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AP Computer Science Principles, Period 1

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Explore Task

2a. Provide information on your computing innovation and computational artifact. Name the computing innovation that is represented by your computational artifact. Describe the computing innovation intended purpose and function. Describe how your computational artifact illustrates, represents or explains the computing innovation intended purpose, its function or its effect. (Approximately 100 words)

The self driving (or driverless) car is a computing innovation that is rising in popularity and coming to the vanguard of the American Automobile industry, and possibly changing the way we travel forever. The intended function of these driverless cars is to provide a safer means of transportation, and to eliminate human error on the road; leading to less car crashes. Self driving cars are computing innovations because they uniquely consume huge amounts of data that varies from photo data to graphical gps data. My computational artifact shows the different parts of a self driving car as well as what one looks like in real life. I also included the Tesla model semi truck that they have been developing for many years. This car will hopefully have self driving technology in the future. Finally, I showed a little sketch image of how proximity sensors work and added a brief flowchart of facts.

2b. Describe your development process, explicitly identifying the computing tools and techniques you used to create your artifact. Your description must be detailed enough so that a person unfamiliar with those tools and techniques will understand your process. (Approximately 100 words)

To make my artifact I used the program Google Drawings which is free if you have a google email account. I started by finding pictures that I thought were meaningful and could convey the complexity of self driving cars. I then arranged them in a way that cancels most of the boring negative space on the canvas that the program provides. After that, I included a couple facts or descriptions of the images, like you would see in a textbook, to help make the artifact more understandable. Google drawings is a program that is very easy to use as long as citations are included. It aims to make the jobs done in applications like adobe photoshop, accessible for everyone.

2c. Explain at least one beneficial effect and at least one harmful effect the computing innovation has had, or has the potential to have, on society, economy, or culture.(Approximately 250 words)

The self driving car is supposed to be a much safer form of traveling but do its benefits really outweigh the negatives of possible system error? There is no doubt that the idea of self driving cars is very attractive for its precision and safety. It is also estimated that "90% of all road fatalities are attributed to human errors such as speeding, drink driving and distractions occurring within and outside the vehicle. 1.3 million people are killed worldwide every year"(Budget Direct). Self driving cars could drastically decrease the number of fatal accidents by ten fold if utilized correctly, and could lead to a much safer world for generations to come.

However, there's always going to be that niche of people that need to have the feeling of controlling the car. American culture would take a huge hit if self driving cars became the norm. With the thrill of independence and freedom being stripped away from driving, American car culture would no longer exist. Although they could be safer, driverless cars will have a much harder time expressing one's freedom.

2d. Using specific details, describe: The data your innovation uses. How the innovation consumes (as input), produces (as output), and/or transforms data. At least one data storage concern, data privacy concern, or data security concern directly related to the computing innovation. (Approximately 250 words)

      In order to operate self driving cars rely on giant masses of data to ensure a safe and worry free ride. This data is in the form of of AV picture and video format which comes from a spinning autonomous camera over head of the car. There are also proximity sensors on the front and back bumpers of the car. These proxy sensors let the cars computer know how close other cars and objects are (curbs, center divides, and pedestrians). This data is processed into low level programing digits, usually in hexadecimal or base 10. These functions let the car know wether to slow down, speed up, or to turn a certain way. Yet with all this data there are many privacy concerns for self driving cars, "The development of autonomous driving vehicles will likely increase the risk of hacking," said Phil Yanella a partner in Ballard and Spahr Privacy and Data Security Group "These cars will have multiple connection points. There will be connections between the Computer Area Network, which is kind of the brains of the car, as well as its component parts – its brakes, the drive train, etc" (Yanella).   Without doubt, the cars will not be

perfect in their first years of commercial release and it's likely that the computer in the car will be susceptible to hacking. Driving can have a fatal outcome, as we all know, so the concerns for self driving cars is very great. People's lives depend on the functionality of these cars.

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