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Self-driving car with AI

Artificial intelligence has become a precious tool in the industry, especially in companies that use autonomous systems.
In order to understand how it works you have to go back to its origins : the idea of implementing algorithms that reacts just like human brains in better.
Concerning Self-drinving car, you have differents steps :
First things first, data need to be collected from the surrounding environment so as to be processed or not, depending of its utility.
This is an important choice because calculation time from detecting algorithms increase with the amount of data to process and it get easily exponential.
To do that, numerous sensors, radars and cameras are set up on vehicules.

In order to perceive the environment, self-driving cars use a combinaison of three sensors and image technologies: radar, lidar, and cameras.
Radio Detection and Ranging (RADAR) is used by sending out radio waves that bounce back onto obstacles and are detected, Light Imaging Detection and Ranging (LIDAR) uses laser light pulses to scan the near environment and create a 3D model , and finally Camera are used to see in high resolution.

When the autonomous vehicle generates data from its surrounding environment, a repetitive loop, named « Perception Action Cycle », is created and feed the data into the intelligent agent, who allow him to to make decisions and so enable the self-driving car to execute precise actions in that same environment, such as detecting objects on the road, maneuvering through the trafic without human intervention and get right to the final destination safely on its own.
What make self-driving car algorithms so hard to develop is that ,the world we are living in, is not linear, unperfect and unpredictable. Indeed, as Elon Musk said, if roads had straight lines perfectly white, it would be « a piece of cake », but the world isn’t that simple, and we have to take account for differences between panels, sidewalks, and so on.
To have work on a project aiming to detect basics road panels from a photo, I couln’t agree more with Elon Musk. With a small database of little picture focused on panels, times of calculation were

huge, which is not surprising because It’s image processing, but it made me realise how complexe is artificial intelligence with images.

From a political point of view, artificial intelligence brings the question of responsability concerning eventual unintended actions from a machine. Currently It’s the nearest human who get the blame. However people, such as Madeleine Clare Elish, a researcher at Data & Society and a cultural anthropologist by training, are working on it. She shows us that if we take a look on how we treated engine liability during accidents when an intelligent system is involve, we notice that everytime, human errors are presents, mainly due to a lack of experience.

But even if such accidents could happen, we can see more potentials benefits :
If self-driving car are well builted, a safety system can ensure a trumendous reduce of accidents.
For people who comute a lot during their days, it will enable them not to waste their time during long hours at driving.
Furthermore, by preprocessing the system to respect speedlimit, it will reduce speedlimit tickets and governments could even higher speedlimit due to the increased of safety from these systems.

553 words

https://medium.com/datadriveninvestor/artificial-intelligence-and-autonomous-vehicles-ae877feb6cd2

https://www.youtube.com/watch?v=aHdY1lBxNtc

https://www.thezebra.com/how-do-self-driving-cars-work/