Akash W Shah

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Education

McGill University, Honours Physics and Computer Science, Montréal, Québec **2023 – Present**
GPA: 3.83, on a 4.0 scale

Sharon High School, Sharon, Massachusetts **2019 – 2023**
GPA: 6.0, on a weighted 6.0 scale

Honors

Summa Cum Laude	(high school)
Excellence in Physics Award	(high school)
Honor Roll	(all semesters of high school)
AP Computer Science A Exam Perfect Score	(0.47% of test takers globally)
Trottier Space Institute Summer Undergraduate Award Honourable Mention	(2025)

Membership & Experience

McGill Rocket Team **Payload Software Lead: Summer 2024 – Present**
Avionics Software Member: Fall 2023 – Spring 2024
Programmer for the McGill Rocket Team. Wrote embedded systems code and drivers for custom flight computers utilizing the STM32 microcontroller in C and C++. As a general member, wrote SD card driver used for data logging during flight. As the Payload Software Lead, led and trained a team of 5–7 people in writing code for high-speed data acquisition (DAQ) and analysis and developing an active temperature control system using thermoelectric coolers.

Boardwalktech Internship **Summer 2024**
Remote intern; worked on Unity Central, a productivity tool for the shipping industry. Researched and developed a system for finding keywords in a corpus of documents of varying type and format and searching for them using the Ripple search engine. Involved natural language processing with latent semantic analysis.

FIRST Tech Challenge, *Team Unlimited* **Captain: Spring 2022 – Spring 2023**
Member: Spring 2019 – Spring 2022
Captain of a team in the FIRST Tech Challenge (FTC) high school robotics competition. Ranked second in the state in 2022-2023 season. In previous years, was software lead and a member. Involved a commitment of 7–20 hours per week throughout the year. Qualified for state competition every year.
Designed and constructed robots for competitions, including:

- Programming remote control and autonomous code in Java, involving control theory, PIDF loops, and finite state machines
- Computer Aided Design (CAD) using SOLIDWORKS to model parts for 3D printing
- Hands-on construction using hand tools and power tools such as bandsaws, drills, Dremels, and drill presses

Led a team of 10–15 people in multiple areas, including:

- Scheduling and coordinating work and collaboration between multiple subteams

- Coordinating outreach events, including: exploring new outreach opportunities, creating outreach materials, and managing travel logistics
- Managing online presence
- Branding and graphic design for the team website and physical materials
- Training new members in hardware, software, CAD, documentation, and outreach

Sharon High School CyberPatriot Team **2021 – 2023**
Ranked first in state both years in CyberPatriot, a competition organized by the Air Force Association to identify and fix security issues and viruses and to complete various cyber and cryptographic challenges in multiple operating systems. Coded scripts in Batch to automate the process. Specialized in Windows 10 and Server 2019 operating systems. Reached Platinum Tier in state round in 2021-2022 season. Reached Platinum (highest) Tier in National Semifinals in 2022-2023 season.

Immigrant Family Services Institute (IFSI) Volunteering **Summers 2019 – 2022**
Designed curriculums for 5-week classes "LEGO Robotics with Mindstorms" and "Programming in Python" for children aged 8–15 years, whose families recently immigrated from Haiti. Taught these classes in-person and remotely for group sizes of 5–15 students.

Hong Kong Programming Class **Spring 2021**
Designed a curriculum and conducted a 6-week, remote training on Python coding to students in Hong Kong, aged 8–12.

Projects

Erosion Simulator (McGill Physics Hackathon) **November 2024**
The McGill Physics Hackathon is a two-day event where teams make a program to solve physics problems. In a team of five, created a Python program which uses a basic fluid simulation to determine where to erode a river over time. Used NumPy for simulation purposes and a marching cubes algorithm and Matplotlib for the visualization animation.

Gravitational Lensing Simulator (McGill Physics Hackathon) **November 2023**
With a partner, created a Python program to render what a picture would look like in the presence of a large mass with a large gravitational field. Used NumPy to simulate the path of light through space.

Game Development **Winter 2020 – Present**
Taught myself Unity3D Game Engine development; worked on multiple games in my free time. Participated in three game jams, events where teams are challenged to create a game based on a theme in a limited time. Designed and implemented "Protista", a newly invented abstract board game that can be loosely described as complexity theory in a competitive form; exercised coding, graphics, algorithms, 3D modeling and animation, and user interface skills.

Uno Bot (Machine Learning) **Spring 2022**
Wrote an algorithm to play the card game "Uno" and used a genetic algorithm to tune its parameters.

Discord Bot Development **2017 – 2021**

Designed and programmed a Discord bot that allowed users on a chat service to play a text-based game and compete with other users. Completed initial development in middle school and continued to add features through junior year of high school. More than 100 different groups have chosen to add this bot to their servers.

Proficiencies

Programming Languages

C#: Programmed many games. *Extensive experience.*
Python: Made a discord bot and wrote scripts. *Extensive experience.*
Java: Took AP Computer Science A, wrote remote control and autonomous code for robotics, and used machine learning to train an algorithm to play Uno. *Extensive experience.*
C & C++: Wrote embedded systems code and drivers for rocket's flight computer. *Extensive experience.*
Batch: Wrote scripts to fix insecurities in Windows 10 and Server 2019 operating systems as part of the CyberPatriot competition. *Moderate experience.*
JavaScript/TypeScript: Wrote code to format a website and run its backend. *Moderate experience.*
HTML and CSS: Built website. *Moderate experience.*

Software

Unity3D (Game Engine): Developed "Protista" game. *Extensive experience.*
Git (Version Control System): Used to manage versions for every programming project. *Extensive experience*.
SOLIDWORKS (CAD): Designed parts and assemblies for mechanisms for robots prior to them being built. *Extensive experience.*
Autodesk Maya (3D Modeling & Animation): Modeled and created animations for robots to demonstrate functionality; modeled and created animations for game objects. *Moderate experience.*
Audacity (Audio Editing): Edited and mixed music and audio to create mashups and record audio for videos and other projects. *Moderate experience.*
DaVinci Resolve (Video Editing): Edited and created videos for a variety of purposes. *Moderate experience.*
GIMP 2 (Image Editing): Edited images for a variety of projects. *Extensive experience.*
Adobe Lightroom (Photo Editing): Touched up and edited photos for Digital Photography class. *Extensive experience.*
Figma (Graphic Design): Made designs, documents, and branding for robotics team. *Moderate experience.*