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## Introduction

Every day, millions of Americans wake up to the sound of the phone by their bedside. They will reach over and turn the ringing device off and start looking at the newest notifications they received overnight. It won’t be long till they are ready to leave the house with their phone in hand. For many, it doesn’t leave their hands while they drive. Constantly looking down to check incoming emails and text messages. While it is a well-known fact that texting while driving is a bad habit at the least, most people don’t believe that the negative consequences of doing so could happen to them. But what if there was a way to remove the phone from the driver's hand in order to keep their focus on the road? This is a problem that I have set out to find an answer to. I believe that the best way to tackle this problem is a device that can be installed in your car that makes texting and driving impossible while your car is in drive.

One of the ways that car manufacturers have tackled the problem with people not willing to put on their seatbelts while driving is they make a loud beeping noise that constantly goes off until you buckle your seatbelt. This doesn’t stop the driver from driving if the seatbelt isn’t buckled, rather it provides an inconvenience. My idea is to build an app that talks to your car that makes it impossible for you to text while driving. As soon as the car notices that the phone is in the car, it connects and starts talking back and forth. This talking allows the phone to know what gear the car is in and shuts down texting while the car is in motion. This method, of course, isn’t full proof and can be worked around if the driver doesn’t want to comply. If someone wants to do something bad enough, simple safety features aren’t going to stop them. In this paper, I will address what other safety features are being used to help protect drivers and what my idea is to lower the number of accidents on the road.

## The Dangers of Distracted Driving

When someone talks about distracted driving today, you usually think of texting or just generally being on your phone while driving, however, distracted driving goes back as far as the invention of the automobile itself. Whether it was conversing with passengers or reading billboards as you drove by, distractions were plentiful. A distraction is defined as anything that causes your eyes to leave the road even for a second. Some examples might include tuning a radio, switching on the A/C, reaching for the last fry in your fast food bag or even parenting your kids that are fighting in the back seat. It wasn’t until the invention of the cell phone that people really started paying attention to those being distracted while driving. Why though? Aren’t the other distractions just as dangerous?

While it is true that those other distractions can be just as potentially dangerous, there is a reason that distractions caused by cell phones make up twenty-five percent of the total accidents in America. The reason why cell phones are so dangerous is that they usually require more focus than most other distractions. When you read a billboard, your eyes come off the road for a few seconds but then you’ve passed it. You don’t have the option of seconds later reading it again. Texting also requires that you reply to the sender. The act of texting causes your brain to have to divert some focus onto what your typing. As you are most likely aware, when focusing on reading and typing, your brain tends to block out the outside world. This is extremely dangerous when you’re traveling at fifty-five miles per hour down the road and the car in front of you brakes to avoid hitting an animal. If you have your head down, even for five seconds, your car travels the distance of a football field. That’s a huge distance when you put it into the perspective of ability to break in time. This is why cell phone use leads to 1.6 million crashes every year.

## Safety Precautions in Cars Today

As technology becomes more advanced, so do our vehicles. Car technology has come a long way since its’ invention back in 1908. Having seatbelts in your car used to be an advanced feature that many didn’t have. Most also were made of steel with rigid bumpers and big gas guzzling engines. Nowadays seatbelts are standard in every car and most are made of a material that is able to take the majority of an impact in the event that a wreck occurs.

Another feature that is making its way into the car market is artificial intelligence. A.I. brings in a whole new type of safety into the market. It brings a second set of eyes that are never distracted. It also allows for the car to make decisions based on the information it collects. The information the car uses is gathered using the sensors on all sides of the vehicle. Some of these sensors include infrared cameras, radar, GPS, and distance detectors. The collected information is then sent through the onboard computer in the car to turned into usable data. This data can then be used to help avoid obstacles and brake in emergencies. The car does this by comparing data that has been collected to the data that was programmed into it through years of research by companies to try and recreate real-life driving scenarios. It then selects what it believes to be the best course of action and directs course as needed.

