

# Final Individual Report

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## I. INTRODUCTION

The undergraduate research project "Student Design Competition" (S.D.C) by "American Society of Mechanical Engineers" (A.S.M.E) and mentored by Doctor Eduardo Ortiz, is a competition where a prototype needs to be design and manufactured to perform a specific task every year. This year challenge was to pick up different types of sport balls from balancing tubes and place them in a certain area without letting them fall during the whole process. In this report, as a member of the Computer Department, inform everything I did during the whole year and how it improved my skills.

## II. OBJECTIVE AND RESULTS

First, I was assigned as a member of the computer department and the leader of the base division. I participated in the electrical, mechanical and computer research. In the electrical department, I collaborated in the power analysis and selection of motors, controller, voltage regulators, batteries, and microcontrollers. In the mechanical department, I participated in the research for materials and the design of mechanical components. In the computer department, I worked together to design the software of the robot and in the selection of software programs. Based on the research and the power analysis, the chosen component were Digital DC Servos motors, ps4 controller, DC-DC adjustable

voltage regulator, LiPo batteries, and Arduino Mega2560. After the software research, the chosen programs were Arduino Software IDE and OrCAD. Also, I designed the circuit schematic diagrams and the software's algorithms. Furthermore, I participated in the design process of the mechanical components. Next, in the manufacturing and assembly of the mechanical and electrical components of the prototype and the official robot. Finally, I was assigned as the official pilot of the robot for the 2019 ASME E-Fest North SDC competition

## III. CONCLUSION

Our goal of representing Puerto Rico established at the start of the semester was completed. This activity has made a positive impact in my life. Observing different approaches to the same problem has improved my engineering skills. Also, the experience of competing in a friendly environment have showed me that the importance is not winning but having fun and learning. My team have helped me in technical and social skills as well. Their support has made that I accomplish every goal. More than a team, this is a family. Next semester I hope to be part of the team again to keep improving my engineering skills and represent Puerto Rico in the 2020 ASME E-Fest SDC