

Engineers aim to build trust between driverless cars and pedestrians

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To create trust between pedestrians and self-driving vehicles, Jaguar Land Rover has developed a driverless pod with eyes that signal the vehicle's intent to human observers. Photo: Jaguar Land Rover

Building self-driving cars is very difficult. The biggest challenge, though, has little to do with fancy computers or cutting-edge technology.

Instead, companies must engineer something much less concrete but no less important. They need to recreate the human trust that is communicated when human drivers and pedestrians make eye contact at a crosswalk.

Surveys indicate that large portions of the public harbor deep reservations about the safety of self-driving technology. In response, car companies like Jaguar Land Rover have hired psychologists to help them. The psychologists are experts in human behavior. They are studying "how vehicle behavior affects human confidence in new technology," the company said.

The psychologists' solution is virtual eyes. They are large and cartoonish, like the plastic goggle eyes used in art projects.

The eyes have been fitted to self-driving vehicles known as "intelligent pods." Devised by a team of engineers, the eyes seek out nearby pedestrians before "looking" directly at them. The gesture signals that the vehicle sees the pedestrians and plans to remain stationary so they can pass, the company said.

It's All In The Eyes

The engineers recorded the human subjects' trust levels before and after they interacted with the pods. They wanted to determine whether the subjects experienced high enough levels of confidence. So far, more than 500 people have been observed interacting with the expressive vehicles. However, the company has not released details about the interactions.

"It's second nature to glance at the driver of the approaching vehicle before stepping into the road," Pete Bennett said in a statement. He helps develop new transportation technologies at Jaguar Land Rover. "Understanding how this translates in tomorrow's more automated world is important."

Other companies have applied eyes to robots as well. The industrial robot Baxter has a tablet-like face with eyes. The eyes communicate the robot's intentions to nearby human workers, such as concentration when the machine is working or sadness when it is broken.

People are uneasy about not only interacting with but riding inside self-driving vehicles. The American Automobile Association, or AAA, researches roads and accidents in the country. It ran studies about people's attitudes toward riding in driverless vehicles. The group found that 63 percent of U.S. drivers are afraid to ride in a fully self-driving vehicle, down from 78 percent a year earlier.

Wary Of Giving Control To A Machine

Male drivers and younger adults trust the new technology the most, with only half of them reporting a fear of riding inside a fully self-driving car, according to AAA. The group has begun urging automakers to educate consumers about self-driving transportation.

Human error causes more than 90 percent of crashes. However, many drivers still consider their driving skills better than average and do not want to hand control over to a machine.

"Americans are starting to feel more comfortable with the idea of self-driving vehicles," said Greg Brannon. He oversees all research and automative testing for AAA. "Compared to just a year ago, AAA found that 20 million more U.S. drivers would trust a self-driving vehicle to take them for a ride."

Other companies are also exploring how to broadcast messages from self-driving vehicles to pedestrians.

Self-Driving Cars Can't Understand Everything

A Mountain View, California-based company known as Drive.ai launched a test program in the Dallas-Fort Worth, Texas area. The driverless orange vehicles ferry people around an office-park complex where about 10,000 people work, eat and shop.

The words "self-driving vehicle" wrap around their Nissan NV200 vans. The vehicles include outside panels with messages like "waiting for you to cross," instead of having a human driver make eye contact or wave on a person crossing the street.

Company officials have pointed out that self-driving cars still do not understand complex situations. For example, they would not be able to understand a construction worker communicating with hand gestures.

Jaguar Land Rover's intelligent pods have yet to venture into the real world. Instead, they operate on a "fabricated street scene in Coventry," in England, the company said.

Quiz

1 Which section of the article BEST explains how people feel about self-driving cars?

- (A) Introduction [paragraphs 1-5]
- (B) "It's All In The Eyes"
- (C) "Wary Of Giving Control To A Machine"
- (D) "Self-Driving Cars Can't Understand Everything"

2 Read the following claim.

Self-driving cars still have problems safely navigating all driving situations.

Which sentence from the article provides the BEST support for the above statement?

- (A) People are uneasy about not only interacting with but riding inside self-driving vehicles.
- (B) However, many drivers still consider their driving skills better than average and do not want to hand control over to a machine.
- (C) The driverless orange vehicles ferry people around an office-park complex where about 10,000 people work, eat and shop.
- (D) For example, they would not be able to understand a construction worker communicating with hand gestures.

- 3 Which two of the following sentences from the article include CENTRAL ideas of the article?
1. *They need to recreate the human trust that is communicated when human drivers and pedestrians make eye contact at a crosswalk.*
 2. *Surveys indicate that large portions of the public harbor deep reservations about the safety of self-driving technology.*
 3. *The American Automobile Association, or AAA, researches roads and accidents in the country.*
 4. *A Mountain View, California-based company known as Drive.ai launched a test program in the Dallas-Fort Worth, Texas area.*
- (A) 1 and 2
- (B) 1 and 3
- (C) 2 and 4
- (D) 3 and 4
- 4 Which statement would be MOST important to include in a summary of the article?
- (A) Most car accidents are caused by mistakes that are made by the drivers.
- (B) More Americans are beginning to trust self-driving technology than they did a year ago.
- (C) One company created a robot with a tablet-like face that communicates with human workers.
- (D) Some pedestrians want drivers to assure them that it is safe to cross the road.