## The Future of A.I. In Vehicles

A great use for this technology in new and upcoming cars is the ability for the car to drive itself. Years of research and testing has allowed scientists and engineers to create software that is capable of not only processing data collected in real time but also pilot a vehicle off of that information. However, there are many mixed feelings about putting your life in the hands of a computer. Some feel that they can easily trust the A.I. while others won’t get in a car where a computer plays any role in the driving experience. The issue with the technology right now is that it isn’t able to understand every situation it’s put in. For example, there was a news article about a Tesla driver that died because his self-driving car believed that the underside of an 18-wheeler was an overpass and tried driving under it. The car couldn’t recognize that there was a truck perpendicular to its’ current travel path and therefore had no reason to slow down. The driver was distracted and not watching the road at the time. Had they been paying attention, they could have easily moved out of the way or stopped before coming in contact with the truck.

All self-driving cars as of the current date require that the driver maintains focus on the road at all times. This leaves some to believe that these cars aren’t actually self-driving at all. What is the point of a car that drives itself if the person sitting in the driver's seat has to maintain focus at all times? There currently aren’t any self-driving cars that allows you to give up the wheel at any point while doing city driving. There is no doubt that there is a long way to go when it comes to self-driving cars but it makes you wonder what it could be like the day that driving goes autonomous.

We would certainly need to see improvements in the capabilities of the A.I. to recognize situations and make the right choice. We would also need to see an improvement in the cars ability to talk to each other. In a world where every car on the road is autonomous, there would be a central network that allowed cars to talk to each other while driving. If one car was able to tell another that it was going to switch the lane that it was driving in, the second car would be able to move over enough for the first car to switch lanes. Also, if every car’s intentions were known, theoretically, there wouldn’t be wrecks. Since computers don’t get distracted, every car would drive safely no matter who was in the driver's seat.

This type of utopia is great to think about but hard to imagine becoming real. For some drivers, giving up their license in order to be chauffeured around is one they would be absolutely ecstatic to sign up for. However, for many, this freedom isn’t one that they’d be willing to give up. There might never be a day that Americans are willing to give up their freedom of driving for a safer option. This is why many car companies are working on technologies that assist the driver, not fully take over. Some things that are being added include blind spot monitoring, lane keep assist, and adaptive cruise control. All of these systems attempt to help the driver be safer but don’t take the steering wheel out of their hands. Technology advancements like these might be the future of the car industry simply because it still allows for the person driving to make the decisions.

## The Future of Cars

For dozens of years, people have dreamed of having flying cars that they can use to quickly back and forth to work every day. Even though this might sound like a great idea, there are many reasons that this technology might never be created. First, the way we function as a society would have to change. We have created our cities, roads, and homes based on how we travel. Cars have paved the way into the future whether we realize it or not. Cities are designed around the roads that are used to get people in and out. Houses are designed with garages that are only tall enough to fit a medium-sized SUV or small truck. Making a drastic change to how we travel would cost billions to recreate city plans to accommodate the new mode of transportation.

Secondly, the way that we control flights would have to change dramatically. If you look at the show the Jetsons, a show that was based in a futuristic time where they had flying cars, they had floating roads just like the roads we have today. They had lanes to fly in, and traffic lights to stop at. This is not a possibility in our world which raises the question, how are we going to regulate transportation in the sky? The truth is that it would be nearly impossible to do this without requiring everyone to obtain a pilots license instead of a drivers license with a much more strict law system. Even if that were to work, how, and where would we land once we got where we were going? Some flying car prototypes require a landing strip because they operate like a plane, others are more similar to helicopters. Would this require a new landing pad be placed every so many feet? When you really get into the logistics of flying cars, it becomes more of a hassle than an advantage.

Even though the future of the car business will continue to be on the ground, this doesn’t mean that the technology in them will remain the same. With new lighter building materials and advancements in battery storing capabilities, it is likely that your future car will be all electric. With global warming becoming a quickly rising issue, car companies aren’t alone in trying to find ways to reduce the number of greenhouse gasses we put into the atmosphere. One of the best ways to greatly reduce our pollutants is to get rid of as many fossil fuels as possible. One of the biggest fossil fuel uses in the world is gasoline for our vehicles. This is the reason that all-electric vehicles are the way of the future. The issue with the technology right now is the possible range of the vehicles. Most gas powered cars can travel farther than the same sized electric car. However, this will change in the coming years. With advancements in battery technology, electric cars will soon be able to go twice the distance of its’ gas-powered competition.

