

Sofia Pasquini

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SKILLS & COMPETENCIES

Technical communication, critical thinking, dedication to learning, leader, outgoing, resourceful; familiar with Agile development practice.

Languages: Python (Pandas, NumPy, Astropy, SciPy, Scikit-learn, Matplotlib, TensorFlow, Keras, PyTorch, Sherpa, Seaborn etc), MATLAB, R, and SQL (MySQL, PostgreSQL); comfortable working with the git framework.

Operating Systems: Linux, MAC OS, and Windows.

Cloud Platforms: Azure: AZ-900 (Azure), DP-900 (Data), and DP-203 (Data Engineering) Certifications

EDUCATION

University of Western Ontario *Master of Science, Astronomy*

2021 – 2023

Thesis: Experimenting with diagnostic power of the combination of unsupervised learning (hierarchical and agglomerative clustering, Random Forests) to characterize variability in large carbonaceous grains in space. My use of data from James Webb Space Telescope will mark this a revolutionary study in the field at the intersection of data science and astrophysics. ([Project repository.](#))

GPA: 3.97 **Awards:** Western Graduate Research Scholarship (WGRS), 2021-2022.

University of Western Ontario *Bachelor of Science, Honors Specialization in Astrophysics, Minor in Advanced Physics*

2017 – 2021

Thesis: Constraining a large-scale dynamic, numerical model for physical conditions near supermassive black holes using a series of Markov-Chain Monte Carlo simulations.

GPA: 3.7 **Awards:** Maude Holt Kingston Gold Medal for Astronomy, 2021; Dr. Gérard Hébert Scholarship in Physics, 2020; Dean's Honor list, 2018-2021; Western Scholarship of Distinction, 2017.

Relevant coursework and projects: Advanced Machine Learning ([Decision Tree Regression](#)), Data Science and Machine Learning ([PCA and Clustering](#), [Sentiment Analysis](#), [Multimodal CNN](#), [Random Forest Extrapolation](#), [Feature Selection](#), [Cross-Validation](#), [Logistic](#) and [Linear Regression](#)); Computer Science Fundamentals; Statistics; Computational Simulations; Advanced Calculus and Linear Algebra; Ordinary and Partial Differential Equations.

California Institute of Technology

2021

Code/Astro Workshop in Software Engineering for Astronomers, Remote

- Software engineering skills and best-practices for open-source development.
- Developed my own [Python package](#) which simplifies data collection & analysis for common astronomical data types.

Penn State University

2021

Summer School in Statistics for Astronomers, Remote

- Intensive study in statistical inference; Bayesian analysis, deep learning neural networks, machine learning, spatial statistics.

SHARCNET Training

2021

Advanced Research Computing Course, Remote

- Machine learning frameworks (PyTorch, TensorFlow, and Scikit-Learn) implemented on Compute Canada's HPC clusters.

PROFESSIONAL EXPERIENCE

Scotiabank *Data Science Intern, Toronto, Remote*

Sept 2022 - Apr

2023

Leverage distributed computing tools for analysis, data mining, and modeling; apply model and algorithm testing strategies to conduct testing to measure the effectiveness of models and make ongoing changes in order to drive business value.

Kroll *Intern for Data Enterprise Team, Remote*

Jan-Aug 2022

- **Data Engineer:** Development of enterprise-grade cloud-based ETL pipeline for client data from business teams; worked in data warehousing to design the schema using ER diagrams for cross-unit databases, on enterprise-wide data cataloging effort.
- **Data Scientist, Analyst:** Development of fintech solution leveraging data science and machine learning techniques to gauge market insights; coordinated search for API resources for this tool as well as communication with third-party vendors; participation in and leading machine learning journal discussions/knowledge transfer sessions.

University of Western Ontario

2021 - Present

Graduate Student Researcher, Teaching Assistant, London, Ontario, Canada

- Leading first-year physics laboratories and demonstrations in addition to research duties (see MSc Thesis, above).

Pre-graduate and Undergraduate Research Assistant, London, Ontario, Canada

2019 – 2021

- Developed two ETL pipelines, wrote a series of SQL scripts for large astrophysical data sets and carried out the statistical analysis and visualization to construct large-scale numerical models. Publication pending review.

