

SMART DRIVING CARS

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8th edition of the 5th year of SmartDrivingCars

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[Uber self-driving test car involved in crash in Arizona](#)

N. Lomas, mar 25, "More bad news for Uber: one of the ride-hailing giant's self-driving Volvo SUVs has been involved in a crash in Arizona — apparently leaving the vehicle flipped onto its side, and with damage to at least two other human-driven cars in the vicinity.

The aftermath of the accident is pictured in [photos](#) and a [video](#) posted to Twitter by a user of @FrescoNews, a service for selling content to news outlets. According to the company's tweets, the collision happened in Tempe, Arizona, and no injuries have yet been reported....Local [newspaper reports](#) suggest another car failed to yield to Uber's SUV..." [Read more](#) *Hmmm... **Important:** Looks as if this is the same situation as with the Florida Tesla Crash. The Uber car was cutoff and it's the other guy's fault. Hopefully Uber will release (or the police has impounded and will release though FoI) the pre-crash data streams from the Uber GPS, video, radar and Lidar systems so that it can be determined if Uber's Automated Collision Avoidance (ACA) system did all it could be expected to do to avert this Crash.*

One assumes that the Self-driving systems, offensively, are sufficiently good that they won't fail-to-avoid or inappropriately change lanes or run into things in the lane ahead, or...(Note: Uber's [running of a red light](#) in SF is a very serious flaw! Had a crash occurred, then the software/Uber would have been at fault. That event must be essentially never occur; and it occurred within the first few days. Not good!). But one also needs these cars to be good defensively with its Automated Collision Avoidance (ACA/'Smart-Driving Car') capability. We should ask: Has Uber been too cavalier about the defensive ACA / Safe-driving Car aspects and rushed into the Self-driving Car realm (which does them no real good because they require Driverless which may not

necessarily evolve out of Self-driving). What Driverless does need is elegant, robust and fault tolerant ACA /Safe-driving capabilities.

Also... In all of the driving Google/Waymo has done, they've only been at fault once, a 2mph crash with a bus, and have been hit several times where the other car was at fault. Undoubtedly, the Google/Waymo cars have been 'cutoff' many times, but their ACA system averted a crash. Quite possibly, in some of these cases, a human driver may not have fared as well. It would be interesting to know how many because this would be a measure of the extent to which Google/Waymo cars have made everyone else around them safer human drivers. Alain



[Uber suspends self-driving car program after Arizona crash](#)

G. Chelous, Mar 25, "Uber Technologies Inc [UBER.UL] suspended its pilot program for driverless cars on Saturday after a vehicle equipped with the nascent technology crashed on an Arizona roadway, the ride-hailing company and local police said.

The accident, the latest involving a self-driving vehicle operated by one of several companies experimenting with autonomous vehicles, caused no serious injuries, Uber said. Even so, the company said it was grounding driverless cars involved in a pilot program in Arizona, Pittsburgh and San Francisco pending the outcome of investigation into the crash on Friday evening in Tempe..." [Read more](#) *Hmmm... Prudent move, but if the ACA performed as well as can be expected, then they need to get back out there ASAP. On the other hand, if a really good ACA could have avoided this crash, then Uber should wait until they've improved the ACA before they get back out there. Alain*



[Here's what happens when a self-driving Uber fails](#)

D. Muoio, Mar 20, "...We got a ride in Uber's self-driving Ford Fusion back in September and experienced firsthand how regularly the car disengaged. Here's what happens when the car fails and what it says about Uber's place in the autonomous space:..." [Read more](#) *Hmmmm... Progress, but still a long way to go and there is nothing in the article about how the system performs when 'the other car failed to yield'. Alain*



[The Challenges of Partially Automated Driving](#)

S. Casner, E. Hutchinson, D. Norman, May 2016, "What does increasing automation require of drivers? The role of the driver in the extreme cases of fully manual or fully autonomous driving is clear. In manual cars, people drive, and in fully autonomous cars they do not drive. But what is the role of a driver in a partially automated car in which some of the driver's responsibilities are replaced by computers, some of the time? Partial automation makes us part driver and part passenger, having to deal with the familiar problem of working together with computing systems. Even though totally autonomous driving will arrive someday, the transition will be difficult, especially during the period when the automation is both incomplete and imperfect,

requiring the human driver to maintain oversight and sometimes intervene and take closer control.²⁸

Here, we review two kinds of emerging car automation systems and discuss the challenges drivers will likely face when expected to work cooperatively with them behind the wheel. These automation systems range from those that offer informational assistance to drivers to those that can assume control of the vehicle for extended stretches of time—or even seize control of the vehicle when the driver wanders into unsafe situations. We draw on the state of the art in driving research, along with decades of previous work that examined the safety effects of automation as it was gradually introduced in the airline cockpit. We discuss a variety of challenges we expect to arise as automation assumes increasing responsibility for driving tasks once performed solely by humans. Some problems seem counterintuitive and some paradoxical, with few of them lending themselves to simple solutions. In the end we invite the reader to consider the evidence we present and decide whether drivers are ready to "go on autopilot" behind the wheel of the next generation of cars...[Read more](#) *Hmmmm... This is really good (although I take issue with their critique of Nav systems). Doomed to fail: Asking a human to be the Safety monitor on an automated system which requires anything but the most simple action (for example: 'hit the emergency brake button'). Alain*



[Nvidia is Making Moves to Dominate Self-driving Cars](#)

MrTopSStep.com, Mar 20, "It's been a busy week in the world of self-driving cars, from the Intel Corporation (INTC) acquisition of Mobileye NV (MBLY), to Uber and Alphabet Inc (GOOGL) Waymo high stakes lawsuit. But, missed in all the fuss was actual real news — the undisputed leader, Nvidia Corporation (NVDA), is making waves to further its lead in self-driving cars and turn the segment into a multi-billion dollar business...." [Read more](#) *Hmmmm... Interesting. Alain*



