

# Ahnaaf Khan

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## Education

**Queen's University**, Mechatronics & Robotics Engineering, BASc

Sept 2023 – May 2027

- Dean's Scholar

## Projects & Design Team Experience

**Co-Founder**, Qlean - Queen's Cleantech Engineering Design Club – Kingston, ON

Sept 2024 – Present

- Founded and scaled a 35-member cleantech design team; fundraised \$5K+ in sponsorships to support long-term operations.
- Leading development of a coupled Direct Ocean Capture + Ocean Thermal Energy system; completed subsystem designs and preliminary simulations, with the next phase focused on manufacturing the project to capture 1 kg of CO<sub>2</sub> within the year.
- Directed design and construction of a proof-of-concept electrochemical CO<sub>2</sub>-to-ethanol reactor, validating feasibility with 15% conversion efficiency using a copper mesh cathode and nickel anode.

**Rover Arm Software Lead**, Queen's Space Engineering Design Team – Kingston, ON

Sept 2025 – Present

- Developed an inverse kinematics algorithm for a 6-DOF robotic arm, enabling precise end-effector positioning.
- Leading a team of 4 developers to improve arm dexterity and reliability through kinematic optimization and motion planning.

**LabLink (Semi-autonomous delivery robot)**

- Designed and programmed a semi-autonomous peer delivery robot for lab materials. Implemented SLAM mapping and A\* pathfinding in Python with ROS2, enabling autonomous navigation.

## Relevant Work Experience

**Research & Development Intern**, Muse – Toronto, ON

June 2021 – June 2022

- Collaborated with the CTO to design and deploy a Python-based neurofeedback protocol to improve sleep quality, achieving an improvement of 20% for 200k+ active users
- Developed in-app tutorials with ReactJS and Figma that boosted user retention by 30%

**Teaching Assistant**, Queen's University – Kingston, ON

Jan 2025 – Apr 2025

- Improved the quality and completeness of student projects by designing interactive coding tutorials for Data Structures & Algorithms in C, as recognized in end-of-term evaluations.
- Facilitated weekly labs for 70+ students, integrating hands-on mechatronics systems that boosted participation and engagement by 20% compared to the previous semester.

**Assistant AI Instructor**, SureStart – Toronto, ON

July 2025 – Sept 2025

- Launched the inaugural Slingshot Academy: AI Labs at Branksome Hall, designing and delivering curriculum on Generative AI for students with no prior coding experience.
- Guided a cohort of 20+ students (ages 12–15) from foundational Python to deploying web apps with large language models, resulting in 100% project completion and 90% of students reporting increased confidence in programming skills.

**Co-Founder**, NeuraDAO – Toronto, ON

Nov 2021 – Dec 2022

- Assembled and led a founding team of neuroscience PhDs, full-stack engineers, and legal advisors to develop a Web3-based neurotech data marketplace, successfully fundraising of \$250K+ in angel investment for long-term operations.
- Developed the front-end using NextJS/React, improving pilot user retention by 15% across a base of 200 users.
- Presented at Collision to 500+ attendees and pitched at ETHAmsterdam driving investor interest and global visibility.

**Assistant Engineering Course Developer**, Queen's University – Kingston, ON

Apr 2025 – Sept 2025

- Reworked Fluid Mechanics (MREN 241) and Thermodynamics (MREN 230) lab manuals, prelab videos, and simulation programs in response to negative student feedback, resulting in a 20% increase in student satisfaction scores.
- Developed simulation and instructional resources that were adopted across the curriculum by 300+ students per term, reducing instructor prep time and standardizing the learning experience across multiple course sections.

## Technologies

**Languages/Frameworks:** C++/C, Python, PyTorch, Tensorflow, Excel, ROS2, LTSpice, KiCAD, SolidWorks, MATLAB, Git, Linux

**Technologies:** Carbon Capture, Energy Generation, Generative AI, Machine Learning, Robotic Arms, Embedded Systems