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Autonomous cars

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The cruise control system came into use more than 50 years ago and can be defined today as the driver's "right hand". It's been a long time since cars have become able to slow down and speed up automatically, identify their location and distances to obstacles. Numerous driver assistance systems, such as radars, ultrasonic sensors, cameras, GPS systems etc. have been also successfully used for a long time in various vehicles.

Nowadays, specialists of different companies are trying to cooperate in order to "teach" cars to drive independently, i.e. without driver's participation. Various projects devoted to driverless cars are implemented worldwide at universities, research institutes and hi-tech companies. The driverless cars have already travelled hundreds of thousands of kilometers and advocates of this technology believe that the number of the roads that these cars are able to drive on is going to be increased. Furthermore, there will be an opportunity to reduce the amount of traffic jams and improve traffic safety by reducing the chance of driver's mistake to zero [1].

Let's consider the vehicle autopilot system designed by the leader of this field, Tesla Company. Tesla autopilot system is equipped with 8 cameras, which provide a 360° view at a distance of 250 meters and 12 ultrasonic sensors. Together they are capable of identifying soft and solid objects at a great distance. It is also equipped with radar that is designed to operate in poor weather conditions such as heavy rain or fog

and preserves its functionality even being covered with a thick dust layer. The on-board "smart" computer spots and distinguishes traffic lights, road markings and road signs. Having this kind of autopilot system, a car is able to move in traffic stream and change lanes, enter and exit highways and park automatically without driver's participation.
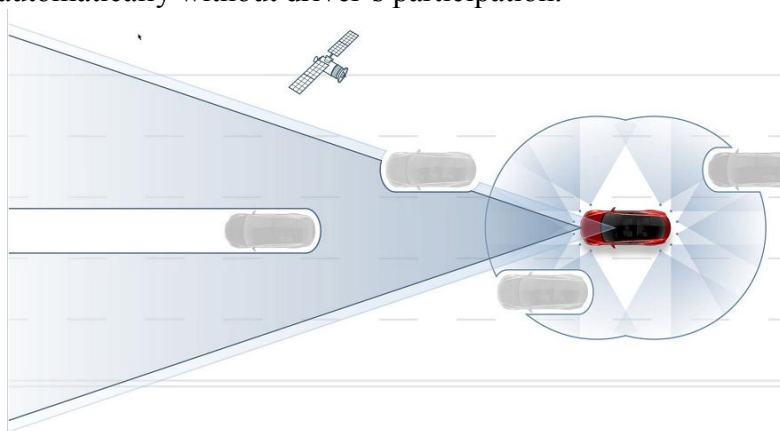

figure 1: How the car sees around itself

We can only guess what the side effects of the future are. Probably there won't be any drop in car sales and people will use transport in a new way. For example, there will be mobile homes and offices. In your vehicle you will be able to have a bed and an office chair and program it to travel through the most picturesque places of the country in order to work in a creative atmosphere and watch how the scenery is changing. You can travel around the globe waking up every day in a new country and live like this for years [2].

Vehicles efficiency enhancement will also ease the economical situation in the world. Millions of people die in car accidents, and hundreds of millions of others produce iron and oil, work at car parts plants, in repair shops, at petrol stations, car parking, motorway services, and taxi. They build roads and

maintain the infrastructure which is important for servicing billions of cars. A global adoption of autopilot gives an opportunity to get rid of such jobs as taxi drivers, traffic police officers and parking attendants [3].

Unfortunately, the vast majority of innovations can be found only in concept-cars. In order to implement them we need to perform certain regulatory changes and turn our mindsets around. Are we ready for the autonomous cars? Are we ready for the fact that we won't drive anymore but we will be responsible for monitoring the process? In which situations is it better to rely on automatics and in which is it not? There are a lot of questions so far. But sooner or later we will get the answers. Probably even sooner than we think.

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