Prateek Machiraju

Class of 2024 @ UNC Chapel Hill | github.com/prateekma | 919-985-4610 | prateekma@unc.edu

First-year student at UNC Chapel Hill studying computer science and applied mathematics.

EXPERIENCE

Project Manager and Developer, PhotonVision — 2020 to Present

- Helped manage a team of around 15 developers in developing a suite of computer vision software tools for robotics teams across the world.
- Implemented an algorithm to encode and decode data sent over a network from client and server in Java and C++.

Contributor, WPI Suite of Robotics Libraries — 2018 to Present

- Top 10 contributor for allwpilib, a robotics library used by over 3,500 teams worldwide.
  - Developed essential robot kinematics and trajectory generation software in Java and C++.
  - Contributed to development of a modern controls framework, including state-space controllers, Kalman filters, and physics simulation of robot mechanisms.
  - Worked with Gradle and CMake.
- Top 5 contributor for frc-docs, technical documentation used by over 3,500 robotics teams worldwide.

President and Programming Lead, Green Hope Robotics Team (FRC 5190) — 2018 to 2020

- Led a robotics team of over 90 students to 2 state championship wins.
- Taught students about general software engineering techniques, such as use of Git, GitHub, code reviews and pull requests.
- Developed a comprehensive Kotlin team library, including tools for live robot motion visualization and debugging using JavaFX and Gradle.
- Organized several outreach events in partnership with MetLife and Cisco to get elementary and middle school students involved in STEM.
- Gave 2 presentations on robot trajectory tracking to 200 in-person and over 6,000 online members in the worldwide robotics community.

PERSONAL PROJECTS

- Developed a cross compiler toolchain using LLVM and Clang to compile C++ programs to the NI roboRIO (github.com/prateekma/llvm-frc).
- Working on an iOS app that interacts with Rust and C libraries to control robots remotely (github.com/prateekma/ios-ds).

SKILLS

- Programming Languages: Java (6 yrs), Kotlin (3 yrs), Python (3 yrs), C++ (2 yrs), Swift (6 mo.)
- Markup Languages: Markdown, reStructuredText, LaTeX
- Operating Systems: Windows (7/10), macOS
- Tools: Advanced Git, GitHub Actions, Azure Pipelines, Gradle, CMake
- Libraries: LLVM, Google Test, JavaFX, Apache Commons Math, EJML, JUnit

EDUCATION

University of North Carolina, Chapel Hill, NC — Comp. Sci. & Math. (applied) — 2024
Enrolled in Honors Carolina, taking Data Structures and Analysis, Systems Fundamentals, Foundations of Programming, and Discrete Mathematics Honors in 2020-21 academic year.

Green Hope High School, Cary, NC — 2020
Graduated with Summa Cum Laude — 4.0 unweighted, 4.6161 weighted GPA, took several STEM AP classes, dual-enrolled at North Carolina State Univ. to take Multivariable Calculus and Applied Differential Equations I.