



Service-Learning in NXT Robotics

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College Park Scholars – Science & Global Change Program

Information Science

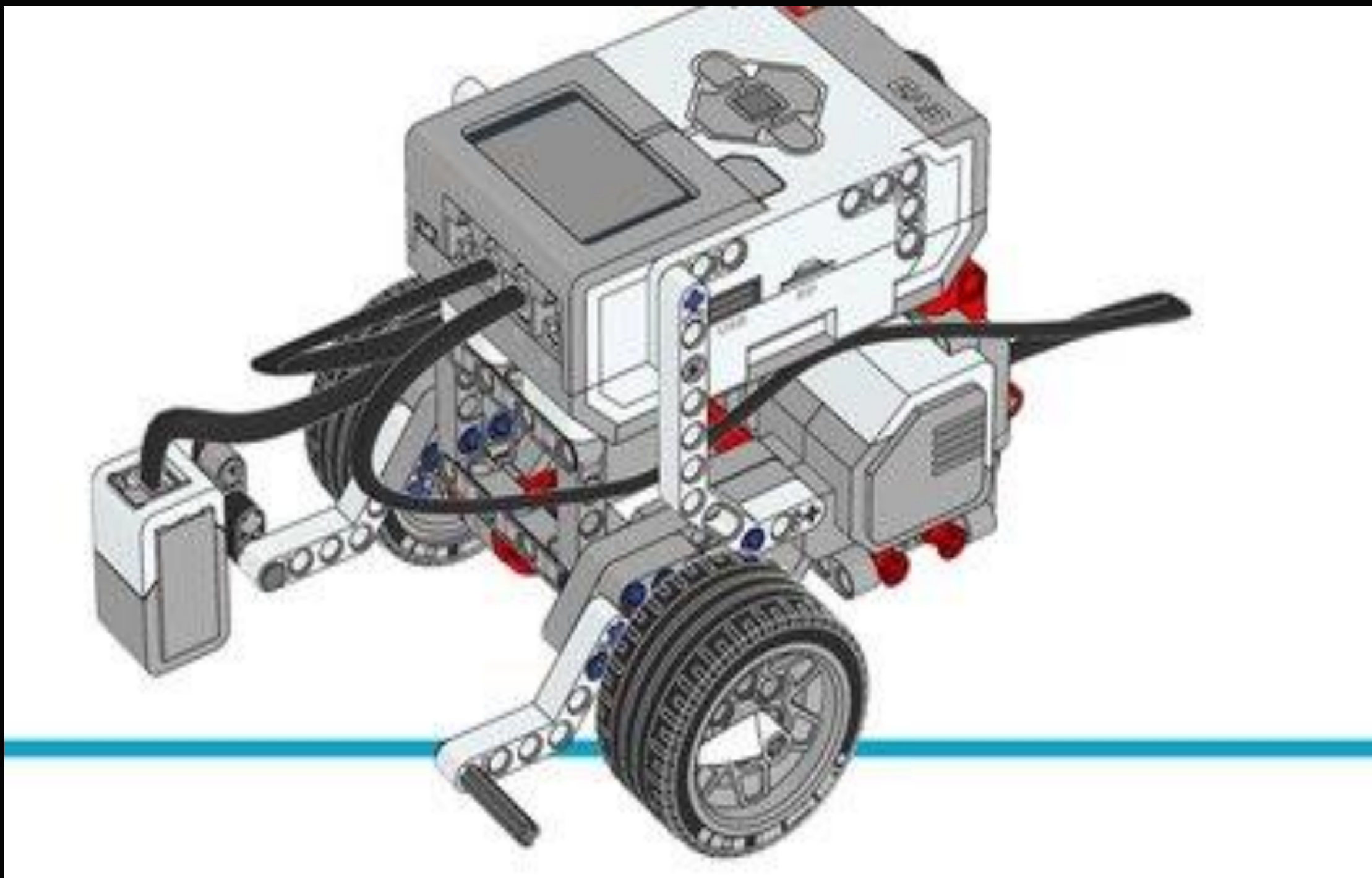
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Introduction

My practicum project through the Robotics course CPSS240 incorporated Robotics and teaching aspects to provide a service-learning experience. The following project discusses the preparations and activities done to guide middle school students at College Park Academy through a robotics challenge.



The base design of the robot before team-dependent modifications. Image from <https://education.lego.com/en-us/support/building-instructions>

Site Information:

College Park Academy

5751 Rivertech Ct, Riverdale Park, MD 20737

Steven Baker (Principal)

Partnered with the University of Maryland to utilize blended learning in order to provide students with the chance to earn college credit in their high school years.

Issues Confronting Site:

The main issue confronting the site was the Grand Challenge we guided the students through: Building a Lego EV3 Robot programmed to “sumo wrestle” by pushing opposing robots out of a ring while maintaining its position in the ring.