## The Movement to Clean Energy

Battery powered vehicles can only help reduce greenhouse gasses if the source of the power it charges from is also clean energy. This would mean that the power that goes into your house or charging station needs to be created by clean energy sources such as wind, solar, or hydroelectric. These sources of energy don’t pollute the air while transforming one source of energy to another. Coal power plants use the burning of coal to heat up steam which is used to turn the turbines. Solar power plants use the energy of the sun and transforms it into the alternating current we use in our houses. The same type of technique is also used for wind and hydroelectric plants. If your car is getting its’ energy from a coal-based plant, you are contributing more pollution to the air then you would have been just driving a gas powered car. It will take more than the effort of a few to be able to make a change like this in the world but the automobile manufacturing plant is a great place to start.

However, for the time being, most manufacturers are going to continue making gas-powered vehicles. This is because there isn’t a big enough need in the market for all-electric cars. With current gas prices and the inconvenience of having to wait for your car to charge before being able to continue with your travels,makes electric cars are more of a niche right now than a full-time replacement. Electric car charging stations aren’t found many places outside of big cities meaning that you won't be able to take your car on long road trips.

On the other hand, owning an electric car will significantly drop the amount of money you spend filling up your car. It will cost you roughly $15 to fully charge an electric car while a gas powered car the same size will cost roughly $40 to fill. This means that you will save more than half in fuel for your vehicle.

## Making The Switch to Hybrid Vehicles

So what are you to do if you're looking to upgrade from a gas powered car to one that can save you some money in the long run? What most people tend to do in these situations is to buy a hybrid. A hybrid is a car that runs on gas when going over a certain speed but while stopped or driving at lower speeds, relies on its’ electric motor to do the work. This option is great for someone who lives in the city or close to where they work. In the typical city setting, a hybrid will use little to no gas. While sitting at stop lights, moving down slow roads, or waiting for traffic, the only power the car will use is that of its batteries. Once the batteries begin to get low, the gas-powered engine starts again and charges the batteries while you drive. This ensures that you are never stranded when the batteries run out. This also means that you don’t need to charge your car when you get home or are on the road, you can stop at one of the hundreds of thousands of gas stations in the United States. But how much are you really saving on gas if you still have to use it? Well if you live in the city and were constantly stuck in traffic, you will be ecstatic to hear that hybrids can get upwards of 55 mpg in the city! This is a huge jump from a normal gas car that might get lucky to get 28.

So what safety systems will your car have in place to ensure that you’re protected while on the road? Most likely, if you were to buy a fully stocked car in 2019, fully stocked meaning that it has all the bells and whistles, it would be easy to expect quite a few advancements over a car that came out just a few years ago. The first thing that you would find is adaptive cruise control. Adaptive cruise control is a camera that sits usually at the topmost part of your windshield behind the rear view mirror that watches the road and cars in front of you. When you turn on the cruise control in your car, the camera makes sure that if you are coming up on a slower car than you, you don’t hit it. It does this by adjusting the speed that your car is going to the speed the car in front of you is going. Your car will then remain this speed until the car in front of you either turns off, or you switch lanes. Your car will then return to the previously set speed and so on and so forth.

The next system you might find is a lane keep and blind spot monitor. A lane keep system watches the road as you drive and attempts to keep you between the lines. It does this by slightly moving your wheel over if your getting close to the line and then beeping if you have crossed it. This feature is great for monitoring your own driving. You might not realize how often you travel over the line until your car is beeping every time you do. The blind spot monitor does exactly as its’ name implies, it’s usually a light on the side mirrors that light up if there is currently a car in your blind spot. This helps drivers better navigate when switching lanes going down the road.

