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Homework 4

### Automatic Breaks in Cars

Have you ever been driving down the road when you are distracted momentarily by either something outside of your car or your lack of attention to the road in front of you, when all of a sudden a car appears out of nowhere in front of you and you don't have time to hit the brakes and avoid the collision? Well, newer models of cars are becoming more equipped to handle this situation themselves.

Automatic breaks have been in some models of cars in the United States for about 10 years. They have been in other countries around the world for longer because the driving systems and road laws elsewhere are better suited for the technology before it was improved to be able to handle american roads. These automatic breaking systems are accompanied with other technologies such as lane control, blind spot sensors and other features. This paper is only going to focus on the automatic breaking systems. Different companies have different models of breaking systems and they each operate a little differently.

For instance, Volvo has a system called City Safety which it developed in 2008. It has the capacity to use a laser system, called Lidar, to detect objects up to 500 feet in front of the car and works great for speeds under 31 miles per hour. If it detects that a collision is imminent, it will warn the driver with a pinging sound and a red light in the heads-up display. It will also

precharge the breaks so when the driver does press the break pedal the car will be ready to react.<sup>1</sup> If the driver of the car doesn't react in time, then the car will break itself. In fact, research has shown that a third of collisions happen when a front bumper of a car runs into the back bumper of a car in front of it. In half of those cases, the person in the rear car never applied their breaks.<sup>2</sup> In 2010, Volvo upgraded its system so that now it can also detect pedestrians in front of the car. So with these new breaking systems, those statistics might change. In fact, Volvo's goal is to have "No one seriously injured or killed in a new Volvo by 2020."<sup>3</sup>

With Subaru's EyeSight, they use a different system than City Safety. It uses two cameras that are mounted on top of the windshield. The cameras use black and white video that scans every tenth of a second to detect the distance and speed of objects in front of the vehicle. If it detects a collision then it will warn the driver and gently apply the brakes of the car. If the driver still does nothing to prevent the accident, the system will then fully apply the breaks, resulting in about 1 g of force to avoid the accident.<sup>4</sup>

These technologies can be a great thing in helping to reduce the amount of accidents per year both with cars and pedestrians. One of the main problems would be how does the car tell what is a danger in the way of collisions and what is just something that is suitable to run over.

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<sup>1</sup> *A Heritage of Innovation*. Volvo, 2015. Web. 26 Mar. 2015. <<http://www.volvocars.com/us/about/our-company/heritage/innovations>>.

<sup>2</sup> Hall-Geisler, Kristen. *How Automatic Braking Systems Work*. How Stuff Works, 2013. Web. 26 Mar. 2015. <<http://auto.howstuffworks.com/under-the-hood/trends-innovations/automatic-braking-system.htm>>.

<sup>3</sup> *IntelliSafe*. Volvo, 2015. Web. 26 Mar. 2015. <<http://www.volvocars.com/us/about/our-innovations/intellisafe>>.

<sup>4</sup> Hall-Geisler, Kristen. *How Automatic Braking Systems Work*. How Stuff Works, 2013. Web. 26 Mar. 2015. <<http://auto.howstuffworks.com/under-the-hood/trends-innovations/automatic-braking-system.htm>>.

For example, how can the car tell if you are going to hit another car or just run over a cardboard box in the road. If the system thinks that the box is a danger when the driver knows that the box can easily be hit then the car will slam to a stop in the middle of the road or highway. This could cause other accidents and it would be because some computer system freaked out over a shape it couldn't make sense of. In an interview conducted by Kristen Hall-Geisler, the safety compliance manager at Volvo, Adam Kopstein, said, "Making the car stop is easy; we've got the sensors and ABS. The trick is making sure it only does it when it's supposed to."<sup>5</sup>

Another situation that could possibly cause more problems would be that the driver of the car could become dependent on the system to start breaking for them, especially if the system was like Subaru's EyeSight that starts to break when it feels a collision could possibly happen. So while approaching a stoplight the driver could just let the car sense that there is another car in front of it and let it start slowing down for the driver and then the driver wouldn't have to worry about it. I borrowed a car from my uncle that did have the automatic breaking system in it. It was very strange to start driving a car that thought for itself. However, once I got the hang of it the car was very easy to drive. My uncle however, who went back to a car that did not have this system, promptly got in a fender bender because the 2002 Mazda Protege that he was driving didn't have automatic breaking. So since he was use to the car taking over, he in fact just ran into the car in front of him. Systems like this could make the drivers become complacent.

At the same time, if the system fails and the driver is relying on it to break for them and they get into an accident, is the driver at fault or is the company that made the system that fail?

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<sup>5</sup>Hall-Geisler, Kristen. *How Automatic Braking Systems Work*. How Stuff Works, 2013. Web. 26 Mar. 2015. <<http://auto.howstuffworks.com/under-the-hood/trends-innovations/automatic-braking-system.htm>>.

A case could be made against the company since their system was suppose to help prevent this from happening. However, there was a human being in the car who was suppose to be paying attention to the car and the road. So I believe that the driver would be at greater fault because a system like that could fail, like it did, and the driver should be able to take control. Also, the driver should be paying enough attention that the automatic breaks wouldn't have needed to take over in the first place since they are a preventative technology.

If we look at Kantianism as an ethical theory and make automatic breaking systems universalized in every car on the road, then we would have safer roadways. People wouldn't have to worry about borrowing someone else's car and not having that system like my uncle. Also all the cars out there could see that if the car in front of them suddenly stops then they would have the ability to also stop and so would the car behind them. So there would hopefully be less fender benders and multi-car pile-ups. So since making these systems universal, we can see that the benefits would be good making these systems moral.

Now looking at Utilitarianism, having the car makers put these systems in all their cars would make their happiness rise because they are going to sell safer cars. The people buying the car's would possibly feel a little less happy because they would have to pay for the improvements which can be expensive but their happiness would go back up if they had to rely on the system to save them from an accident. The people's that would have been in the accident with them happiness would go up because they are no longer in an accident whether they know it or not. So that would also make these systems moral under Utilitarianism.

All in all, I think these systems will help prevent accidents on the road both with cars and with pedestrians. The technology might cost more to the consumer but the ability to avoid

accidents would be of greater value. The technology is going to continue to grow since the need for less accidents on roadways is always in need.