|  |  |  |
| --- | --- | --- |
|  | **Driverless Cars: A First Look** |  |

# 

## For the following activities you will be making observations about self driving cars.

[A First Drive (Google)](https://www.youtube.com/watch?v=CqSDWoAhvLU) 2014

* What benefits does the self driving car offer?

More time, safer, and less worry

* What special opportunities does this car represent for the blind man?

It allows him to own a car and allows him to be independent.

[The Future of Driverless Cars](https://www.youtube.com/watch?v=P1tfOeChenQ)

* Where and when did the idea for driverless cars first originate?

1930s magazine called Air Wonder Stories.

* Where, when, and who created the first truly autonomous car?

1980s Carnegie Mellon

* By 2010 how many miles had Google’s self driving cars driven in California?

140000 miles

* How many miles had occurred by 2012 and how many accidents occured?

300000 miles without an accident.

* What did Elon Musk say he wanted by 2019?

He wants you to be able to sleep in your car at your end location.

* By 2020 what companies are planning to release semi autonomous vehicles?

GMC, Mercedes Benz, Audi,

* Answer the question in the video, if a car is driven entirely by a computer, should you need a license to ride in one? Explain your answer:

I believe you should because you would need to have some understanding on how to originally drive a car as you might need it if something was to happen to your autonomous car.

[The Self Driving Car Instructors](https://www.youtube.com/watch?v=jrVwqQVCrLw)

* Where do self driving cars get training data? (There are more than one way the cars get data.)

They get it from human training from trained experts. They do in person in city training and virtual training.

* What are the various tests that instructors must pass in the video?

They have to be really good already and then they have to go take a 6 week training course.

Emergency braking, high speed lane changes, recover from a scid.

* What is the meaning of a yellow box, a blue box, and a red box?

The yellow box is a bicyclist. The blue boxes are other vehicles. Red boxes are pedestrians.

* What is the job of the copilot?

The co-pilot is to keep an eye on what the car sees. They alert the pilot of obstacles, what the car plans to do, and when the pilot has to take over.

* What happens when a car runs into a situation it is baffled by?

It bails out and gets the pilot to drive.

[Why Self Driving Cars Don’t Just Crash](https://www.youtube.com/watch?v=4RKxCNiOZ74)

* Why do self driving cars not use GPS for mapping?

It has an error that it can be several meters off.

* What sensors do self driving cars use to map what is around them? What is the purpose of each sensor type?

Lasers that measure how far and shape of the objects around it. Radar for speed. High resolution camera for complete picture. Ultrasonic sensors in wheels for curbs. Microphones for listening to emergency vehicles. Gyroscopes show the car’s movement.

[The Simple Solution to Traffic](https://www.youtube.com/watch?v=iHzzSao6ypE)

* What is the problem with traffic outlined by CGP Grey?

The problem is coronation.

* What is the first simple solution to traffic presented? (Wishing upon a star.)

Everyone coordinates together

* What benefits are outlined in this video? List them below.

Stayed in the middle and more efficiency, no intersections, no traffic signs

[How Close Are We to a Self-Driving World?](https://www.youtube.com/watch?v=U5laBg-ERbQ)

* What are the five levels of automation? What separates each level?

1. Level 1 is drivers assistance
2. Level 2 is semi automation
3. Level 3 is conditionally automation
4. Level 4 and 5 are completely automation

Separated by amount of human interaction

* What is lidar?

Lidar is the most common sensor that is laser based. Detects range from obstacles and surroundings.

* What is solid state lidar and what problem does it solve?

It is lidar without moving parts. It solves the problem of normal lidar breaking a lot and it makes them faster to get and cheaper to maintain.

* What are the current autonomous vehicle regulations in California, Utah, and Florida?

Some are safety, sustainability regulations to better the overall environment.

[The Real Moral Dilemma of Self-Driving Cars](https://youtu.be/WBjY3QGNdAw)

* What is the real moral dilemma with autonomous cars? List the question and briefly explain:

Accidents are happening right now and most of them are driver error. This means that autonomous cars can help shrink this data and eliminate accidents.

* What is causing roadway deaths currently?

Driver error due to humans misreading or not paying to their surroundings.

[MIT Moral Machine](http://moralmachine.mit.edu/)

Watch the [video](https://youtu.be/XCO8ET66xE4) and take the test under the Start Judging button. This test is designed to present you with a series of unwinnable scenarios and judge how you and others who take the test respond to different situations. After you take this test, reflect on the experience below in the form of a brief essay describing what you have learned about yourself and what a machine should do in various unwinnable situations: