Self-Driving Car Intersection

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Traffic lights are one of the most dreaded aspects of daily life. They are slow and often inefficient. One possible fix is a self-driving car intersection. Since self-driving cars can drive with more precision than humans, they can be made to cross the intersection in more efficient ways. This experiment modeled a self-driving car intersection and determined the most efficient algorithm for the cars to cross. Efficiency was defined as having the lowest average time to destination and idle time for the cars. The first algorithm was a traffic light algorithm. The traffic light algorithm works by changing the light as soon as the intersection is clear. The second algorithm, the constant speed algorithm, worked by determining if a path and speed for the car across the intersection would result in a collision. If it predicted no collisions would occur, the car started moving at the designated speed. If it predicted a collision would occur, the car waited and asked to go again later. The varying speed algorithm worked similarly, however the car checked the path at multiple lower speeds before waiting. The traffic light was the slowest with an average time to destination of 4.27 seconds and idle time of 2.21 seconds. The constant speed algorithm averaged 2.3 seconds and .28 seconds respectively. And the varying speed algorithm averaged 2.7 seconds and .33 seconds. This means that the constant speed algorithm was most efficient in terms of time to destination and idle time.

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