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Cut to the Chase

Mechanics of Self-Driving Automobile

WHAT are self-driving automobiles?

- An autonomous car (also known as a driverless car, self-driving car, robotic car) and unmanned ground vehicle is a vehicle that is capable of sensing its environment and navigating without human input. Many such systems are evolving, but as of 2017 no cars/trucks permitted on public roads were fully autonomous. They all require a human at the wheel who must be ready to take control at any time.

WHAT is the case for self-driving automobiles?

- Safety is a primary reason for the self-driving automobiles. For instance, in America there are 33,000 people killed every year and 94% of the accidents are attributed to the human error. In the Middle East, road deaths are one of the leading unnatural causes of death. Oman leads the region with 30.4 deaths per 100,000 population followed by Saudi Arabia, Kuwait, Egypt and Qatar at 24.8, 16.5, 14 and 13.2 respectively. These numbers are much higher than that of developed countries.
- Automation aims to remove/reduce the chance of human errors¹. In addition to this, fuel efficiency is touted as the second major reason. Automated trucks have experimented with convoys that travel at predetermined speeds, distance and time. Autonomous trucks can coordinate their movements to platoon closely together over long stretches of highway, cutting down on wind drag and saving on fuel.

WHEN can we expect self-driving automobile on roads?

- Self-driving trucks (with drivers on board for backup and driving in city conditions) are expected to be on road in the next five to ten years. Uber, the cab-hailing service company, bought Otto, a manufacturer of self-driving vehicles for \$680Mn in August 2016. Daimler, the German automotive behemoth announced its decision to engage in 'platooning' tests on highways in Oregon and Nevada during September 2017. In addition to this, other independent companies are building self-driving trucks such as Einride increasing the chances of seeing semi-automated trucks on roads in the next decade.
- With the current state of technology and the successful deployment and improvements of pairing function, commercial applications could supercede personal applications of such function. This function allows the autonomous vehicle to track the movements of the lead truck and follow it safely. Truck drivers carry more load in a single journey and without violating the standards of driver rest or load. With

¹ Provided there is demand for the cryptocurrency/ token that has been distributed

the US feeling acute shortage of truckers, 100,000 jobs open and unable to find drivers to fill them, the deployment of self-driving trucks presents a huge unaddressed opportunity that is ripe for technology companies. The trucking industry expects to see 21% more truck driving jobs by 2020.

- Self-driving cars might take a little longer before being deployed in the market. Automakers and suppliers gave widely differing timelines for the introduction of self-driving vehicles, showing the uncertainties surrounding the technology as well as a split between cautious established players and bullish new entrants. Cars must also be designed for city driving which involves tackling footpaths, congested roads, traffic jams, pets and people on the road as compared to driving in mostly straight lines on the highways. We could see full-fledged self-driving cars that could pick up and drop people on their own by 2031.

WILL human driving become obsolete?

- Driving is a skill that humans hone over years of practice and driving on road in all sorts of weather and road conditions tackling even the most challenging of terrains with remarkable dexterity. Most of the technologists admit that despite their goal to remove the drivers as a whole from cars and trucks that ambition is still miles away from completion. Regulations, labor groups and political distrust of automation could push; prolong human driving for at least the next decade or two. Driving as a profession and trade is ring-fenced from completely getting vanished atleast owing to technological shortfalls such as automated vehicle's poor judgement in harsh weather conditions.

HOW much can self-driving automobile save annually?

- A report by RethinkX, an "independent think tank" created by James Arbib, and Tony Seba says that as self-driving vehicles become common, most people will stop owning cars and instead pay by the ride Uber-like on-demand autonomous electric vehicles (Transport as a Service). Doing so could save a family more than \$5,600 a year — equivalent to a wage raise of 10% for the median American household.
- Overall cost saving from the transformation to autonomous vehicles would help Americans save roughly \$1Trn per year. While the timeline for achieving such savings is grossly optimistic the cost-savings is much more achievable.

References

1. https://en.wikipedia.org/wiki/Autonomous_car
2. <https://www.technologyreview.com/s/603493/10-breakthrough-technologies-2017-self-driving-trucks/>
3. <http://time.com/money/4797898/self-driving-cars-could-soon-save-the-average-family-at-least-5600-a-year/>
4. <https://www.ottomotors.com/company>
5. <http://money.cnn.com/2017/08/18/technology/future/colorado-self-driving-truck/index.html>
6. <https://medium.com/basic-income/self-driving-trucks-are-going-to-hit-us-like-a-human-driven-truck-b8507d9c5961>
7. <https://futurism.com/experts-predict-the-timeline-for-self-driving-cars/>

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