Akshay Kolwalkar

Toronto| Louisville, KY |437-313-9982|akshay.kolwalkar@mail.utoronto.ca|linkedin.com/in/akshay-kolwalkar

EDUCATION

University of Toronto Toronto

Bachelor of Applied Science, Mechanical Engineering + PEY/Co-op

- Relevant Coursework: SolidWorks, Differential Equations, Thermodynamics, Multivariable & Vector Calculus 3, Mechanics & Dynamics, Electrical Principles, Linear Algebra, Materials Science, Probability & Statistics
- Technical Skills: MATLAB, ROS2, Solidworks CSWA Certified, NumPy & Pandas, C++, React.js

WORK EXPERIENCE

Louisville Automation and Robotics Research Institute

Student Researcher June 2025 - Present

- Working with Dr. Sabur Baidya to develop an autonomous driving algorithm to compete @ F1Tenth's Boston VTC 2026.
- Using AutoDrive for 3D simulation, SAC RL algo (PyTorch) in ROS2 RViz & gym, Nvidia Jetson NX, Docker
- Worked with Dr. Alireza Tofangchi to implement a **Variable Stiffness Actuator** into an affordable prosthetic leg prototype

General Electric Appliances Louisville, KY

Manufacturing Production Intern June 2025 - July 2025

- Operated production equipment, ensuring quality & output standards were met, presented optimizations to the assembly process, assisted in the maintenance of niche factory equipment, and coordinated with area manufacturing engineers

PROJECTS

NASA Space Apps Hackathon Toronto

Awards: Local Impact, Most Inspirational October 4-5, 2025

- Developed NEOScope, an interactive web app featuring a 3D visualization of 40 asteroids' orbital paths, a 2D simulation with effects of meteorite impact, and performance of impact mitigation strategies (laser ablation, gravity tractor, etc.)
- Calculations including asteroid orbital paths, meteoroid atmospheric entry flight dynamics, and meteorite impact effects, made using NASA data, Euclidean Keplerian Orbital mechanics.
- Used React & Three.js frontend, Python & Flask backend for NASA's SBDQ & Sentry APIs, numpy & pandas

University of Toronto Aerospace Team - Space Systems May 2025 – Present

Attitude Determination and Control Systems

- Working on FINCH - a 3U CubeSat whose primary mission is hyperspectral crop imaging. Launch target is Q3 2028.
- Using STK 12 to visualize relevant satellite dynamics and celestial object coordinates to output an ideal flight path, including slew, camera exclusion zones & tracking algorithm, and LVLH determination
- Technologies: NASA's SpiceyPy for celestial body ephemeris; Integration with TensorTech's ADCS 10m, numpy & pandas

Cinematographic Robotic Arm (MIE243 Mechanical Engineering Design) Sep 2025 - Dec 2025

- Designed a 6 DOF robotic arm for prosumer independent cinematographers meeting industry-leading standards in reach, payload limit, speed, and precision, while remaining lightweight and affordable. Competes with Motorized Precision's EVO
- Used SolidWorks for 3D modelling, isometric drawings, and mass & material analysis. Gantt chart for project management

Intersection Safety Project (APS112 Engineering Strategies and Practices II) Jan 2025 - April 2025

Team Leader

- Worked with client Geoffrey Bercarich to reduce intersection fatalities. Project done in alignment with intl. initiative 'Vision Zero'. Led meetings, determined objectives & constraints, considered stakeholders' interests, and presented final proposal