# Sasha Robinson

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## Education

**McMaster University (GPA: 3.9/4.0)** Hamilton, ON

*Bachelor of Applied Science in Computer Science, Minor in Mathematics* *Sep. 2022 – Expected Apr. 2026*

## Experience

**Machine Learning Research Intern** May 2024 – Present

*McMaster University* *Hamilton, ON*

- Exploring the intersection between AI-assisted systems, human cognition models, and data-driven storytelling, with a focus on advancing interdisciplinary AI research; working alongside Dr. Swati Mishra.
- Engineering a full-stack application that integrates a **BERT-based NLP model** and advanced graphing algorithms to approximately "solve" the process of data-driven narrative creation.
- Leading a controlled, comparative experiment involving over **100+** participants, quantitatively analyzing AI-human interactions, leading to the development of a cognitive toolkit for AI-assistance in story planning.
- Authoring a research paper about our findings and their implications for the AI and HCI research communities; for submission to IEEE VIS 2025.

**Teaching Assistant** May 2024 – July 2024

*McMaster University* *Hamilton, ON*

- Instructed **40+** students in Discrete Mathematics during the summer semester; covered topics such as introductory logic, algorithm complexity, data structures, probability, and programming.
- Developed and delivered weekly lecture slides for tutorials, providing in-depth explanations of key concepts and guiding students through practice problems.
- Provided feedback on marked exams and assignments and hosted one-on-one office hours; received great praise about teaching quality and commitment from several of my students.

**Research Assistant** Jan. 2024 – Apr. 2024

*McMaster University* *Hamilton, ON*

- Reviewed and annotated **30+** research papers on machine learning, HCI, and AI applications across various interdisciplinaries, as it related to supervisors research.
- Produced comprehensive summaries and analyses of the read material, as well as presenting results to supervisor.
- Collaborated with peers and professors in weekly research meetings, discussing findings and contributing to their ongoing development.

## Projects

**Firewatch** | *Python, Tensorflow, Keras, Jupyter Notebook, Seaborn*

- Engineered and trained a machine-learning predictive model for forest fire detection using Tensorflow with Keras in Jupyter Notebook, achieving an impressive **96.3%** accuracy.
- Performed data visualisations using the scientific Python stack (NumPy, Pandas, Matplotlib) with Seaborn to analyse model performance and delve deeper into the utilised dataset.
- Implemented data augmentation and dropout techniques to mitigate model overfitting (improving accuracy by **10%**) and installed unit tests to validate the accuracy of the model.

**Optimizing Train Pathfinding** | *Python, Git, Google Colab, NumPy, Matplotlib, Pandas*

- Analyzed and visualized the time complexity and efficiency of several popular graph pathfinding algorithms, such as Dijkstra's, Bellman Ford, and A*, to compute optimal train routes in the London subway system.
- Collaborated with a team of 3 peers using GitHub for version control and Google Colab for collaborative software development, analysis, and testing.
- Individually wrote a comprehensive **12-page** report documenting our findings, including data visualizations, code snippets, and detailed analysis on algorithm performance, scalability, and practicality.

## Technical Skills

**Languages**: Python, Java, Javascript, HTML/CSS, SQL (Db2), NoSQL (Firebase), Swift, C, C#, Haskell
**Libraries**: Keras, Tensorflow, PyTorch, NumPy, Matplotlib, Pandas, Seaborn
**Frameworks**: Flask, Django, Node.js, Vue.js, Bootstrap, SwiftUI, JavaFX
**Developer Tools**: Git, Github, Jupyter Notebook, Visual Studio Code, Firebase, Vercel, Linux / MacOS, XCode