Twitter Thread by Michael T Spooky ■



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(THREAD)

1. There's been a lot of news lately about people in the Autonomous Vehicle industry realizing the problem they're trying to solve is much trickier than they initially hoped.

I think there’s a good analogy in a similar technology: self-checkouts.

2. Self-checkouts have been around a while. Companies have been working on them since 1984, and they’ve been in stores around the country for nearly two decades. As you well know if you’ve used one, they also still kinda suck. https://t.co/sRmgB9sGXn

3. This is not for a lack of financial incentives! A company that could figure the technology out would be able to replace billions a year in labor. Even a marginal improvement on the tech would be incredibly valuable as current systems feature staggering losses to shoplifters

4. It’s not as if “scanning items at a checkout” is an especially daunting task. It’s considered unskilled labor. Teenagers do it.

5. Turns out that making an automated system that’s 95% as good as a human is relatively easy and one that’s 100% as good as a human is very hard. I think it’s becoming clear that autonomous vehicles are going to turn out like this

6. For self-checkouts, the tech doesn’t work perfectly but it’s still useful. The equilibrium it’s fallen into isn’t “replace the cashiers” but “one cashier is managing several different self-checkout registers at once” (along with customers performing a lot of the actual labor)

7. Unfortunately, that’s not really going to be a good outcome for AVs. The tech is frankly just not very useful unless it is *100%* automated. The upside to your car driving itself is very small if you have to stay alert and be ready to take over at a moment’s notice.

8. And it goes without saying that dreams of fleets of autonomous taxis won’t be worth much if the cars aren’t 100% autonomous (allowing you to eliminate the expensive drivers), or at least 100% autonomous within a geofence.

9. And the downside is that careless or foolish people will instead conclude they don't have to pay attention at all and will cause collisions. Already happened with Uber's AV test unit that killed Elaine Herzberg.

10. Even though it was a *test unit* the driver was lulled into a false sense of safety and wasn't watching the road. https://t.co/yfMu2vukHr

11. Similar: the death of Joshua Brown, who was killed instantly when his Tesla collided with the back of a truck. Brown believed that the autopilot system was more capable than it was and would watch movies while driving. https://t.co/kn6zRVirT1

12. Anyone asserting autonomous vehicles will be inherently safer (a very common attitude attitude on the internet, browse Tesla fan forums if you don't believe me) is mistaken. Nothing guarantees that.

13. Most true AV systems haven't driven enough for even one death to have been likely to occur if they were merely as safe as human drivers, who cause a fatality roughly every 100 million miles.

For instance, as of July, Waymo had 8 million miles logged https://t.co/q8uxlLtkBY

14. Note that 30%ish of vehicle fatalities are caused by drunk drivers so the bar to be as safe as a *sober* human driver is even higher. https://t.co/HIs0cXCzY4

15. Road type makes a huge difference as well - the type of urban, grade-separated interstate highways that Tesla autopilot has logged most of its miles on are also very safe for human drivers

16. And what worries me is that a "good enough" system will have the wrong market incentives. Let's say there are two AV systems - one cautious (Car A) and one less-cautious (Car B).

17. Car A gets into a fatal accident, on average, every 200 million miles, twice as safe as human. Car B gets into a fatal accident every 50 million miles, twice as dangerous as a human.

18. It'd be *impossible* for you to tell which system is safer just by riding in the car. The average American adult drives something like 15,000 miles per year. You'd have to be on the road for 3000 years before you'd be statistically likely to be in a fatal accident in Car B.

19. But now let's say that Car B gets you to work 30 seconds earlier by driving more aggressively. That, you'd notice. Or maybe Car A features unpleasantly frequent emergency braking and Car B provides a smoother ride.

20. The "causes fatal accidents" factor is operating on a scale that is extremely hard for human beings to evaluate, the "gets you to work faster" factor or comfort factor aren't. Consumers are going to be biased towards the easy-to-evaluate criterion.

21. That's the danger with companies rolling this technology out irresponsibly, as I'd argue that Tesla has.

22. Tesla recently discontinued offering it’s “full self driving” upgrade package on its Model 3 sedan, but likely because the hardware in the cars is insufficient https://t.co/74Ger3L5FG

23. Tesla is likely to be unable to offer even unsafe autonomy on Model 3s since the cars don't use LIDAR after their LIDAR camera supplier split with Tesla after the Joshua Brown crash. https://t.co/YZXDm92iI6

24. Look, when there’s an UNKNOWN ITEM IN BAGGING AREA it’s an annoying hassle, but no one’s gonna die. The stakes for AVs are much higher and people need to wake up to the fact that driverless technology that’s 90% as good as a human is worth less than nothing.

25. That’s not to say that AV-like improvements aren’t potentially valuable. Driver-assist emergency braking, for instance, is lifesaving technology and I expect car manufacturers to continue to iterate their driver-assist tech in the coming decades. https://t.co/O33P2vb9al

26. But any company who is betting on full, Level 5 type autonomy anytime soon is either fooling themselves or (much worse) willing to put a dangerous product into the public.

27. Similar to self-checkouts winding up being less about automation and more about shifting work from employees to customers, the big push in the world of AVs is to make sure that the drivers and owners retain the legal liability when the AVs inevitably cause accidents.

28. In conclusion, when you hear the “World of Tomorrow” tales about driverless cabs whisking us on couches everywhere at 120mph, please also realize that the UNKNOWN ITEM IN BAGGING AREA dystopia is a just-as-likely path.

29. (Thank you, as always, for listening)

30. Correction: I screwed this up, mobileye was the vendor for Tesla's camera/vision system and doesn't sell LIDAR https://t.co/ndW8KY7ObL

> Mobileeye doesn\u2019t supply LIDAR
>
> — Vinny (@Vinnnyr) October 25, 2018