Sean Warren

478-213-1261 seankwarren722@gmail.com
seankwarren.com github.com/seankwarren

Objective

Highly skilled chemical and software engineer seeking a position to apply my proficiency in full-stack web application development, material science, and data analysis & visualization, to build tools to improve research outcomes.

Education

Georgia Institute of Technology **August 2016-May 2020**
B.S. Chemical Engineering (Minor in Scientific Computing)

Professional Experience

Product Developer *@ OMP Inc* **July 2020-April 2022**

- Developed tools for data visualization, data infrastructure, and UIs for data entry and validation for supply chain planners in the chemical industry.
- Implemented a framework for grouping productions of batch and semi-continuous processes to minimize downtimes, automating most of the previous planning workflow.
- Collaborated with chemical companies for requirements gathering, project development planning, feature building, testing, validation, documentation, and end-user training.
- Utilized version management with Git and SVN, cloud development with Azure, and database management with MySQL, OracleSQL, and SQL Server in a Python development environment.

Test Engineering Intern *@ Binergy Scientific* **May 2019-January 2020**

- Improved the yield of thermally-activated battery pellet manufacturing, validated cell performance with cell-discharge testing, and performed cell-disassembly and failure analysis using SEM, impedance spectroscopy, and CT imaging.
- Manufactured battery electrode samples, and assembled into test cells for performance characterization.
- Automated liquid handling and executed testing of a quartz crystal microbalance device, evaluated signal processing methods, flow profiles in the microfluidic device, and heater control algorithms.
- Developed LIMS system for storing and organizing raw data from experiments using LabView, Python, and MongoDB.
- Designed custom manufacturing tooling in CAD, documented new SOPs and trained technicians on custom tooling.

Undergraduate Researcher *@ University of Illinois, Chicago* **Dec 2017-August 2018**

- Published findings in ACS Applied Materials & Interface: Electron Transfer Kinetics at Graphene Quantum Dot Assembly Electrodes
- Conducted research on graphene materials for oxygen evolution and reduction catalysis under an NSF grant in close collaboration with Argonne National Lab.
- Managed submission of DFT calculations to the Ohio Supercomputer cluster and developed methods for filtering candidates to significantly reduce supercomputer access costs.
- Worked in a wet chemistry lab synthesizing promising candidates and characterizing with NMR, UV-vis, chromatography, mass spectroscopy and IR spectroscopy.

Skills

Programming:	Python, JavaScript/Typescript, MATLAB, bash
Machine Learning:	PyTorch, HuggingFace, Langchain
Web Development:	Django, React, Node.js, REST API, websockets, HTML, CSS
Databases:	MySQL, OracleSQL, SQL Server, PostgreSQL

Projects:

Non-profit Data Analytics

- Turned large relational databases from the Atlanta Watershed into a usable dataset to track water quality with statistical analysis techniques and machine learning.
- Categorized local contaminations and proposed solution strategies using clustering methods trained on statewide data and recommended corrective actions to improve water quality and monitoring.

Real-time Multiplayer Web Game

- Designed and built a custom UI, focused on accessibility, using React and StyledComponents for a responsive layout.
- Built a RESTapi/Websocket server in Django for receiving and responding to incoming gameplay updates and managing Postgres database interactions focused on low latency.

Neural Networks and Transformers from Basics

- Built a character-level bigram model up into a full RNN then to a chat-gpt-like transformer and documented the entire process in Jupyter, based on Andrej Karpathy's lectures.
- Explained concepts from the simplest examples and building in complexity, for example with embedding: starting with integer encoding, then one-hot encoding, then vector embedding in a multi-layered-perceptron.
- Explored hyper-parameter optimization and fully trained a network with ~1e7 parameters to create original, Shakespeare-like text.

Portfolio Website

- Showcased work on web development, numerical simulation, and machine learning, using React in TypeScript focused on mobile-friendly, responsive design.