# Michael J. Simons

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## Education & Relevant Coursework

**B.A in Mathematics**, *University at Buffalo (May 2024)*
*Concentrations in Computing & Applied Mathematics*

**Mathematics Courses**: College Calculus 1-3, Linear Algebra, Differential Equations, Survey of Multivariate Calculus, Survey of Partial Differential Equations, Number Systems, Mathematical & Scientific Computing, Probability for Engineers, Data-Oriented Computing for Mathematics, Theory of Games, Numerical Analysis, Abstract Algebra

**Computer Science Courses**: Computer Science I & II, Internet of Things, Discrete Structures, Data Structures, Systems Programming, Algorithms & Complexity, Programming Languages, Software Engineering Concepts, Processing of Strings & Sequences, Data Models & Query Languages, Data Intensive Computing, Machine Learning, Reinforcement Learning

## Work Experience

**IT Intern** (*May - August, 2022 & 2023*)
*Monroe-Woodbury Microcomputing Center*, *Harriman, NY*
• Assisted Superintendent for Compliance and Information Systems to support network infrastructure upgrades and security.
• Installed and maintained networking equipment, operating systems, and software applications, providing consistent performance across multiple platforms.

**Customer Service Associate** (*November 2017 - July 2019*)
*BJ's Wholesale Club*, *Monroe, NY*
• Helped customers with purchases, product inquiries and membership services, ensuring a high level of satisfaction.
• Trained new team members on company policies, best practices, and customer interaction skills.

## Software Proficiencies

**Programming Languages**:
Python, R, Java, C++, Javascript, SQL, HTML/CSS

**Data Science & Machine Learning Packages**:
NumPy, SciPy, Pandas, Matplotlib, Seaborn, Selenium, BeautifulSoup, OpenCV, Pickle, Scikit-learn, TensorFlow, Keras, PyTorch, OpenAI Gym, Stable Baselines3

**Processing Frameworks & Cloud Platforms**:
Spark, Hadoop, Amazon Web Services, Azure

**Development & Deployment Tools**:
Git, Docker, Visual Studio Code, IntelliJ

**Document Creation**:
Microsoft Office Suite, LaTeX, Python Notebooks

**Methodology & Practices**:
ETL, Agile, UML, Version Control

## About

Intellectual curiosity has instilled in me a deep-seated appreciation for practical applications of mathematics in technology. I am particularly drawn to the power of artificial intelligence in engineering innovative solutions to real-world challenges.

## Core Technical Skills

**Machine Learning**:

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|---|---|
| *Regression Analysis* | *Clustering & Classification* |
| *Image Processing* | *Natural Language Processing* |
| *Deep Learning* | *Reinforcement Learning* |

**Data Analytics**:

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| *Data Visualization* | *Descriptive Analysis* |
| *Predictive Modeling* | *Structural Methods* |
| *Statistical Methods* | *Large-Scale Processing* |

**Applied Mathematics**:

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| *Computational Theory* | *Mathematical Modeling* |
| *Numerical Methods* | *Probability* |

**Algorithm Design**:

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| *Sorting Algorithms* | *Complexity Analysis* |
| *Search Algorithms* | *Graph Theory* |
| *String Algorithms* | *Dynamic Programming* |

**Technical Communication**:

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|---|---|
| *Oral Presentations* | *Reports & Documentation* |

## Projects

**Data Science & Computational Mathematics Portfolio**
mjsimons.com/portfolio.html
• Showcases practical application of data analysis, machine learning, scientific computing, and numerical methods through a selection of literate-programming style technical reports developed in Jupyter Notebook.

**Algorithm Visualizer**
mjsimons.com/algorithm_visualizer.html
• Designed and implemented a web application to visualize and contrast the efficiency of various graph algorithms for solving randomized mazes. Algorithms include Dijkstra's, A*, Breadth-First Search, Depth-First Search, and Bidirectional Search.
• Collaboratively developed *Bisective Funnel Search*: a novel search algorithm that bisects the search space into two regions while remaining fully connected, often resembling a funnel of visited nodes situated around the optimal path.