



Autonomous Vehicle Guidelines Must Require Driver Behind the Wheel

-- John M. Simpson, Privacy Project Director, April 8, 2016

Consumer Watchdog, a nonprofit, nonpartisan public interest group, is concerned that an unjustified rush to deploy self-driving autonomous vehicle technology will threaten the safety of the nation's highways. We agree that some automated vehicle technologies, such as automatic emergency braking, will save lives. But those systems are designed to work with and augment a human diver's abilities and compensate for their shortcomings.

Google wants to take the human driver completely out of its self-driving robot car. Perhaps that will be possible in decades, though it's not at all clear it can ever happen. Deploying a vehicle today without a steering wheel, brake, accelerator and a human driver capable of intervening when something goes wrong is not merely foolhardy. It is dangerous. NHTSA's autonomous vehicle guidelines must reflect this fact.

Google is also seeking to bypass the usual auto safety standards and fast track the approval process. Rather than accepting Google's approach, NHTSA should ask the company some tough questions as you develop the automated vehicle technology guideline. I'll suggest ten of those question in a few minutes.

The need to require a driver behind the wheel is obvious after a review of the results from seven companies that have been testing self-driving cars in California since September 2014: Robot cars are still not capable of dealing reliably with everyday real-life situations.

Under California's self-driving car testing requirements, these companies were required to file "disengagement reports" explaining when a test driver had to take control. The reports show that the cars are not always capable of "seeing" pedestrians and cyclists, traffic lights, low-hanging branches, or the proximity of parked cars, suggesting too great a risk of serious accidents involving pedestrians and other cars. The cars also are not capable of reacting to reckless behavior of others on the road quickly enough to avoid the consequences, the reports showed.

The companies' own evidence makes clear that a human driver able to take control of the vehicle is necessary to ensure the safety of both robot vehicles and others on the road.

Google, which logged 424,331 "self-driving" miles over the 15-month reporting period, said a human driver took over 341 times, an average of 22.7 times a month. The robot car technology failed 272 times and ceded control to the human driver; the driver felt compelled to intervene and take control 69 times.

Other testing companies, driving far fewer autonomous miles than Google, also reported substantial numbers of disengagements. Bosch had 625 disengagements with 934.4 miles driven. Nissan with 1,485 miles driven had 106. Mercedes-Benz reported 1,031 with 1,738 miles driven. Delphi reported 405 disengagements with 16,662 miles. Volkswagen with 10,416 miles reported 260. Tesla claimed it had none, but did not say how many miles its drove.

It's important to understand that these "disengagements" were prompted by real situations that drivers routinely encounter on the road. Among reasons cited by Bosch were failures to detect traffic lights and heavy pedestrian traffic.

Google's robot technology quit 13 times because it couldn't handle the weather conditions. Twenty-three times the driver took control because of reckless behavior by another driver, cyclist or pedestrian. The report said the robot car technology disengaged for a "perception discrepancy" 119 times. Google defines such a discrepancy as occurring when the car's sensors don't correctly perceive an object, for instance over-hanging branches. The robot technology was disengaged 55 times for "an unwanted maneuver of the vehicle." An example would be coming too close to a parked car. The human took over from Google's robot car three times because of road construction.

What the disengagement reports show is that there are many everyday routine traffic situations with which the self-driving robot cars simply can't cope. It's imperative that a human be behind the wheel capable of taking control when necessary. Self-driving robot cars simply aren't ready to safely manage too many routine traffic situations without human intervention.

Proponents of taking away the ability for the driver to take control argue that the robot technology will lull the occupant into a distracted state where he cannot intervene effectively. But it's clear the current robot technology cannot handle a number of routine situations and the driver must take control. The emphasis should be on developing warning mechanisms to give the driver ample time to takeover.

If there were only robot cars on the road that could communicate with each other the problem might be simpler to solve. That is not the reality. Drivers sometimes communicate with each other with gestures. Traffic cops use hand signals to give directions. How can a self-driving robot car deal with such situations? It cannot.