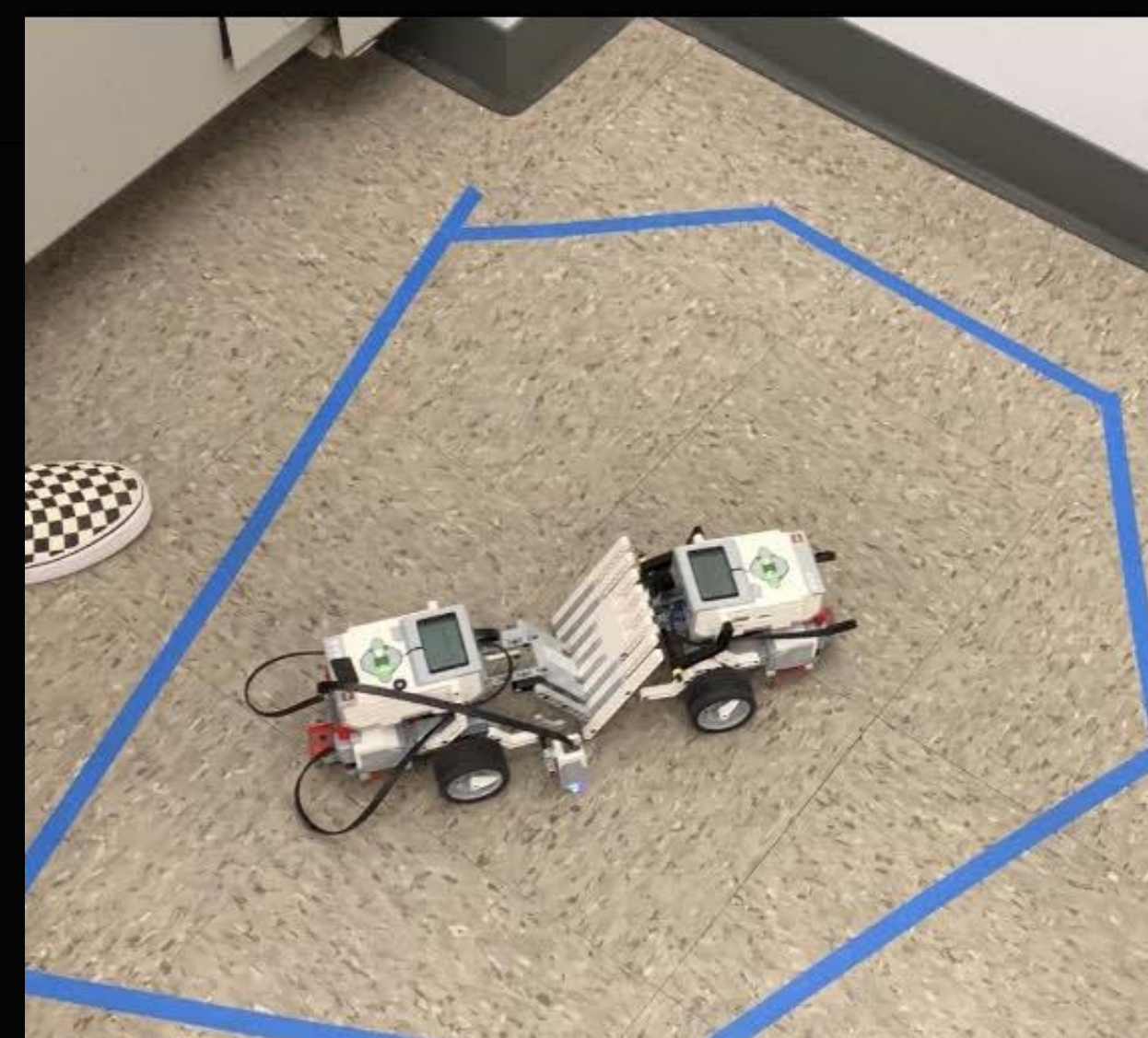


Activities:

Every week with a group of me and 6 other classmates, I visited the Robotics club at College Park Academy. There, we broke up into teams to guide our assigned students through the Grand Challenge we set for them: To build a Lego EV3 Robot programmed to “sumo wrestle” by pushing opposing robots out of a ring while maintaining its position in the ring.

Impact:

While it may seem like a simple club activity, it is much more than that. By providing guidance to students undertaking this project, we are helping to introduce them to STEM. There is a lot of underrepresentation of minorities in this field, whether it be based on gender or race. This activity helps to get more people exposed to it and its broad range of fields in the hopes of inspiring them to pursue fields of study related to it.



Two completed robots built and fully programmed during mandatory training held prior to the first visit.

Discussion:

Due to the COVID-19 outbreak, I was unable to fully see this project to completion. We cleared the building phase and touched upon the necessary programming, but schools closed too soon for much else, unfortunately.

Future Work:

Prior to this project, I had very little robotics experience. However, as someone who enjoys programming, I would like to pursue robotics as a hobby, and experiment with many kinds of structures outside of the basic rover. For example, building a hand or even a small walking robot that has all the necessary moving parts is something that I would like to build and program.

Acknowledgments:

I would like to thank Dr. Thomas Holtz and Dr. John Merck for being so accommodating and all the years they have taught me in this program. I would also like to thank my instructor for this course, Dr. Timothy Reedy, along with my group members and the staff at College Park Academy for making this project possible.