The third feature that you might find is automatic emergency braking. This feature watches the road like the first system but when it detects that your car might hit an object, it starts braking for you. This system is important because as we have discussed, distracted drivers might not notice what is going on in front of them. This safety system could help save the lives of thousands of people that aren’t paying attention for that split second that it takes for an accident to happen.

The final safety feature that you will find is a backup camera. Backup cameras are one of the oldest safety systems but one that will most likely be used the most. Whether it is to help you park, or seeing the little kid running behind your car, these cameras make the notion of backing up our cars much safer.

## How My Product Solves The Problem

Even with these great innovations in car technology, we still haven’t managed to greatly reduce the number of accidents that happen each year. The problem is that it isn’t a problem with the vehicles we are driving. The problem lies with the user or driver of the vehicle. People by nature are curious. This curiosity makes it hard for us to stay focused on mundane tasks such as driving. As the road stretches further and further, we tend to get bored behind the wheel. This is when our eyes start to wonder. The worst thing we can do to our selves in these situations is to give ourselves more things to distract us. Even if we can’t stop some things such as the radio, signs, and interesting things along our route, there are a few things that we can help. To start off, when buying food, if at all possible, wait till you are at your location or at least stopped before digging into the fries. Another thing you can stop is distractions like messing with the in-car entertainment system or fiddling with the A/C. But maybe the most important one of all is your phone.

Having the world at your fingertips is no easy thing to ignore, especially if you’re bored. Being able to set the phone aside and focus on the task at hand could one day save your life. Many people, however, struggle with the act of putting the phone aside while they’re driving. Whether it is texting or calling, both can divert your attention. Texting, being the worse of the two, takes your eyes off the road for seconds at a time. Seconds that could be the difference between life and death. For this reason, I suggest making a product that just like other safety features, is built into your car that stops the driver from being able to text. This isn’t an easy task to accomplish though. Putting a system in place that removes the driver's ability to text while still allowing the passengers to carry on with their usual tasks is a bit tricky.

To start off, you can’t block the radio frequency inside the car for multiple reasons. First, most importantly, in the case of a serious accident, the driver must be able to contact help. If the crash happened to break the system in the car and the cell reception continued to be blocked, this would cause the driver to be helpless if they were alone. Secondly, passengers should be able to use their phone freely when driving down the road since they don’t need to be at full attention. Thirdly, hands-free calling still needs to be available for the driver. Studies have shown that talking on the phone provides the same distractions as talking to someone that was sitting next to you so long as the driver is using the phone hands-free.

So what are we to do? My idea is to use an app on your phone that connects to your car. The car will then have a camera that focuses on the driver and does facial recognition to see who is driving. If it sees that you are in the driver's seat, messaging apps on the phone will be temporarily disabled. In the event that an accident takes place, the driver will be able to use their phone to call for help without worrying about the phone not working. Since this app will connect to the car over Bluetooth, there will only be a one-time setup process. After that, the car will automatically connect to your phone when you step into the vehicle. Once the car is placed back into the park again, the app will push the notifications you got during the drive to the notification panel. The advantage of using this app is that it has the possibility of making you a better driver. Without the chance to message your friends back and forth, you eliminate 25% of the accidents in America.

## Product Testing

Of course, we need a way to see if the product is successful and people use it. One of the major downfalls to safety systems placed in cars is that the user must be willing to use them. There are always ways to get around a safety feature. For example, if someone didn’t want to wear their seatbelt, all they would have to do is buckle it before they got in. To counteract this, manufacturers have set these safety features to be on by default and must be turned off every time the car is started. The same kind of technique could be used to counteract the helpfulness of my product. However, in a recent study, it has been shown that most people are willing to leave this feature turned on. They get distracted without even knowing it and this feature would help reduce the curious nature of humans.

To test the effectiveness of the product, testing would have to be done. For example, a sample group of 100 drivers would be selected for the test. For the first month, drivers would drive as they normally do and their phone activity while driving would be tracked. At the start of the second month, the drivers would have the app installed on their phones and again their activity would be tracked. If the product worked, you would see a dramatic decline in the use of the cell phone while driving. If the app didn’t work, you’d see that the drivers would uninstall or not use the app to its’ full potential. If the product was found to be beneficial and implemented into cars all across America, we would hope to see a dramatic change in the amount of phone-related accidents in the next coming years.

