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Jacob Sickafoose

R&D Electrical Engineer

Links:
linkedin.com/in/jacobsickafoose
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Skills

Technical Skills	Reading/creating electrical schematics, using test measurement equipment, SMD soldering, technical report writing in LaTeX, 3D modeling, CNC Routing, Hobbyist Home/Automotive Repair
Programming	C, Python, Verilog, Java, MIPS Assembly, Firmware communication protocols: SPI, I2C, UART, etc.
Tools	LabVIEW, LaTeX, PSpice, Altium, KiCad, MATLAB, Git, MarkDown, SOLIDWORKS, Adobe Suite

Work Experience

Research & Development Electrical Engineer **February 2023 — Present**
Avation Medical — Neuromodulation Start-up Company *Valencia, CA*

- Created and modified firmware unit tests as project requirements evolved.
- Worked closely with the Principal Firmware Engineer to identify and fix issues as well as make improvements.
- Wrote and executed V&V system test cases.
- Led and performed end-to-end development of hardware/firmware test systems encompassing all stages from conception to execution. These stages included: Generating comprehensive requirements. Designing electrical schematics and PCBs for data acquisition device to system interfacing. Developing LabVIEW and Python code to execute test measurements.
- Extensive GitHub project management and issue tracking both as a firmware tester as well as a developer.
- Interviewed, led and mentored a rotating team of 2-3 engineering interns to successfully execute projects, leveraging and developing each of their unique skills.
- Modified device firmware and hardware to research system improvements and finalize next generation goals.
- Improved system signal processing using Python/MATLAB for development and implementing in firmware.
- Assisted in clinical trial data filtering and analysis with SQL and Python.
- Key contributor to ISO audit preparations and process as the company's sole electrical engineer and local office's quality rep.
- Authored invention disclosures leading to patent applications.
- Generated and edited numerous technical reports and work instructions, ensuring accuracy and clarity of the procedures followed.
- Authoring an IEEE technical publication (in progress) on the topic of using in-system sensor data to calculate hydrogel pad complex impedance and condition for neuromodulation applications.
- First among 30+ R&D interns in company history to be hired full time, and even during a hiring freeze. Also the first full-time engineer hired with less than 7 years of experience.

Frame Modeling and Manufacturing **September 2019 — June 2021**
UCSC Slugbotics — University Robotics Club *Santa Cruz, CA*

- Designed the Remotely Operated Vehicle (ROV) frame in SOLIDWORKS, working with sub-teams to accommodate their requirements.
- Machined the frame using CNC routing, 3D printing, etc. and assembled the final ROV and various subassemblies.
- On-boarded new members, educating them on standard operating procedures, 3D modeling, how to use tools, etc.

Education

University of California, Santa Cruz **Graduated August of 2022**
Bachelor of Science, Major in Robotics Engineering, Minor in Electrical Engineering
3.02/4.0 GPA

Notable Courses:

- Senior Design Project: Tactile Stimulation
  - Developed a haptic feedback system via an electrical nerve interface. This integrated circuit design/simulation and firmware programming to implement transcutaneous neuromodulation with constant current biphasic waveforms.
- Logic Design
  - Created a video game on an FPGA using VGA display protocols, implemented using Verilog.
- UAV Theory and Practice
  - Implemented a Python 3D UAV simulator utilizing state-space representation and control in addition to PID loops. The simulated UAV was capable of autonomous navigation and target following with wind modeling.
- Sensing and Sensor Technologies
  - Wrote firmware code in C to extract usable data from raw sensor inputs. This required software & hardware filters and setting ARM system control registers to implement interrupt driven communication protocols SPI, UART, and I2C. Custom hardware abstraction layers were created for each protocol.

West Ranch High School, Valencia **Class of 2017**
Honor Society
4.02/5.0 GPA