

Ray Matsumoto

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Technical Skills

Languages Python, SQL, Unix

Tools NumPy, Pandas, Scikit-Learn, Matplotlib, Git/Github, Azure, Docker, Spark

Techniques linear and logistic regression, random forest, k-means clustering, curve fitting

Experience

Vanderbilt University

Nashville, TN

GRADUATE RESEARCHER

August 2016 - May 2021

Scientific Research: Simulated electrolytes for energy-storage applications

- Developed screening workflow to perform and analyze over 400 simulations on a high-performance computing cluster to study electrolytes for energy-storage
- Developed analysis tools in Python and C++ to analyze atomic structure and dynamics of simulated chemical systems
- Resulted in 10 peer-reviewed publications, 2 oral presentations, 5 conference posters

Software: Developed open-source software for reproducible simulation workflows

- Led team of 4 graduate students to demonstrate reproducible simulation workflows through the use of open-source software
- Improved unit testing suite in mBuild software to achieve code coverage over 85%
- Developed open-source packages with unit testing, continuous integration pipelines, and Docker images to enable reproducible simulations

Fitesa

Simpsonville, SC

INTERN

May - August 2015

- Conducted materials analysis of incontinence products to understand the non-woven polymers market
- Presented findings to engineering sales team and collaborated to develop sales strategies

Independent Projects

Phase-Separation

- Predicted phase separation of fluid mixtures from unstructured data through the use of k-means clustering and image analysis with scikit-learn and scikit-image
- Presented findings at Vanderbilt Data Science Symposium

MLB Pitch Classification

- Predicted pitch types using structured data and supervised machine learning algorithms with Pandas, Scikit-learn, XGBoost, and imbalanced-learn

Pyfooty

- Developed a Python package to scrape soccer data from FBref with BeautifulSoup and Pandas

Education

Vanderbilt University

Nashville, TN

DOCTORATE OF PHILOSOPHY IN CHEMICAL AND BIOMOLECULAR ENGINEERING

May 2021

Clemson University

Clemson, SC

BACHELOR OF SCIENCE IN MATERIALS SCIENCE

December 2015