

Self-driving cars?

Leave the Driving to the Car, and Reap Benefits in Safety and Mobility, says the title of a recent article by Sebastian Thrun in the New York Times. It goes on to elaborate: The Jetsons had them in the 1960s. They were the defining element of “Knight Rider” in the 1980s: cars that drive themselves. Self-driving cars appear in countless science fiction movies. By Hollywood standards, they are so normal we don’t even notice them.

But in real life, they still don’t exist. So what if they were real? What if you could buy one today? When I was 18, I lost a close friend to a car accident. His friend had taken his father’s brand-new Audi Quattro for a spin, and he took my friend along for the ride. On an icy road, the driver lost control of the car and collided head-on with a truck. Both he and my friend were declared dead at the scene.

This was not an isolated occurrence. Roughly a year ago, my lab manager succumbed to a traffic accident. A distracted driver hit her Prius at more than 50 miles an hour from the side while she was driving cautiously through an intersection.

Too many people share the same fate. In 2010, the number of traffic fatalities in the United States was 32,788, according to the Department of Transportation. In recent years, nearly all states have passed laws prohibiting the use of handheld devices while driving. Nevada took a different approach. In a first for any nation, the state passed a law that legalizes texting, provided one does so in a self-driving autonomous car. This places Nevada at the forefront of innovation.

I have been spending the better part of my professional life trying to create self-driving cars. At Google, I am working with a world-class team of engineers to turn science fiction into reality. Google’s vast computing resources are crucial to our technology. Our cars memorize the road infrastructure in minute detail. They use computerized maps to determine where to drive, and to anticipate road signs, traffic lights and roadblocks long before they are visible to the human eye.

Our cars use specialized lasers, radar and cameras to analyze traffic at a speed faster than the human brain can process. And they leverage the cloud to share information at blazing speed.

Our self-driving cars have now traveled nearly 200,000 miles on public highways in California and Nevada, 100 percent safely. They have driven from San Francisco to Los Angeles and around Lake Tahoe, and have even descended crooked Lombard Street in San Francisco. They drive anywhere a car can legally drive.

I am confident that our self-driving cars will transform mobility. By this I mean they will affect all aspects of moving people and things around and result in a fundamentally improved infrastructure.

Take today's cities. They are full of parked cars. I estimate that the average car is immobile 96 percent of its lifetime. This situation leads to a world full of underused cars and occupied parking spaces.

Self-driving cars will enable car sharing even in spread-out suburbs. A car will come to you just when you need it. And when you are done with it, the car will just drive away, so you won't even have to look for parking.

Self-driving cars can also change the way we use our highways. The European Union has recently started a program to develop technologies for vehicle platoons on public highways. "Platooning" is technical lingo for self-driving cars that drive so closely together that they behave more like trains than individual cars. Research at the University of California, Berkeley, has shown that the fuel consumption of trucks can be reduced by up to 21 percent simply by drafting behind other trucks. And it is easy to imagine that our highways can bear more cars, if cars drive closer together.

Last but not least, self-driving cars will be good news for the millions of Americans who are blind or have brain injury, Alzheimer's or Parkinson's disease. Tens of millions of Americans are denied the privilege of operating motor vehicles today because of issues related to health or age.

Some of these changes are far out in the future. But I envision a future in which our technology is available to everyone, in every car. I envision a future without traffic accidents or congestion. A future where everyone can use a car (NYT 5-12-11).