Joseph Marchand
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Education

University of Minnesota Duluth
Master of Science, Chemistry Expected May 2025

Project Portfolio: https://joeymarchand.github.io/JosephMarchand_Portfolio/index.html
LinkedIn: https://www.linkedin.com/in/joseph-marchand-aaa64424b/

Professional Experience

Research Assistant – *University of Minnesota Duluth* December 2021 – Present

- Utilized machine learning techniques to analyze and manipulate large, complex datasets, deriving meaningful insights using Python and R.
- Designed, developed, and deployed a neural network for automated microplastic identification, incorporating data preprocessing, transformation, and validation processes.
- Built an interactive dashboard to streamline neural network model deployment, improving usability and accessibility for diverse users.
- Conducted statistical analysis to identify trends in microplastic accumulation and assess environmental impact.
- Designed and executed experiments focused on improving accuracy, performance, and efficiency in analytical methodologies.
- Developed and optimized SQL queries for efficient structured data extraction, transformation, and analysis.
- Published peer-reviewed manuscripts, demonstrating strong written communication skills in conveying research findings clearly and effectively, while developing high-quality figures to support data visualization.
- Collaborated with cross-functional teams while multitasking to translate complex data insights into actionable recommendations, driving informed decision-making.
- Delivered presentations at professional conferences, effectively communicating complex concepts to diverse audiences.

Graduate Teaching Assistant – *University of Minnesota Duluth* August 2023 – Present

- Assisted students on data analysis, and statistics in Quantum Mechanics and Thermodynamics undergraduate courses.

Projects

Automated Identification of Microplastics (AIM)
Developed and deployed a neural network-based polymer classification model utilizing over 2.2 billion data points to accurately identify polymer types. The project integrated advanced preprocessing and data cleaning techniques to ensure high-quality input for model training, followed by automated post-processing to refine predictions. The final phase involved creating an interactive dashboard to enhance usability and model integration.

Skills

Python | R | SQL | MS Excel | Machine Learning | Neural Network | ArcGIS | CustomTkinter |