## Product Realization

How do you bring this product to market? To start, all projects need to start with a base plan. This plan outlines what problem the project will attempt to solve. In the case of my idea, the plan will include building a mobile app that is compatible with the majority of the phones on the market. For simplicity sake, you will stick to Apple and Android markets. The next step would be to design the app itself. How it works, what it looks like, and what it does. After that, you would have to design the facial recognition software and the placement of the camera in the car. The camera must be placed somewhere that it has a good shot of the driver but doesn’t impose on the sight of the road. For this reason, the best place for the camera to be placed is above the driver's sun visor. This way it can easily see the face while also staying out of the way. After all of the logistics are figured out, the prototyping stage begins. You want to consider filing for a patent in order to protect your creation from those that might want to steal your idea. Building a working prototype is important for the marketing side of the business. Most startup companies use their prototypes to show investors what possibilities the future could hold. For this reason, you want your prototype to be as complete as you can possibly make it. It doesn’t have to be perfectly polished with no problems, but the main idea of the product should be working.

Once you have a working prototype that you are satisfied with, you can start the testing phase. In testing the product should be put to the test in various different scenarios. For example, you should be able to show that the camera will be able to identify who someone is even if they have a hat on or it happens to be night time. A product that can only be used in certain applications is a hard sell. It requires that there is a select market that you want to sell to rather than selling to everyone. Another thing to test would be how well the app would work together with the car. The car must be able to tell the app which gear it is in so that the app can determine whether or not to allow texting. Once out of the testing phase, you need to move on to obtaining funds to further research and development. The ability for a company to secure funds for the startup is a key factor in whether or not a company succeeds. To obtain these funds, you must be able to show possible investors how well your product could be sold on the market. If the investors like the idea they might be willing to back your company with funds to support it. Once the money is secure, you must find a way to quickly and cheaply build and sell the product with as little cost to us as possible. In our case, this means reaching out to car manufacturers that might be interested in putting our technology into their cars. Landing a brand deal with some of the most well-known faces in the car industry is a fast track to a successful business.

Once we have a contract stating that a certain manufacturer will put our product into their cars, we can focus on perfecting the app. With more feedback coming in from customers, we are able to narrow down the possible bugs in our system. As the software gets better and more people bein using the product, other manufacturers will want to sign a contract with our company. This is the end goal for most start-up companies. To be partnered with international companies that promote and distribute the product that we sell. Once we have reached the stage where the company is international we can look for more ways to bring simplicity and wellness to the lives of millions of more people. Diversifying a portfolio is a great way to ensure that your company keeps its’ head above the water even in the darkest of times. This means that if your company specializes in more than one type of technology, there is a better chance of it surviving an economic downfall of any sort.

## Next Steps

Once a successful and striving company has been created, you must be able to maintain a certain atmosphere within the company to ensure that the company continues to thrive. To do this, you must be willing to make tough decisions when it comes to managing and employee selection. You must make sure to hire those that share the end goal as your company. Any hires that don’t agree with this end goal can end up damaging the companies reputation or peace among the employees.

Another thing to look out for when running a business is the budget. A closely managed budget ensures that the funds that the company is bringing are able to further the ongoing projects that the company might have. A budget that is not maintained can be a quick downfall of the company. Overspending or wasteful spending can quickly send a company into the red before they even know what happened. This is why it is important to hire trustworthy and diligent bookkeepers to keep track of where the money is going.

After the company has been set up and the standards are set, you can start to relax and see the change your product has made in the world. For my product, I would hope to see a world where distracted driving is a thing of the past. A world where people are able to focus on driving instead of their handheld devices. I would wish to see where my invention changed the world for the better and helped reduce the number of accidents that happen each year. I also would want to see my company dive into other technologies such as self-driving A.I.s being put into cars.

The future is looking bright for the car industry and I can’t wait to see the changes happen. I want to leave my grandchildren with a world that they would be happy to grow up in.

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