

Sunny Patel

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EDUCATION

• University of Illinois Urbana-Champaign

Bachelor of Engineering Physics, specialization in Computational Physics

Champaign, IL

Aug 2018 – May 2022

EXPERIENCE

• Belcan

Software Engineer

Rockford, IL

Jul 2023 – Present

- Developed real-time C++ software in a Linux environment to interface with and test distributed embedded hardware systems, communicating over hardware protocols like CAN to send simulated control and sensor data.
- Built Python automation tools to generate test configurations, drive system-level test scenarios, and validate hardware responses against predefined requirements.
- Supported hardware-in-the-loop (HIL) testing workflows by simulating system inputs and monitoring outputs across multiple synchronized machines.
- Implemented a precision timing and synchronization algorithm to measure inter-machine latency and detect timing drift in clustered systems, improving system reliability and diagnostics.
- Enhanced internal software-hardware integration tooling by extending shared utilities, improving debugging efficiency and scalability of future embedded test development.
- Led preparation and release of updated test software, collaborating with systems and test engineers to rapidly iterate on requirements and deploy validated solutions.
- Refined and maintained a standardized developer environment image, ensuring security and dependency compliance while reducing environment setup time by ~3 hours per deployment

• USGS Illinois Water Science Center

Data Analyst/IT Programmer Intern

Champaign, IL

Aug 2021 – Aug 2022

- Maintained and enhanced Python-based data processing pipelines using Pandas and SciPy for scientific data analysis and delivery.
- Constructed a user interface using Microsoft Power Apps to modernize logging for field equipment
- Acted as a tech liaison to onboard and train a new team of employees
- Supported hardware setup and IT infrastructure during transition back to in-person operations

• Programming for Engineers and Scientists

Course Assistant

Champaign, IL

Aug 2021 – May 2022

- Assisted in teaching Python and MATLAB to engineering students, supporting coursework in numerical methods, data analysis, and scientific computing.
- Hosted office hours to provide hands-on debugging and conceptual support on technical programming assignments.

PROJECTS

• Ecommerce Website

Nov 2022 – Jul 2023

- Developed a single page application that allows users to make an account and order products online.
- Included a Relational database of 6 tables stored in PostgreSQL
- Created the frontend in React.js using the React-Bootstrap UI library
- Handled the backend using Django Rest Frameworks with CRUD functionalities

• RATS (Roomba Acoustical Tracking System)

Aug 2021 – Dec 2021

- Lead a project exploring the possibilities of using sound waves to triangulate a moving Roomba.
- Engineered a circuit board to support components including an Adalogger, microphone, GPS, BME 680, Radio Transmitter, and a real time clock
- Programmed a Arduino and Python script to compute a Fourier Transform of incoming sound waves for triangulation

• Potential Majors App

Feb 2021 – May 2021

- Developed a database of required classes for different UIUC majors and minors hosted on Google Cloud Platform
- leveraged MySQL queries for students to search for majors they are on progress to complete
- Implemented the front-end using React.js and Bootstrap

SKILLS

- **Languages:** C++, Python, JavaScript, SQL, Java, HTML
- **Technologies:** Makefile, Git, Linux, Docker, React, Redux, Azure, AWS