

Jayant Varma

Toronto | Email | My website | Linkedin | Github

Education

York University, MSc. in Computer Science September 2025 – present

- Supervisor: Dr. Maleknaz Nayebi
- Coursework: Big data systems, Mining software engineering repositories, Probabilistic models and Machine Learning, Computational complexity [Audit]

York University, BSc. Honors with Specialization in Computer Science January 2021 – June 2025

- Overall GPA: 7.14/9 (79.34% or 3.3/4)
- Final year Coursework: Research Project course in Computer Vision, Signals and Systems, Computer Vision, Machine learning, Mathematics of Cryptography, Distributed systems, Advanced data structures, Compilers and interpreters, Computational Physics, Advanced topics in Computer Vision[Audit]

Experience

Teaching Assistant, Dept. of Electrical Engineering and Computer Science, York University - Toronto, ON, Canada September 2025 – present

- Held tutorials, labs, lab tests, and exams for Computer Organization course
- Teaching quality hands on expertise with low level programming, RISC-V assembly, Verilog, and good communication skills

Research Assistant, Tsotsos Laboratory for Active and Attentive Vision, Dept. of Electrical Engineering and Computer Science, York University - Toronto, ON, Canada April 2025 – August 2025

- Providing experimental, coding and data analysis support for human investigations into natural and digitally assisted vision
- The project was made in collaboration with the Google AR/VR group
- Due to highly competitive nature of this research, no further details can be given at this stage

Computer Vision and Machine Learning Researcher, Elder Laboratory – Toronto, ON, Canada January 2024 – April 2025

- Research project course, EECS 4080
- Did literature survey of:
 - Autonomous driving datasets of indoor and outdoor scenes (real and synthetic)
 - Lightweight Neural net methods for instance and panoptic segmentation for autonomous driving
- Fine-tuned and trained YOLO11n on the SceneParse150 and the COCO-Panoptic datasets to perform instance segmentation for navigation of the AirChair wheelchair
- Post-processing using Robot Operating System (ROS), and C++ to optimize the code to perform in real-time.
- Video presentation link

Volunteer researcher, Allan I. Carswell Observatory, York University – Toronto, ON September 2024 – April 2025

- Rediscovered Kelt-16 b exoplanet using the transit method, thus verifying it's existence and reproducing the results of the original discovery paper, supervised by Professor Sarah Rugheimer and Joshua Parsons
 - Created a Python data analysis pipeline for processing images using NumPy, AstroPy, Matplotlib, SciPy
 - Image analysis is heavy on computer's RAM, I made a clever, optimized algorithm that works with as little resources as necessary
 - Did technical writing in LaTeX
- Help conduct, and do my own astronomy research at Allan I. Carswell Observatory

Computer Vision and Machine Learning Researcher, Universität Augsburg – Augsburg, Bavaria, Germany June 2024 – September 2024

- Prestigious DAAD RISE-Germany scholarship holder, co-funded by DAAD and Mitacs as one of top applicants

from Canada

- Worked with Julian Lorenz at Dr. Rainer Lienhart's lab to create a synthetic dataset of indoor scenes that also features humanoids. Scenes and humanoids were generated using diffusion models, and key annotations such as scene graphs, 3D point clouds, object segmentations, and more (link to list of annotations) were added to show human-object, object-object, and human-human relations
- Implemented key parts of the pipeline bridging the diffusion model output to JSON to Unity
- Programmed in C# and worked in Unity to add objects in the generated scenes and humanoids, and also added scene graph annotations
- Presented paper on diffusion model that generates scenes, and read about inpainting, scene graphs, scene and humanoid synthesis stable diffusion models

Class representative, Bethune College, York University – Toronto, ON

September – December 2024

- Held and organized study sessions for PHYS 3070: Planets and planetary systems
- Taught Python, NumPy, and LaTeX

Class representative, Bethune College, York University – Toronto, ON

January 2023 – April 2023

- Held and organized study sessions for Math 1025: Applied Linear Algebra
- Helped many new students prepare better for exams and answered their questions, solved questions with them

Clubs and group activities

Computer Education Reading Group (CERG) Lassonde School of Engineering

October 2022 – present

- First student member of the group where we discuss papers and ways to teach Computer Science to improve Computer Science pedagogy at Lassonde

Club Infinity, York University

May 2021 – Present

- Active member of the reading group from Jan.2022 to Aug.2022 where we read *Gödel, Escher, Bach* by Douglas Hofstadter over the course of Winter and Summer of 2022

Projects

Distributed Chat application

- Developed a distributed chat application that hosts multiple clients having real time communication
- Application is a full-stack website whose backend is made with Go-lang and frontend with JavaScript
- Use of web-socketing for real-time messaging, and made my own web server
- Tools Used: Go-lang, Docker, Kubernetes, Azure, Redis, JavaScript, Git
- Github repo: (click here)

Syntax

- A Machine Learning based writing assistant that upgrades a text (less than 500 words) by suggesting replacement of overused/poorly used words with appropriate synonyms to increase the lexical variety in a professional tone, while ensuring it suits the context of the paragraph.
- Utilizing BERT architecture in being able to find relation (attention mechanism) within the fixed context length so we can improve possible writing and suggest possible better words within the given context window
- Hugging Face weights on the BERT base model to fine tune downstream tasks
- Utilizing prompt for quality data generation of this supervised learning model

Awards

Graduate student fellowship (2025): \$79,000

DAAD RISE Germany Scholarship funded by Mitacs Globalink (2024): \$6,000

York University continuing student scholarship(2023): \$600

Two time EECS 3101 Learning Excellence award Winter 2023

EECS 2011 Learning Excellence award Fall 2022

York University International Scholarship of Merit(2021): \$4,000

Technical Skills

Programming Languages: C, Java, Python, Go, C#, JavaScript, Matlab

Others: Pandas, pyxdf, Git/Github, Unity, PyTorch, Kornia, NumPy, OpenCV, Kubernetes, Docker, Redis, LaTeX, HTML/CSS, Linux, MacOS, Windows, MSOffice