

# SANJAY MOHAN KUMAR

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## EDUCATION

### George Mason University

Pursuing Bachelors degree in Computer Science

Expected Graduation: May, 2026

*Fairfax, VA*

- **Relevant Coursework:** Object-Oriented Programming, Data Structures

### Broad Run High School

Aug 2018 - June, 2022

*Ashburn, VA*

- **Relevant Coursework:** Computer Science A, Statistics, Physics, Tech of Robotic Design, Project Lead the Way(PLTW), Adv Functions & Modeling, Adv Computer Info Systems
- **Certifications:** Workplace Readiness, Microsoft Office Specialist, WISE Financial Literacy

## SKILLS

<b>Programming</b>	Java, Kotlin, Python, C++, Latex, Git, Unix Shell, OpenCV
<b>Software</b>	IntelliJ, Visual Studio, MATLAB, Microsoft Office, Adobe Software
<b>Hardware</b>	Arduino, Raspberry Pi, 3D Printing
<b>CAD</b>	Onshape, Autodesk Fusion 360
<b>Robotics</b>	State Machines, Control Theory, Trajectory Generation & Following, Open & Closed Loop Controllers
<b>Soft Skills</b>	Leadership, Problem Solving, Critical Thinking, Teamwork

## EXPERIENCE & LEADERSHIP

TODO

## PROJECTS

### Smart Signal: *C++ | Arduino*

Sep 2017

Designed, assembled, and programmed an innovative project that simulates a traffic intersection in which the lane with the most traffic(identified using sensors) is prioritized the green light foremost in order to minimize traffic build-up.

### Projectile Motion Simulator: *Python | Physics*

Sep 2020

Created a program 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. Developed as part of FIRST Tech Challenge 2019-20 season Ultimate Goal.

### State Machine Builder: *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: *Kotlin | Real-Time Position 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,  $\theta$ ). Additionally, it can communicate with sensors to retrieve readings at optimal times as needed.

### AlphaLib: *Kotlin | Control Theory | Trajectory Generation & Following | OpenCV | Software Library*

Aug 2022

An all-in-one 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.