[Driverless transit vehicles could replace Jacksonville's current Skyway system](#)

D. Dixon, Mar 26, "... The current Skyway route runs from San Marco along the south bank across the St. Johns River and then runs mainly from the Prime F. Osborn Convention Center to just north of Hemming Park. The proposed routes for the autonomous vehicle extension of that service stretch well into Riverside's Five Points area to the west and all the way to the Sports Complex to the east. It also runs along Main Street to the north in Springfield to UF Health and well into San Marco along Hendricks Avenue. "It's about connecting those places," said Brad Thoburn, JTA vice president of planning, development and innovation...." [Read more](#) *Hmmmm... A viable opportunity for Slow Speed Driverless vehicles. Alain*



[The 10 U.S. Cities Where Self-Driving Cars Make the Most Sense](#)

K. Korosec, Mar 21, "...The top U.S. cities primed for self-driving cars is led by New Orleans, Albuquerque, Tucson, Ariz., Portland, and Omaha, according to a new index created by Inrix, a company that aggregates and analyzes traffic data collected from vehicles and highway infrastructure..." [Read more](#) *Hmmmm... I'm not sure that the INRIX metric is anywhere near the*

right one; therefore, the resulting list needs to be taken with a grain of salt. My metric would identify the cities that have the greatest potential for casual ridesharing that isn't already served by existing transit systems. Alain



[Tesla Model 3: Autopilot is most popular option among reservation holders and 58% want a battery upgrade](#)

F. Lambert, Mar 21, "Unsurprisingly, the Autopilot is most popular option among reservation holders and maybe a little more surprising, a majority of Tesla Model 3 reservations holders in the US want a battery upgrade over the base "more than 215 miles" option..." [Read more](#)
Hmmmm... Comfort & Convenience and Range Anxiety. Alain



[Self-Driving Cars' Spinning-Laser Problem](#)

T. Simonite, Mar 20, "Many components go into making a vehicle capable of driving itself, but one is proving to be more crucial and contentious than all the rest. That vital ingredient is the lidar sensor, a device that maps objects in 3-D by bouncing laser beams off its real-world surroundings....Still, many in the self-driving-car industry think lidar needs reinventing if it is to become practical enough. Velodyne is one of several companies working on designs that don't use spinning mirrors to direct their laser beams out into the world, as the devices on the road today do. Versions that steer their lasers electronically, described as solid state, should be much cheaper, smaller, and more robust, because they don't have moving parts..." [Read more](#) *Hmmmm... Interesting. Alain*



[Driverless Future? If they ever get the bugs out, autonomous cars will put a lot of human drivers out of work](#)

S. Greenhouse, Mar 21, "Self-driving (sic) vehicles will threaten the jobs of as many as five million people—workers who make a living as taxi drivers, long-haul truckers, Uber and Lyft drivers, local delivery drivers, limo chauffeurs, and even many bus drivers. ... [Read more](#)
Hmmmm... 'Self-driving' won't put anyone out of a job. These systems still need drivers for parts of each trip. 'Driverless' may eventually put all [210 million licensed drivers](#) out of work, 96% of whom don't get paid to drive. Alain



[Silicon Valley likes to "move fast and break things." What happens when it makes cars?](#)

T. Lee, Mar 20, "Mark Zuckerberg popularized the slogan "move fast and break things" to describe the breakneck pace of innovation at Facebook, and the phrase has become popular across Silicon Valley. So what happens when technology companies start to build a technology — self-driving cars — that can literally move fast and break not just things but people?

It's a crucial question not only for the major Silicon Valley companies working on self-driving technology — including Google, Uber, and Tesla — but also for regulators. The balance is tricky: If regulators are too lax, people could die from malfunctioning self-driving vehicles. But overregulation could delay the introduction of cars that drive themselves much better than a human driver, costing many more lives in the long run..." [Read more](#) *Hmmmm... This is the basic quandary. Alain*

Some other thoughts that deserve your attention

RODNEY BROOKS

[Unexpected Consequences of Self Driving Cars](#)

R. Brooks, Jan 12, "...In this post I will explore two possible consequences of having self driving cars, two consequences that I have not seen being discussed, while various car companies, non-traditional players, and startups debate what level of autonomy we might expect in our cars and when. These potential consequences are self-driving cars as social outcasts and anti-social behavior of owners. ..." [Read more](#) *Hmmmm... Interesting. The social interaction will be different. How do we socially interact with elevators today or even our own computers/smartPhones???* Alain

[On the More Technical Side](#)

<http://orfe.princeton.edu/~alaink/SmartDrivingCars/Papers/>

Half-baked stuff that probably doesn't deserve your time

**The
New York
Times**

[Self-Driving Cars Could Be Boon for Aged, After Initial Hurdles](#)

M. Chapman, Mar 23, "Single, childless and 68, Steven Gold has begun to think about future mobility and independence. Although in good health, he can foresee a time when he won't be a **confident** driver, if he can drive at all. While he hopes to continue to live in his suburban Detroit home, he wonders how he will be able to get to places like his doctor's office and the supermarket if his driving becomes impaired.

For Mr. Gold and other older adults, self-driving cars might be a solution...." [Read more](#) *Hmmmm... This is an irresponsible suggestion. 'Self-driving' cars only relieve the driver from the task of driving some of the time in some places. The rest of the time in the rest of the places a 'confident' driver is required! So while self-driving might offer some comfort and convenience to 'confident' older drivers, they are NOT the mobility solution for 'non-confident' older drivers. Nor are they the solution for the young, the visually impaired or the inebriated! Mobility for these folks requires **Driverless**, period. Alain*