Manuel

Manuel is a 1511 Legacy Student. He has participated on 1511 since 8th grade while his two older brothers were on the team. Since joining officially 3 years ago, he has created his own legacy, impressing us with his broad technical expertise in electrical, mechanical, CAD and programming.

He is a silent leader; leading by example, following through with commitments, teaching and being humble. When he starts an effort, students easily follow because they trust his expertise. They say that he gives honest, well-thought out opinions, effectively weighing pros and cons. He is analytical, spending hours doing calculations. During robot Integration Meetings, if the group hits a roadblock, they will often defer to Manuel on how to solve the problem.

He knows 11 languages, 8 programming and 2 foreign, German being his first. He has taken initiative with several side projects. He learned C++ by porting a 1990s graphing program to a more modern framework. He wrote various artificial intelligence opponents for GIPF, an abstract strategy game. He's also written several small programs to simulate FIRST game aspects (i.e. frisbee flight) or cellular automata to help the team learn.

As Programming Sub-team Lead, Manuel trains new students, making the sub-team autonomous. When a freshman female wanted to learn how to program, he stepped in to take the time to teach her. In order to make programming easier for students, he used a more organized version control software to allow multiple programmers to code simultaneously.

Manuel's technical expertise spans beyond Programming. In 8th grade, he learned to use machinery in the shop and helped build the field for Rally, our Week 0 event. In 9th grade, he helped with the mechanical design of the robot. Last year, he was our primary designer of the frisbee shooter, using CAD to design the parts, and then guiding the build. This year, he figured out the hot goal detection and programmed the driver station dashboard for the controls. Last fall, he wrote our first I2C test code, to allow us to expand our robot input/output. At competitions, he's on Pit Crew, troubleshooting any issues with the robot and helping other teams.

One of his goals is to help us be an open-source team to help other teams. He championed the effort to publicly develop our code on our online engineering notebook so others could learn from our in-progress code. For the last 3 years, he has beta tested FIRST's C++ control systems and presented our findings at Kickoff and Open Houses.

In addition to teaching students and teams, Manuel teaches the community about FIRST. He participated in 7 robot demonstrations this year, such as the Rochester Red Wings Baseball Game, Greentopia EcoFest and the Rochester Museum of Science Center's Android Exhibit, spreading FIRST to thousands! He spent a cumulative 40 hours promoting FIRST to the large crowds at the NYS and Monroe County Fairs.

Manuel also recruits for FLL and FTC, participating in robot demos at elementary schools and ImagineRIT. He helps run all 4 summer FLL camps for over 100 new and returning kids. He

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referees at FLL events every year and was software inspector at the first Rochester FTC competition.

He is accomplished outside of FIRST. He reached the 2nd level of American Mathematics Competitions for 2 years and ranked 2nd in the National French Competition. In Cross Country, he has been runner of the week the last 3 years and ranked in the top 7. In 9th grade, he scored 5 on the AP Calculus BC exam and is currently taking one Honors and four AP classes, with top-notch grades! He has expertly balanced academics, extracurriculars and FIRST.

Manuel's pragmatism and focus would make him a great FIRST judge, which is something he is interested in doing in the future, as well as mentor. With a desire to improve himself and his world, he says his future goals are to, "make a notable contribution to some field of science, technology, mathematics. I want to go to a college where like-minded people better than me go."