Inside AV Developers’ Incident Response Plans

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What’s an AV?

- **Level 0**: no automation, driver in complete control
- **Level 1**: driver assistance
  - Cruise control or lane position, driver monitors at all times
- **Level 2**: occasional self-driving
  - Control both speed and lane position in limited situations; driver monitors at all times

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- **Level 3**: limited self-driving in some situations, like Interstates
  - Vehicle in full control, informs when driver must take control
- **Level 4**: full self-driving under certain conditions: ODD
  - Vehicle in full control for entire trip, such as shuttles
- **Level 5**: full self-driving at all times
AV status 2019

- Level 1 available to consumers for many years
  - Adaptive cruise control, lane-keeping assistance
- Level 2 available to consumers now
  - BMW, GM, Mercedes, Tesla, VW, ...
- Level 4 coming soon; Level 5 eventually; Level 3 uncertain
  - Waymo (Google) test fleet: 10 million miles as of October 2018; another million miles every 40 days
  - 62 companies with AV testing permits in CA as of 1/28/19
  - By 2020: available (perhaps) from Audi, BMW, Ford, GM, Mercedes, Tesla, Toyota, Volvo, VW; Delphi, FCA, JLR, Lyft, NuTonomy, Uber, Waymo, ...
  - AV shuttles operating in Las Vegas NV, Fort Myers FL, U of Michigan; many pilot tests
AV travel projections

T. Litman, www.vtpi.org
The big takeaway

- AVs and DVs (driver-controlled vehicles) will share the road for a long time – perhaps forever
What can cause an AV crash?

- AV driver behavior
- AV interactions with DVs
- AV interactions with other road users
- AV system failure

136 AV crashes in CA as of March 12, 2019
most were low speed, DV at fault
most, perhaps all, involved test vehicles

3 AV fatal crashes - AZ, CA, FL
What are AV developers’ incident response plans?

- Nat Beuse, Uber
- Matt Schwall, Waymo
- Panel discussion
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