

**Thème 3 : une histoire du vivant**  
L'intelligence artificielle

**'Self-driving' cars are still a long way off.**

**What do we mean by 'self-driving'? Compare machine learning to the brain.**

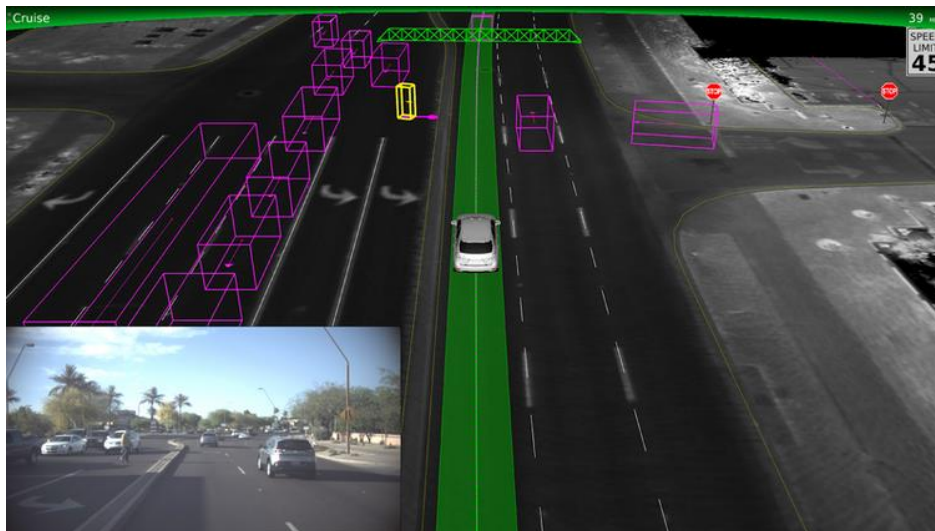
**Discuss the impacts and potential benefits of autonomous vehicles. Will autonomous cars have the same life-saving instincts as human drivers?**

Tesla cars include an "autopilot" feature which monitors surrounding traffic and lane\* markings, and the company is currently rolling out a more advanced "full self-driving" system which promises automatic navigation, stopping at traffic lights, and more.

**Document - Machine learning and self-driving software**

The self-driving software is a key differentiating feature of highly automated vehicles. The software is based on machine learning algorithms and deep learning neural networks that include millions of virtual neurons that mimic the human brain. The neural nets do not include any explicit "if X happens, then do Y" programming. Rather, they are trained to recognise and classify objects using examples of millions of videos and images from real-world driving conditions. The more diverse and representative the data, the better they get at recognising and responding to different situations. Training neural nets is something like holding a child's hand when crossing the road and teaching them to learn through constant experience, replication and patience.

**How a self-driving car sees the world.**



Waymo

While these algorithms can detect and classify objects very accurately, they still can't mimic the intricate complexities of driving. Autonomous vehicles not only need to detect and recognise humans and other objects, but must also interact with, understand and react to how these things behave. They also need to know what to do in unfamiliar circumstances. Without a large set of examples for all possible driving scenarios, the task of managing the unexpected will be relatively resistant to deep learning and training.

<https://theconversation.com/self-driving-cars-are-still-a-long-way-off-here-are-three-reasons-why-159234>

\*voie

## Éléments de discussion

Self-driving cars combine a variety of sensors to perceive their surroundings, such as radar, lidar, sonar, GPS, odometry and inertial measurement units.

Thus, AVs require not only software development to improve the technology used, but also experience driving on roads in order to develop greater familiarity with a wide variety of scenarios and obstacles.

An autonomous car is a vehicle capable of sensing its environment and operating without human involvement.

A human passenger is not required to take control of the vehicle at any time, nor is a human passenger required to be present in the vehicle at all.

/ neurones

- Collectes de données
- Apprentissages -entraînement
- Tests
- Utilisation du modèle
- Utilisation de plusieurs paramètres