assistant** | Berkeley, CA — *August 2019 - November 2019*
*Berkeley Low-Cost Interplanetary Solar Sail (BLISS)*

- Collaborated with a small group of students to conceptualize a 10 gram photon-propelled spacecraft capable of interplanetary travel
- Contributed towards the overall spacecraft system modeling and design with an emphasis on the power subsystem

**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 system interface drawings and 1200 spacecraft electrical functionalities for the NISAR and Mars 2020 flight projects
- Modeled flight system harnesses for robustness against signal noise, in-rush current, thermal faults, and EMI/EMC interference
- Reproduced over 100 circuits in Visio to repurpose power, telemetry, pyrotechnic, guidance, and RF schematics
- Wrote a Python script to check revision differences for a large spreadsheet that models flight system electrical interfaces

## Projects

**Autonomous Quadcopter |** github.com/ltrooney/quadcopter

- Wrote custom Arduino C++ flight computer code to generate 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
- Modeled quadcopter dynamics and controller response with MATLAB

**Voice Controlled Robotic Car**

- 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**

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

## Skills

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

## 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