SANJAY MOHAN KUMAR

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EDUCATION

George Mason University Fairfax, VA
Pursuing Bachelor of Science in Computer Science *Expected Graduation: May 2026*
Relevant Coursework: Data Structures, Low-Level Programming, OOP
Awards/Certifications: Spring 2023 Dean's List

SKILLS

Programming	Java, Kotlin, Python, C/C++, Linux/Unix
Technology	Git, OpenCV, TensorFlow, NumPy, Pandas
CAD Programs	Onshape, Autodesk Fusion360, SolidWorks
Hardware	Arduino, Raspberry Pi, 3D Printing, PCB Design
Robotics	State Machines, Open/Closed Loop Controllers, Motion Planning, Kinematics

EXPERIENCE & LEADERSHIP

GMU FIRST Alumni Association, Vice President Oct 2022 - Present
Led STEM club, organized FIRST events & community outreach. *George Mason University*

- Led STEM-focused club as Vice President, organizing FIRST robotics events and community outreach to drive interest in robotics and STEM related fields.
- Helped lead "Spring into STEM" community event at GMU which promoted STEM to students K-12th in the DMV area, with roughly 300-500 participants.
- Through various marketing and promotion strategies, grew the alumni association by 20-35 members over the course of two semesters.

PROJECTS

Smart Signal: *C/C++ | Arduino* Sep 2017

I created a dynamic traffic intersection simulation, using ultrasonic sensors to prioritize the busiest lane for the green light, reducing traffic congestion and wait times. This project gained recognition for seamlessly integrating hardware and software solutions, highlighting my proficiency in addressing practical problems through innovative technology.

3D Projectile Motion Simulator: *Python | Physics* Sep 2020

Created a software that could estimate the necessary variables to launch an object a specified distance. This program derived velocity(could be translated into motor power), launch angle, and flight duration while accounting for environmental influences. Could also simulate the projectile in 3D to simulate position at any given time.

State Machine Builder: *Java & Kotlin | State Machines | Software Library* Feb 2022

An extremely robust software library designed to make the creation and analysis of Finite State Machines as easy as possible. Its potential to be embedded into any system is made possible by a "Plug-and-Play" style interface.

Sensor Localization: *Java & Kotlin | Real-Time Location Estimation | Software Library* July 2022

Software library that uses distances to nearby fixed objects to derive a robot's relative real-time position (x, y, θ). Additionally, it can communicate with sensors to retrieve readings at optimal times as needed.

AlphaLib: *Java & Kotlin | Trajectory Generation & Following | OpenCV* Aug 2022

An all-in-one software package that makes programming any FTC robot easier and highly efficient. Several control theory concepts are skillfully implemented, such as Trajectory Generation & Following, Open(FeedForward) & Closed(PID) Loop Controllers, and Object Classification.