

# Ray Matsumoto

☎ (843) 475-8628 | ✉ ray.a.matsumoto@vanderbilt.edu | 🏠 <http://www.raymatsumoto.com> | 🌐 rmatsum836

## Technical Skills

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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

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### Vanderbilt University

GRADUATE RESEARCHER

Nashville, TN

August 2016 - 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
- 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

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Simpsonville, SC

May - August 2015

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

## Independent Projects

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### 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, XG-Boost, and imbalanced-learn

### Pyfooty

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

## Education

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### 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