Self-Driving Cars

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Before I Begin

* When you first simply hear the term

Self-Driving Card Defined

* Vehicles that will get from one place to another without the help of a human

Quick Video for Overview

Technology Behind the Car

* Lane Departure Warning System
* Adaptive Cruise Control
* Self-Parking

Key Features

* Cameras- Required to detect lane departure and road information
* Radar- Waves that detect long and short-range objects
* LINDAR

LIDAR (Light Detection and Ranging)

* 360-degree rotation with continuous 3D scanning

Cruise System

* Cameras and Radars used to create an image of the surroundings

Quick Video to Understand the Features

History of Autonomous Card

* Introduction of Cruise Control: 1948

Future of Autonomous Cars

* Companies saying to have self-driving cars on the road by 2020:
  + Google (partner with suppliers to release their tech)
  + Tesla
  + BMW
  + Nissan

Large Market Prediction

* Examples of consumers for self-driving cars:
  + Large corporations
  + Small businesses (fast food, restaurants, etc.)

Levels of Automation

* No Automation
* Driver Assistance
* Partial Automation
* Conditional Automation

Pros

* Free up people’s time
* Improve mobility (decreased traffic)
* Improve traffic and fuel efficiency
* Fewer accidents
* Parking made easier
* Better mobility for elderly, children, and disabled.

Cons

* Government restrictions and regulations
* Malfunctions

Short Term Results

* Useful to individuals, corporations, and governments
* High distrust with regards to new cars
* Low public awareness

Long Term Results

* Loss of jobs for truckers, couriers, and other transportation

Stats for Thought

* 40,100 people were killed in car accidents in the US along in 2017
* In just NC alone

Setbacks

* Cost Factor
  + $2500 on average for safety tech (excluding automation)
  + Most Americans can’t afford
* Not best performance in bad weather
* Accidents are inevitable
* Privacy concerns

How Should a Self-Driving Car Approach a Crosswalk?

* The Trolley Problem:
  + The brakes have failed
  + You are controlling the signal switch
  + If did nothing, five people will die
  + If switch is flipped, one person will doe
  + What to do?

Practical Analysis

Trolley Problem

* When the identities of the actors are changed:
  + Your Relatives vs Your Wife
  + Death row inmate’s vs POTUS

“While we are free to choose our actions, we are not free to choose the consequences of our actions”

“Human drivers may be forgiven for making an instinctive but nonetheless bad split-second”

IOT (Internet of Things)

* Alexa
* Phone
* Remote Start for cars
* GPS
* Mostly any electronics
  + ALL connected to the IOT in some sort of way
* Is it safe to put so much trust in Self Driving Cars when it would be connected to the IOT where it is possible to be hacked?

Final Thoughts

* Who is to blame when a crash does happen?
  + The vehicle maker?
  + Car Owner?
  + System Developer?
  + Everyone else?
* Would we ever be able to completely trust Self-Driving Cars?
* Will there ever be a peace platform for this issue, or will remain a two sided issue?