

EDUCATION

Carnegie Mellon University <i>Master of Science in Chemical Engineering</i>	Pittsburgh, PA Dec. 2020
University of Tennessee, Knoxville <i>Bachelor of Science in Chemical Engineering</i>	Knoxville, TN May 2019

EXPERIENCE

U.S. Environmental Protection Agency <i>Data Modeling Specialist (Contractor)</i>	Durham, NC Dec 2021 - Present
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- Improved a Feature Engineering method by transforming a chemical fingerprinting tool into a more universal format to allow for expanded applications in toxicology predictions of target chemical substances
- Performed in-depth pairwise comparison analysis across different chemical fingerprint sets using Exploratory Data Analysis to identify differences in information captured across chemical spaces.
- Developed data pipeline which extracted and aggregated data from MongoDB collections and transformed to loaded into multiple machine learning models

Carnegie Mellon University <i>Graduate Research Assistant</i>	Pittsburgh, PA Aug 2019 - Dec 2020
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- Performed in-depth statistical analysis of composition effects on catalyst surface performance with computational calculations to reduce the required search space for screening by 70%
- Designed a flexible framework with PyTorch for active learning with Deep Learning Neural-Network potentials leading to a reduction of 60% in computational time while maintaining accurate results
- Manipulated large dataframes containing atomic structure information with MongoDB database in Python
- Collaborated in improvement of projects through implementation of continuous integration to improve code structure and minimize errors

Oak Ridge National Laboratory <i>Research Intern</i>	Oak Ridge, TN June 2019 - Aug 2019
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- Constructed a unique framework through combining density functional tight binding with metadynamics which accelerated scanning of the free energy profile of a system by a factor of 1000
- Implemented neural-network assisted molecular dynamics simulations to reduce the error below 10%.
- Ran Python Jupyter notebook experiments for neural network hyper-parameter optimization.

PROJECTS

For additional projects and source code, visit <https://mattaadams.github.io/>

Q-Wall Game | *Python (TensorFlow, Pygame)*

- Developed a Deep Q-Learning agent in TensorFlow capable of accurate navigation inside a game environment

Sorting Algorithm Visualizer | *JavaScript, ReactJS, HTML/CSS*

- Developed and deployed a web app through GitHub Pages which visualizes popular sorting algorithms to aid in understanding of their functionality

ReciPy Maker | *Python, Bootstrap, PostgreSQL, Docker*

- Utilized Python scripts to scrape web data for data collection and transformation using BeautifulSoup
- Developed and deployed a Recipe Recommendation System with a RESTful API using Django Rest Framework

Twitter Bot Detection | *Python (NumPy, Pandas, Scikit-learn, PyTorch)*

- Utilized Twitter's API to extract and clean data into a readable format across thousands of individual accounts
- Collaborated with a team of 3 to implement and evaluate multiple machine learning algorithms to obtain an overall accuracy of 85% for bot detection and classification.

SKILLS

- **Languages:** Python, JavaScript, SQL, CSS/HTML, Bash
- **Frameworks:** PyTorch, TensorFlow, Django, NodeJS, ReactJS
- **Technologies:** Docker, Kubernetes, REST APIs, MongoDB, Git, CircleCI, VSCode, Linux (Ubuntu)