There is another troubling aspect to Google's approach to self-driving robot cars. While it wants to take the human driver out of the equation, its programmers will be making life and death decisions in the algorithms they create to navigate the vehicle. What ethical choices will these humans program into the robot car? Will the vehicle protect the safety of its occupants over the safety of pedestrians and cyclists? These are serious moral issues and there must be complete transparency from the developers of self-driving robot car technologies about the choices their programmers are making.

Another area that requires complete transparency from the self-driving robot car manufacturers is information about what happens when something goes wrong. When there is a crash technical data and video related to the incident should be made public.

A Google robot car crashed into a bus on Valentine's Day. Video recorded on the bus by the transit company was released to the public. Google says it has no plans to release its video or technical data. When public roads are used as private laboratories, there needs to be complete transparency. Google must release video of this crash, as well as all the other crashes its robot vehicles were involved in.

As the National Highway Traffic Safety Administration reviews the safety claims of the developers of self-driving robot car technology, you must not rely only on the word of the manufacturers. This is a key requirement to protect safety. Manufacturers have a vested interest in rushing to make their product available as soon as possible. Tests of this complex technology by an independent third-party organization will help ensure the self-driving vehicles can perform as claimed and can handle situations encountered in the real world.

Rather than rigorous testing to show that its robot cars meet Federal Motor Vehicle Safety Standards, Google now seeks to replace this open and accountable regulatory process with a fast track system that will favor Google's business and marketing plans at the expense of consumers and the marketplace. It would essentially permit the company to collude with DOT and NHTSA behind closed doors and out of sight of the public and the news media. Such a process would threaten the public's health, safety and security. Instead of accepting Google's proposal you need to ask the company some important questions. Here are ten that should be answered:

1. We understand the self-driving car cannot currently handle many common occurrences on the road, including heavy rain or snow, hand signals from a traffic cop, or gestures to communicate from other drivers. Will Google publish a complete list of real-life situations the cars cannot yet understand, and how you intend to deal with them?
2. What does Google envision happening if the computer "driver" suddenly goes offline with a passenger in the car, if the car has no steering wheel or pedals and the passenger cannot steer or stop the vehicle?
3. Your programmers will literally make life and death decisions as they write the vehicles' algorithms. Will Google agree to publish its software algorithms, including how the company's "artificial car intelligence" will be programmed to decide what happens in the event of a potential collision? For instance, will your robot car prioritize the safety of the occupants of the vehicle or pedestrians it encounters?

4. Will Google publish all video from the car and technical data such as radar and lidar reports associated with accidents or other anomalous situations? If not, why not?
5. Will Google publish all data in its possession that discusses, or makes projections concerning, the safety of driverless vehicles?
6. Do you expect one of your robot cars to be involved in a fatal crash? If your robot car causes the crash, how would you be held accountable?
7. How will Google prove that self-driving cars are safer than today's vehicles?
8. Will Google agree not to store, market, sell, or transfer the data gathered by the self-driving car, or utilize it for any purpose other than navigating the vehicle?
9. NHTSA's performance standards are actually designed to promote new life-saving technology. Why is Google trying to circumvent them? Will Google provide all data in its possession concerning the length of time required to comply with the current NHTSA safety process?
10. Does Google have the technology to prevent malicious hackers from seizing control of a driverless vehicle or any of its systems?

NHTSA officials have repeatedly said safety is the agency's top priority. You must not allow your judgment to be swayed by rosy, self-serving statements from companies like Google about the capabilities of their self-driving robot cars. NHTSA has said that autonomous vehicle technology is an area of rapid change that requires you to remain "flexible and adaptable." Please ensure that flexibility does not cause you to lose sight of the need to put safety first. Innovation will thrive hand-in-hand with thoughtful, deliberate regulation. Your guidance for the states on autonomous vehicles must continue to require a human driver who can intervene with a steering wheel, brake and accelerator when necessary.

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