CASE STUDY 2

Autonomous Vehicles

Autonomous vehicles, also known as driverless vehicles, are capable of travelling between destinations without human operators. Various predictions forecast that by 2030 up to 15 percent of new cars in North America could be fully autonomous. [1]

Figure 1: Google self-driving car [2]

Autonomous vehicles are equipped with various sensors that work in conjunction with each other to control a driverless car by detecting its surroundings:

- Radar sensors monitor the position of vehicles nearby.
- Video cameras interpret traffic lights and road signs, and detect pedestrians and other obstacles.
- LIDAR, which stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure distances and is used to detect the edges of roads and lane markings.

Estimates of the costs for the various components required to retrofit a vehicle to become autonomous could add up to $10,000 to the base cost of the vehicle. However, in early 2016, Honda announced that its new Civic LX Sedan could be purchased with full autonomous driving capability for only $20,440 (U.S. dollars) [3]. This is only $1,423 (U.S. dollars) more than the average price for a new Civic LX Sedan without autonomous driving capability. [4]

A 2016 research report by Rand Corporation found autonomous vehicles offer the possibility of significant benefits: fewer vehicle crashes; more efficient traffic flow; less traffic congestion; lower fuel consumption; less pollution; and, increased mobility for the young, the elderly, and the disabled. [5] The same research report described drawbacks, including the potential loss of occupations and economies based on public transit, vehicle repair, and insurance.

On January 1, 2016, the Ontario provincial government began allowing the testing of autonomous vehicles on Ontario's roads. The testing period will last 10 years. Ontario is the first jurisdiction in Canada to allow autonomous vehicles on its roads. [6] In the United States, California, Michigan and Nevada have

passed detailed legislation that allows the operation of autonomous vehicles, but currently allow them on public roads for testing purposes only. [7]

References

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