

Akshay Kolwalkar

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EDUCATION

University of Toronto

Toronto, ON

Bachelor of Applied Science (BASc) in Mechanical Engineering + PEY/Co-op

Relevant Coursework: Calculus 3, Probability & Statistics, SolidWorks

Technical Skills: **Excel**, **C++**, **MATLAB**, ROS2, CAD, Pandas, React.js

WORK EXPERIENCE

Louisville Automation and Robotics Research Institute

Student Researcher

June 2025 - Ongoing

- Developing autonomous driving algorithm using ML for the RoboRacer (F1Tenth) competition. AutoDrive 3D simulation, ROS2 RViz, and TensorFlow. Working in Dr. Sabur Baidya's team to compete at Porto competition
- Worked with Dr. Alireza Tofangchi to implement a **Variable Stiffness Actuator** into affordable prosthetics.

General Electric Appliances

Louisville, KY

Manufacturing Production Intern

June 2025 - July 2025

- Operated production equipment to ensure quality and output standards are met, presented optimizations to assembly process

UNIVERSITY PROJECTS

NASA Space Apps - Local Impact and Most Inspirational Awards

October 4-5, 2025

- Developed an interactive web app featuring a 3D visualization of 40 asteroids' orbital paths, a 2D simulation with effects of meteorite impact, and performance of various impact mitigation strategies (laser ablation, gravity tractor, etc.)
- Calculations including - asteroid orbital paths, meteoroid atmospheric entry flight dynamics, meteorite impact effects - made using NASA data, research paper physics models, and NumPy.
- React frontend, Three.js rendering, Python backend for NASA APIs, Flask web framework, Tailwind styling

University of Toronto Aerospace Team - Space Systems

May 2025 – Ongoing

Attitude Determination and Control Systems

- NASA's Spicypy for celestial body ephemeris; numpy and pandas for processing and outputting flight instructions
- Using STK 12 to visualize relevant satellite dynamics and celestial object coordinates to output an ideal flight path complete with rotational information and exclusion zones

Stock Portfolio Risk Management (Saint George Capital)

Oct 2024 - May 2025

- Worked on developing a novel proxy/metric of variance in equities that differentiates positive from negative volatility using measures such as CVaR, Sortino Ratio, realized skewness, and semi-deviation. Libraries: Pandas, NumPY, yfinance, etc.

Academic Blog

May 2025 – Sep 2025

Prompt Engineer

- Optimizing academic paper presentation on social media through LLM manipulation with Harvard PhD Hashim Zaman

Intersection Safety Project (APS112 Engineering Strategies and Practices II)

Jan 2025 - April 2025

Team Leader

- **Collaborated** with client Geoffrey Bercarich to develop a solution to minimize intersection fatalities, specifically at St. George and Bloor St. West. Project is done in alignment with international initiative 'Vision Zero'
- Responsibilities included: **leading** client and team meetings, determining critical objectives and constraints, consideration of key stakeholders and constraints, and consistent communication with the team's Engineering Manager