Gursimar Singh

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Education

University of Toronto — Toronto, ON
B.Sc. Computer Science with a focus in AI, Minor in Mathematics — *Sept. 2022 – May 2026*

- **Relevant Coursework** - Machine Learning, Data Structures and Analysis, Systems Programming, Computer Architecture, Theory of Computation, Multivariable Calculus with Proofs, Probability and Statistics
- 3.98 cGPA, Dean's List Scholar (2023, 2024)

Experience

Research Assistant — Sept. 2024 – Present
People, AI, & Robots (PAIR) Research Group — *Toronto, ON*

- Working with Gaussian Splatting and Neural Radiance Fields for perception in robotics tasks.

Research Assistant — Sept. 2024 – Present
Acceleration Consortium — *Toronto, ON*

- Working on computer vision for intelligent, remote robotic control in Self-Driving Labs.

Data Science Intern — May 2024 – August 2024
Loblaw Companies Limited — *Toronto, ON*

- Developed a vector search engine and LLM-based data cleaning pipeline for product data for all 350+ No-Frills and Maxi stores across Canada.

Research Assistant — Sept. 2023 – April 2024
University of Toronto - CoNSens Lab — *Toronto, ON*

- Built novel computer vision models for both classification and robotic grasping tasks and compared model behaviour to EEG signals in different streams of the human brain.

Director of Education — June 2023 – Feb 2024
UofT Undergraduate AI Group — *Toronto, ON*

- Led a team of 7 to develop and deliver workshop content to 150+ students on topics like Machine Learning, Computer Vision, NLP and Generative AI.

Machine Learning Engineer Intern — May 2023 – July 2023
PhotograFirst — *Toronto, ON*

- Built computer vision models in Pytorch for tasks like depth map reconstruction and image segmentation. Combined models in a novel architecture, achieveing high accuracy on real-world image culling.

Project Director — Sept. 2022 – May 2023
University of Toronto Machine Intelligence Student Team (UTMIST) × PhotograFirst — *Toronto, ON*

- Led a team of 9 to finetune models for object detection, emotion recognition and near-duplicate detection of images in Pytorch and OpenCV. Applied to the task of image culling for professional photographers.

Projects

Research Paper Implementations | *Python, PyTorch, OpenCV, Hugging Face, NLTK* — GitHub Link

- Implemented 15+ state-of-the-art research papers in topics like Computer Vision and NLP using PyTorch.

Studeasy | *Python, Scikit-Learn, Flask* — GitHub Link

- An LLM-powered study tool with features like study note generation, RAG for grounded question-answering, and quiz generation with answer grading.
- Won Second Place at Hack the Mist 2023 amongst over 30 teams and 120 participants.

Technical Skills

Languages: Python, SQL, C, Java, R, Rust
Libraries: PyTorch, Tensorflow, Keras, Scikit-Learn, Pandas, OpenCV, NLTK, Hugging Face, Matplotlib, Flask
Developer Tools: Git, GitHub, Jira, Docker, Google Colaboratory, VS Code