

Week 9

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QT

Facts

- Google Waymo
 - Detects pedestrians, cyclists, vehicles, road work, and more
 - Detection radius of two football fields
 - Can predict movement of other bodies
 - Merging traffic such as bikes or cars on the freeway
 - Relies on two million miles of real world experience
 - Defensive driving
 - E.g. stay out of blind spots and nudge away from large vehicles
- First crash of a tesla model s that was operating in auto pilot mode.
 - Note tesla's auto pilot mode does not imply an AI fully capable of driving a car.
 - * Auto pilot is merely a suite of driver assist features, such as
 - auto lane change
 - Self park
 - Traffic aware cruise control
 - Summon to and from garage/parking spot
 - No recalls were ordered by the US National Highway Traffic Safety Administration since it placed responsibility for the accident primarily on the driver
 - * The driver was watching a movie at the time of the accident
 - * The truck which the tesla collided with was visible within 7 seconds of the crash
 - * The driver did nothing to avoid the crash, neither break nor attempt to steer out of the way
- Insurance Rates
 - Insurance company, Root
 - Noticed that Tesla's crash rate reduced by 40% after auto pilot was introduced
 - Rolling out self-driving car discount first to Tesla drivers, eventually to all self-driving cars
 - Tracks driving habits from the driver's smart phone
 - Can detect autosteer-eligible highway miles

Perspectives

- Self driving cars will reduce traffic accidents
 - A software fully dedicated to driving is less prone to accidents than a human and to errors in general
- Nothing is 100% accident proof. Accidents, deaths even, will happen. Even if at a substantially smaller rate, the accidents that do occur will be very controversial as it will not be certain who will be at fault, the driver or the manufacturer of the car.

Precedent

- Vaccines
 - The government protects vaccination from lawsuits since it is necessary for a healthy society. Compare previously high mortality rates from unvaccinated diseases to the high mortality rates of car-related accidents.

Conceptual

- With tesla's auto pilot features, the driver is still responsible for the actions of the vehicle. The definition of a self-driving car could be limited to that of a vehicle which has features similar to that of tesla's autopilot. This would limit the amount of controversial accidents, but it may not fully satisfy insurance companies who would otherwise lower interest rates for cars that were "more" self-driving.
- A self-driving car could be defined as one which can perform not only all the functions a driver would perform on a regular basis but also those which he or she would perform only in novel situations, such as avoiding an accident that occurs right in the moment. This would satisfy the insurance companies, but would not solve all of the ethical issues facing self-driving cars currently.

Scope

- If auto pilot features were the requirement for a car to be considered self-driving, then tesla already has self-driving cars and there are not so many ethical issues
- Otherwise, there are many ethical issues such as who is at fault during an accident (driver or manufacturer).

Assumptions

- I am all for automation.
- I don't like sitting in front of a steering wheel for hours.
- I don't know what it feels like to know someone hurt by an automated vehicle, such as a tesla.

Laws

- There is no legislation surrounding self-driving cars yet
- But there is much expectation that there will be before the first self-driving car has even been commercialized.

Codes of Ethics

- The first moral imperative of the ACM Code of Ethics (Association for Computing Machinery) are applicable here. The first one says to contribute to society and human well-being. Self-driving cars would arguably satisfy this altogether. Productivity would increase and traffic-related accidents would go down significantly.
- The second one is a little more questionable: Avoid harm to others. To follow this to the letter would likely imply forgetting the whole self-driving car idea, obviously. However, since traffic-related accidents would go down and since this is placed lower than the first moral imperative, it might be overruled.

Notes

The persistence skill is interesting because it reminds me of a particular software design strategy, Scrum. The traditional strategy, waterfall, involves all the design and planning happening up front often taking months or even years before implementation actually begins. Once implementation begins stakeholders tend to leave and come back later only to change specifications or once the time comes to integrate the system several months or years into the implementation phase.

This often leads to a huge pain as all of the specification changes usually haven't been documented, and integration is generally a painful process especially if several years of implementation carried without any prior integration. Scrum embraces the philosophy of, "If something hurts, do it more." It's sort of like the idea of doing laundry or dishes more often so that there are less dishes and clothes to deal with. Scrum advocates tiny increments not lasting more than 1 to 2 months usually. At the beginning of an increment there is always a planning phase and at the end a review phase, both phases involving the stakeholders usually.

The increment almost always delivers a potentially releasable product meaning that with Scrum the team is incrementing incredibly often. Compare the 1 to 2 month Scrum increment to the implementation phase of waterfall that may last years without much involvement of the stakeholders. To me, Scrum is all about persistence making it as easy as possible to adapt to change. I use Scrum in my team at work every day and our client is fully involved in our development process even though they are not technical.

The principles skill sort of reminds me of a tool that Scrum provides called story pointing. A story is a user-oriented description of a particular feature. It does not usually have any implementation details captured. Pointing a story is something the development team does to ballpark the effort required to implement the described feature. I believe it ties into the principles skill, because several pointed stories together provides a picture of how long it would take for the team to complete all of them. Over time, the team can track how many points they consume in an increment so that empirically they can track the improvement of their velocity.

According to a couple of the articles we had to read, there are people who value self driving cars which are willing to sacrifice the driver to save pedestrians. Yet, those same people wouldn't want to ride in one of those cars. Of course not! In fact, those same people would be less likely to buy

a self-driving car if regulation required that driverless cars behave exactly in that way?? This kind of frustrates me.