

The difficulties of taking humans out of transportation

March 28 2018, by Brian L. Huchel

A Purdue University professor says the idea of commuters working as their vehicle drives them to their jobs faces more hurdles than people realize.

Eric Matson, associate professor in the Department of Computer and Information Technology, said [autonomous vehicles](#) are being considered in a variety of settings, from domestic vehicles to military transports and even container ships.

But taking humans out of the loop is much more difficult than most may think. Matson said a former Purdue student is researching the function of parking for autonomous vehicles. Simple for human drivers, the duty is a complex task for autonomous vehicles.

"The problem is if all of sudden a bird flies out or some other unexpected condition," he said. "That's something a human would recognize and have no difficulty processing. But it's hard to make sensors work in the same way."

Humans are not perfect, but the average driver is going to take note of situations that autonomous vehicles have difficulty with, said Matson, who works with robotics and machines controlled by artificial intelligence and is co-founder of Purdue's M2M Lab.

"Current AI can't recognize if it sees someone on their phone and not paying attention," he said. "Trying to teach an autonomous system to

recognize that kind of issue is a difficult thing. There's a lot of conditions to look at with that."

Systems can't do image recognition of just someone looking at their phone. You have to look at it from different angles, recognize whether the driver is looking at their phone, their steering wheel or their radio and determine how safe or unsafe the situation is.

Businesses are getting into this and not necessarily looking at the long-term effects of replacing humans, Matson said.

"People are rushing to make everything autonomous," Matson said. "Some of its driven by reducing labor or time savings when you're talking about businesses.

"But in a lot of ways, there's not a lot of labor savings. For a two-hour commute to work, perhaps. But if you only have a 15-minute drive, there's not much time to do extra work, if you are a commuter."

Cost of production may also hinder putting the autonomous vehicles on the road.

"We have to look at this and be realistic about what it's going to cost to put one of these cars on the street," he said.

Systems, and particularly sensors, used for autonomous vehicles must be high quality, Matson said. But he noted companies will look at lesser items to lower production cost, resulting in potentially less reliable systems.

The agriculture industry has made extensive investments in the use autonomous vehicles in recent years.

The entire world of autonomous vehicles will be a "terrorist haven" without safeguards. This is already beginning to occur and appearing in government threat analysis.

"Whenever [autonomous cars](#) hit the road, terrorists are going to start putting out tech to interrupt or take control of these systems and cause those cars to crash and create havoc," Matson said. "If I have cars or other autonomous vehicles depending on purely wireless signals, it's not hard for me to cause enough interference to cause problems with those vehicles that could result in a pileup or serious situation."

Provided by Purdue University

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