

MIT's Reimer: Level 5 AVs are "Centuries" Off for Purchase-ability (But Robots Safer than Humans)



Here us what Dr. Reimer' argues:

Level 5 (i.e. fully self-driving) AVs won't be available to buy for "centuries" because the definition of a Level 5 AV is one that can drive itself beyond a geo-fenced area, and entire continents can be geo-fenced. However, he also opined that we're "probably very near", and possibly already past, the stage of robot drivers being safer than human ones, and that humans expect robots to drive considerably more safely than they would ever expect another human to drive.

Q: How far away from Level 5 AVs being readily commercially available to the average consumer do you think we are?

"Centuries. Because the definition [of Level 5] is a vehicle that will drive anywhere that we would, which means you cannot be constrained by traditional engineering bounds. A Level 4 AV has to work in a geo-fenced area. It is not to state how big that geo-fenced area may be. It could be the size of the continental US. The key thing is that the Level 4 vehicle may not be able to go into Canada or Alaska. The Level 5 vehicle, on the other hand, needs to go anywhere at any time. That means no matter how hard it's snowing, no matter how dense the African jungle may be, that is the type of technology that it's defined around. It is the ultimate concept.

Level 4 is where AVs will be “Stuck” for Century:

Over the next century or two, what we will see is Level 4 AVs, automation that works within some boundaries, we will see those boundaries expand over time, to the point where they start as small towns.”

More on Level 5

“Perhaps eventually across state lines and perhaps eventually across country lines but bound by the engineering criteria and the sensing systems’ limitations, as opposed to autonomous [vehicles’ limitations]. The key being, we are developing highly automated vehicles that will have human interaction somewhere in the ecosystem, not fully autonomous systems that will act the potential risks of systems failures completely on their own.”

Q: Do you think the benefits of AVs potentially eliminating human error outweigh?

“On a one-to-one ratio, I think it’s very near-term. So per mile driven, the fact that an automated system may very well be safer than a human is probably very near, if not something we’ve already passed. The broader question is: in the context of human error versus robotic error, how much safer do robots have to be for them to be societally acceptable? Because right now, when a mistake occurs, we blame the driver. It’s very different and you need to begin to think of this a little more deeply than per-mile, because all miles are not treated equally.

Q: Do you think natural human skepticism about robot drivers means a robot driver is inherently going to have to meet a higher barrier of safety in order to become societally acceptable?

“Yes. I think we look at failures in human behavior and kind of roll them off in some sense, ‘we’re only human’. When we bring machine intelligence and robotics into that, we are looking for something that’s superhuman. We are fascinated with the context of robots, we have been for years, so we are looking at robots as something superhuman. We are literally taking a different perspective on that. Now, the unfortunate part is over the course of a century or more, the robots will be far better than us in almost all situations. How do we give them enough leeway so that they can learn fast but not too much leeway that they’re making more mistakes than we would?”

Q: We hear a lot about infrastructure in cities needing to be reconfigured to accommodate AVs. Do you think rolling them out in the countryside is feasible? And if so, what do you think needs to be done to adapt rural roads to their requirements?

“Rural roads are inherently harder on one side and easier on another. There are fewer vulnerable road users, etc, fewer exterior objects to worry about. On the other hand, hills and curves present natural occlusions, making it harder for sensing systems that can’t see around the corner. I think the problem is not the technology, the problem is the scale and density. So naturally, the road network on which one would need to operate in a rural setting naturally becomes much, much larger than [that needed to drive within] an urban setting. In essence, it’s harder to scale in a way that makes economic sense.”

How does one find and connect with Bryan Reimer at MIT?

Start here: <https://www.tu-auto.com/tag/massachusetts-institute-of-technology-mit/>

Who is Greg Hyde?

Author who writes for TU Automotive. See his content at <https://www.tu-auto.com/author/hydeg/>



Greg Hyde of TU Automotive talked to respected autonomous vehicle expert Bryan Reimer of the Massachusetts Institute of Technology (MIT) in November 2018. Dr Reimer, a research scientist at MIT’s AgeLab and associate director at the New England University Transportation Center