Matthew Adams

mattaadams1@gmail.com | (865) 951-9994 | mattaadams.github.io/

EDUCATION

Carnegie Mellon University Pittsburgh, PA
Master of Science in Chemical Engineering **Dec 2020**

University of Tennessee, Knoxville Knoxville, TN
Bachelor of Science in Chemical Engineering **May 2019**

SKILLS

Software: Excel, Git, Ubuntu, Vim, MongoDB, Docker, CI/CD, MATLAB
Programming: Python, PyTorch, Bash, SQL

RESEARCH EXPERIENCE

Carnegie Mellon University **Nov 2019 – Dec 2020**
Graduate Research Assistant (Advisor: Dr. Zachary Ulissi)

- Studied composition effects on catalyst surface performance with DFT calculations to identify the relevant search space for computational catalyst screening
- Developed a flexible framework for active learning with machine learning potentials leading to a reduction of 50% in the number of required DFT calculations

University of Tennessee, Knoxville **May 2017 – May 2019**
Undergraduate Research Assistant (Advisor: Dr. Siris O. Laursen)

- Performed DFT calculations to analyze atomic systems to gain additional insight into the relationship between surface Nickel concentration and Hydrogen selectivity
- Presented findings at multiple conferences and received both an Award of Merit and Bronze Award
- Trained undergraduate students in gas flow reactor operations and catalyst performance analysis resulting in increased group research productivity

INTERNSHIP EXPERIENCE

Oak Ridge National Laboratory **June 2019 – Aug 2019**
Science Undergraduate Laboratory Internship (Advisor: Dr. Stephan Irle)

- Used density functional tight binding in conjunction with metadynamics which accelerated scanning of the free energy profile of a system by a factor of 1000
- Captured particle size and temperature effects on particle formation revealing new details on the sintering mechanism

ACADEMIC PROJECTS

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

Using Machine-Learning to Predict Adsorbate Binding Energies of Active Sites **Spring 2020**
Data Science in Chemical Engineering – Carnegie Mellon University

- Designed a process capable of automatically generating atomistic structures using user-specified elements
- Constructed a model capable of predicting binding energies with an average error of 0.05 eV

Using Machine-Learning Methods to Identify Twitter Bots **Fall 2019**
Artificial Intelligence and Machine Learning for Engineers – Carnegie Mellon University

- Utilized Twitter's API to collect and process data features across thousands of individual accounts
- Investigated feature importance and tuned a model to obtain an overall accuracy of 85%