

Ray Matsumoto

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Education

Vanderbilt University

DOCTORATE OF PHILOSOPHY IN CHEMICAL AND BIOMOLECULAR ENGINEERING

Nashville, TN

May 2021

Clemson University

BACHELOR OF SCIENCE IN MATERIALS SCIENCE

Clemson, SC

December 2015

Technical Skills

Languages Python (NumPy, Pandas, Scikit-learn, Matplotlib, BeautifulSoup), SQL

Tools Git/Github, Azure, Docker, Spark

Experience

Vanderbilt University

GRADUATE RESEARCHER

Nashville, TN

January 2017 - May 2021

Scientific Research: Simulated electrolytes for energy-storage

- Developed screening workflow to perform and analyze over 400 simulations on a high-performance computing cluster to study electrolytes for energy-storage
- Implemented clustering algorithms with NumPy and multiprocessing packages to identify relationships between structure and dynamics of electrolytes
- Wrote functions in Python and C++ to analyze atomic structure of simulated chemical systems

Software: Developed open-source software for reproducible simulation workflows

- Ensured software consistency with continuous integration pipelines in Azure
- Improved unit testing suite in mBuild software to achieve code coverage over 85%
- Composed Docker files to distribute simulation workflows
- Supervised 1 graduate and 3 undergraduate research projects in molecular simulation and Python programming

Fitesa

INTERN

Simpsonville, SC

May - August 2015

- Conducted materials analysis of non-woven polymers and compiled findings into Powerpoint presentation for Engineering Sales Team

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

MLB Pitch Classification

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

Pyfooty

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