

# Michael Montemurri

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## EDUCATION

### McGill University

Aug 2024 – Present

*M.Sc. Mathematics and Statistics, supervised by Prof. Eric Kolaczyk*

*Montreal, QC*

- Thesis: Graph-embedded random forests and graph representation learning, focusing on applications for interpretable molecular property prediction in low data regimes.
- Teaching Assistant: Calculus II
- Courses: Network Science, PGMs (UdeM), Statistical Inference, Adv. Distribution Theory, Regression, GLMs.

### Bowling Green State University

Aug 2019 – Apr 2023

*B.Sc. Physics & Applied Mathematics, supervised by Prof. Mikhail Zamkov*

*Bowling Green, OH*

- Graduated Summa Cum Laude, GPA: 3.99/4.00
- NCAA Division I Men's Soccer Team

## EXPERIENCE

### Morgan Stanley | Quantitative Finance

May 2025 – Aug 2025

*Fixed Income Strats Summer Associate (Incoming)*

*Montreal, QC*

### Mila | Quebec AI Institute

Aug 2024 – Present

*ML/AI Research Student*

*Montreal, QC*

- Investigated positional encoding methods for GNNs and graph transformers.
- Explored the integration of graph data into tree-based models to improve performance in low-data regimes.
- Utilized the Calcul Québec HPC cluster to train and evaluate models on molecular graph datasets for interpretable property prediction.

### South Essex Fabricating | Research and Development

Sep 2023 – Aug 2024

*Data Scientist*

*Windsor, ON*

- Built an end-to-end multi-modal ML model for weekly crop yield prediction, integrating crop scan images, climate sensor data, and harvest measurements, improving accuracy over the existing model by 23%.
- Fine-tuned and deployed a YOLOv5 model for seedling detection and germination rate tracking from uploaded images; developed a Flask web app with a SQL database backend for internal deployment.
- Integrated custom CV models to automate data collection pipelines, expanding sampling coverage area by 4x.
- Conducted ad-hoc statistical analysis to support decision-making and validate trial outcomes.

### Zamkov Lab

Sep 2020 – May 2023

*Research Assistant*

*Bowling Green, OH*

- Conducted research on the synthesis and optoelectronic properties of colloidal semiconducting nanocrystals (quantum dots) for photovoltaic applications.
- Contributed to experiments on shape control of nanocrystals and co-authored peer-reviewed publications on the synthesis of quantum dots with enhanced bi-exciton lifetimes and quantum yields.
- Led a project developing quantum dots with infrared high-excitation emission spectra for solar cell applications. Presented research at the 2023 American Chemical Society Conference.

## TECHNICAL SKILLS

**Languages:** Python, R, SQL, MATLAB, C++

**Cloud/Platforms:** Azure Functions, Azure Web Apps, COMSOL, OriginPro, PowerBI, Excel, Gephi

**Libraries:** PyTorch, DGL, Pandas, NumPy, Scikit-learn, RDKit, OpenCV, MAPIE, tidyverse, iGraph

## HONORS AND AWARDS

**NSERC Canada Master's Scholarship (CGS-M):** Valued at \$27,000/year. (2025)

**Fonds de recherche du Québec Master's Scholarship (FRQNT):** Valued at \$20,000/year. (2025)

**J. Robert Overman Scholarship:** Highest GPA in the department. (Physics, 2022; Mathematics, 2022)

**BGSU Putnam Math Team Member:** Invitation based on academic standing. (2022)

**CoSIDA Division I Men's Soccer Academic All-American Team** (2022)