MANAV DUDHIA

Reno, NV | 702-688-3752 | mdudhia721@gmail.com | LinkedIn

EDUCATION

University of Nevada, Reno 05/2026
B.S. in Electrical Engineering, Minor in Computer Science and Engineering GPA: 3.93/4.00
Courses: Embedded Systems Design, Circuits II, Electronics I, Signals & Systems, Computer Organization

EXPERIENCE

Smart Robotics Lab, UNR 02/2023 - Present
Undergraduate Researcher Reno, NV

- Led an interdisciplinary team to develop STAR-2, an anthropomorphic twisted-string driven soft robotic gripper
- Enhanced STAR-2's control system, boosting functionality 6x by expanding motor control from 2 to 12 DC motors through circuit/PCB debugging and C++ control software development with real-time encoder feedback
- Implemented IMU sensors and control algorithms to deliver real-time positional data feedback, used for comprehensive motion performance evaluation
- Conducted gripper testing and data analysis using MATLAB and Python scripting for use in a research publication
- Designed testing apparatus in Fusion 360 and SolidWorks to ensure reliable and repeatable experimental results

Panasonic Energy of North America 05/2024 - 08/2024
Quality Engineering Intern Sparks, NV

- Enhanced 2170 cell production quality for Tesla Model 3/Y vehicles at Gigafactory 1
- Saved $\sim$ \$325,000 annually by using Python, SQL, and Palantir Foundry to analyze large production databases, developing a live quality alarm and dashboard system that improved defect detection and streamlined processes
- Devised an automated cell testing system integrating a Python-based GUI, real-time data visualization, C++ and Arduino-controlled pneumatics, and thermocouples, significantly improving lab safety and operational efficiency
- Coordinated with senior engineers to deploy alarm system and testing application across production floor

PROJECTS

Universal Leverless Controllers | *C++, Embedded Systems, PCB Design, CAD, Product Design/Development*

- Independently created arcade-style handheld controllers, featuring an I2C-connected display for real-time input feedback, mode-switching, wired/wireless connectivity, hot-swappable keys, and multi-system compatibility
- Designed PCB using KiCad and developed C++ firmware for the Teensy microcontroller
- Modeled controller body in Fusion 360, fabricated using 3D printing and laser-cut acrylic
- Marketed and sold multiple units and versions, generating a net profit of >\$1000

Swamp Cooler System | *Embedded Systems, Low Level Programming, Real Time Control*

- Constructed an Arduino-based swamp cooler control system, utilizing low-level C++ programming with GPIO, ADC, and UART to optimize temperature, humidity, and water level monitoring for automated fan and vent control
- Designed an LCD interface for real-time display of environmental data, with LED indicators for operational states, enhancing system usability without standard libraries
- Implemented precise event tracking with a real time clock (RTC), logging system transitions and user inputs directly through register-level programming to maximize performance and efficiency

SKILLS

Programming: C, C++, Python, MATLAB, SQL, R
Software: SolidWorks, Fusion360, KiCad, Altium Designer, Multisim, LabVIEW, AutoCAD, Excel
Hardware: 3D Printing, PCB Design, Soldering, Oscilloscope, Function Generator, Multimeter, Arduino, Raspberry Pi

AWARDS AND DISTINCTIONS

Nevada Undergraduate Research Award 2024
National Science Foundation EPSCoR UROP Research Proposal Grant 2023 - 2024
- Selected to receive \$4,000 for a proposal to enhance soft robotic gripper control via closed loop sensor feedback and compliant frame design
National Merit Scholarship 2022 - Present
Deans List 2022 - Present