

Randall Scharpf

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Education

University of California, Los Angeles (UCLA)

Bachelor of Science in Computer Science

Expected graduation: June 2025

GPA: 3.864

Courses: Computer Systems Architecture, Digital Design Lab, Operating Systems Principles, Algorithms and Complexity

Leadership and Technical Experience

Bruin Spacecraft Group (UCLA)

Project Rapid Electrical Power System Lead

Los Angeles, CA

November 2021 - Present

Project Rapid Chief Engineer

June 2023 - Present

- Validated 18650 Li-Ion battery models with custom charge-cycling circuit to ensure battery pack capacity does not degrade
- Designed and assembled printed circuit boards to prototype and test DC/DC voltage converters that power the satellite bus
- Negotiated requirements with UCLA Plasma, Energy, and Space Propulsion Lab for achievable ion engine integration plan
- Extended embedded Python interpreter with peripheral-mode SPI hardware interface to report data to main flight computer

Bruin Formula Racing (UCLA)

Low Voltage Electronics Subteam Member

Los Angeles, CA

November 2021 - Present

- Accelerated dashboard from 3 to 30 frames per second with dynamic update rates to display time-sensitive speed information
- Redesigned I2C thermal camera driver for microcontroller with 2KB RAM to search for hot spots from wheel misalignment
- Used SPICE simulation to validate designs within KiCad EDA to ensure safety of car operation and high voltage systems
- Designed balancing circuit for supercapacitor power supply filter to prevent catastrophic overvoltage of supercapacitors

Northern Tier National High Adventure

Wilderness Canoe Guide

Ely, MN

June 2023 - August 2023

- Obtained Superior National Forest guide license, Wilderness First Aid certification, and CPR certification
- Taught identification of native berries, plants, birds, and mammals to scouts, promoting wilderness stewardship
- Provided insight into local anthropology and geological history, promoting interest in varied cultural heritages
- Led 5 crews on over 380 miles of canoeing and 140 portages over 34 days

Skills

Languages: Java (Proficient), C++ (Intermediate), Python (Intermediate), C (Intermediate), and Javascript (Intermediate)

Frameworks: Java Swing (Intermediate), Wordpress API (Intermediate), junit (Beginner), React (Beginner)

Microcontrollers: Arduino (Proficient), STM32 (Intermediate), SAM D51 (Intermediate), PIC10 (Beginner)

Sensors: Thermistors (Proficient), Quadrature Encoders (Intermediate), Gyroscopes (Intermediate), Ultrasonic Sensors (Intermediate)

Projects

Helpful Bot

May 2020 - September 2021

- Programmed Discord bot using Node.js with Discord.js wrapper library for school Science Olympiad team to use
- Integrated in PHP with custom Wordpress plugin on team website for configuring settings in hosting environment
- Managed chat permissions to check for vulnerabilities, ensuring uninvited users could not send or read messages
- Overhauled broadcast system for meeting reminders with Moment.js integration to maintain attendance through pandemic

Minesweeper Winner

August 2021

- Included Java Swing GUI to select game location at runtime and give feedback on game completion progress
- Scanned screen to identify the number of mines surrounding each tile by number color and compute next best move
- Clicked using the Robot test automation library to clear an average of 13 squares per second

Temperature Detector Building

July 2019 - March 2020

- Collaborated with teammate to calibrate NTC thermistor to Steinhart-Hart equation using ice bath and hot water solutions
- Wrote custom seven-segment display driver for 8-digit common anode display on Arduino to show sensed temperature
- 3D-printed casing for displays, wiring, status LEDs, and battery to protect them from damage
- Obtained 0.1°C average error and won gold medal at a Science Olympiad competition against 40 teams

Activities

Pacific Crest Drum and Bugle Corps

June 2022 - August 2022

- Rehearsed for over 250 hours during June and July to master marching and playing technique and refine show design
- Performed in 12 states during July and August to serve geographically diverse audiences
- Placed 20th overall at the 2022 Drum Corps International World Championships