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CS5001

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Individual Capstone Assessment

The project that I will be working is a nerf gun turret that will fire upon an individual in the appropriate circumstances. We plan to use a multitude of technologies to identify when the individual should be fired upon. These technologies include face recognition technology or some alternative to determine who is not a “threat”. There will also need to be a raspberry pi or some alternate so that we can program the machine. There is also the need of a mechanism that first the gun that will need to be fired. Lastly there will need to be some override mechanic in case of a malfunction.

There are a few classes that will have taught us some things that we are going to need for this project. MATH1062 (Calculus II) and AP Physics C are going to be useful to do the calculations. In CS3003 (Programming Languages) we did some work with raspberry pi, which will be helpful, as well as some basic programming languages. In CS2028C (Data Structures), we learned about data structures which may be needed for this project. EECE3039C (Software Engineering) will also be very useful as a skill to help develop the software for the nerf turret. CS4033 (AI Principles and Applications) are also useful since it will be an AI firing and aiming the turret.

My first co-op I was a web developer for Learn 21. On my second co-op I was again a web developer, but with American Financial Group. My third co-op was with Cintas as a Data Analyst. These co-ops firstly taught me how to work well with a team, even if you are just meeting them for the first time. The first two web developer co-ops also taught me some SQL, which may be needed for this project. Lastly, my third co-op taught me machine learning, which may also be needed for this project.

I am excited for this project for several reasons. Firstly, this is the first major project I have been on that has a robotic element too it. I am also excited to uses some facial recognition software, which seems to be more popular over time. I do believe our preliminary approach to the project will include some sort of facial recognition to identify people. I will also need some sort of robotic turret that can rotate, and angle up or down as needed. Then, depending on the results of the facial scan, it will decide whether to fire the nerf gun.

I expect that the nerf gun will be able to be fired with very good accuracy, especially from the range close enough to where the facial scan will have to take place. I believe that we can get the facial scan to work will. I am also worried about how precise the robotics need to be, and if we can build them accordingly. I will evaluate my contributions, not only by the time I spend, but by how much of that time I am getting quality work done and advancing our group towards our goal. We will know we are done when all parts are working, the firing of the gun is accurate, and the facial detection is also accurate. We will know whether we have done a good job is by how accurate the gun is, and how quick the gun is to fire.