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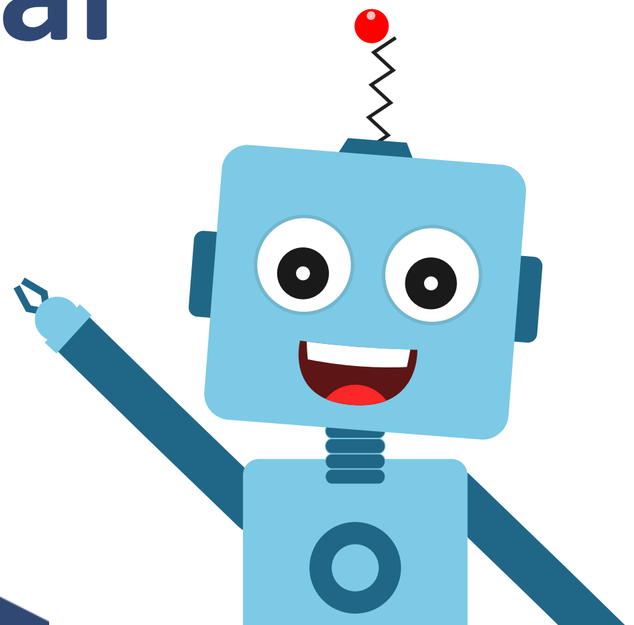
AI Based Self Driving Car Part-2

Session 15



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Self Driving Car

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- Self-driving cars are vehicles that can sense their environment and navigating without human input. They combine a variety of sensors such as cameras, lidar, radar, and GPS with advanced control systems that use artificial intelligence (AI) to interpret data and make decisions. Self-driving cars are seen as having potential to revolutionize personal and commercial transportation, reduce traffic accidents, and offer mobility to those who cannot drive themselves. They can also reduce congestion and pollution, and provide access to areas where public transit is unavailable.
- Self-driving cars, also known as autonomous or “driverless” vehicles, are vehicles that can sense their environment and navigating without human input. Self-driving cars combine a variety of sensors to perceive their surroundings, such as radar, lidar, sonar, GPS, odometry, and computer vision. Advanced control systems interpret sensory information to identify appropriate navigation paths, as well as obstacles and relevant signage.
- Self-driving cars have the potential to improve road safety, as approximately 90% of car accidents are caused by human error. Automated safety features, such as automated emergency braking, are already being incorporated into vehicles, and self-driving cars could further reduce the number of accidents. Self-driving cars could also improve efficiency by reducing congestion and allowing for smoother operation on the roads.

Self Driving Car

- In addition to safety and efficiency, self-driving cars could provide increased mobility and convenience for passengers. People with disabilities who are unable to drive or operate a vehicle could benefit from self-driving cars, as they would give them the freedom to travel independently. Self-driving cars could also reduce the need for private car ownership, as people could use shared, on-demand autonomous vehicles for their transportation needs.

Application of Self-Driving car

Application: Self Driving Car

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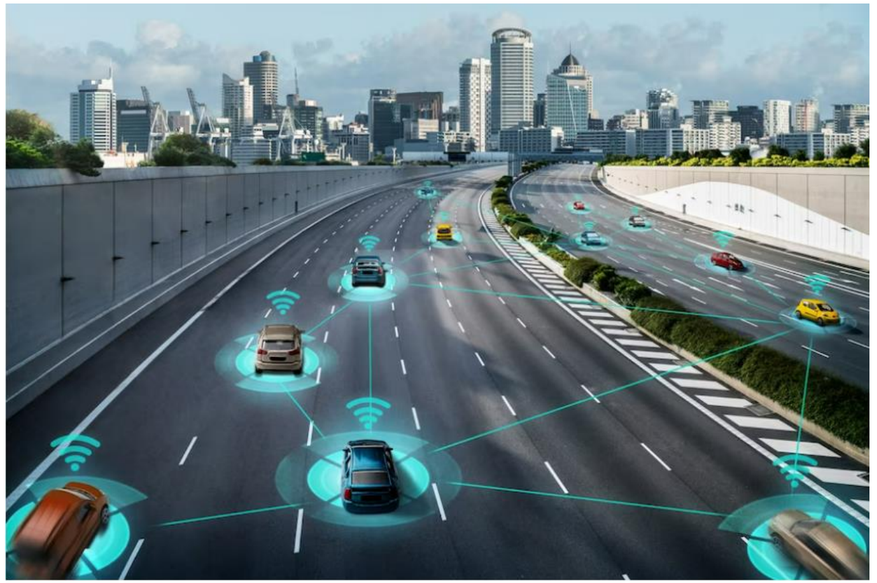
The future of driving belongs to self-driving cars. Here are some of their many useful applications:

1. Self-driving cars are used in waste collection bots, delivery bots, farming vehicles like tractors, etc.
2. They use sensors to note the vehicle's location, altitude, rotation, etc. which help to drive on uneven roads.
3. Self-driving cars are used to help while driving the car in reverse.
4. They are also used to explore new areas like Mars and other planets.



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Activity: Sign Detection With AI

Sign Detection With AI

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In this lesson, we are going to learn exactly that! Then, we are also going to make our own self-driving car using PictoBlox and Quarky.

- We would be using an extension **Recognition Cards** in this activity, so we would also be writing card-related functions and for writing those functions we need to define an object card in the same manner as we did for the sprite. Here we use a variable name **recocards**. We can use any **variable** name.
- Next, we want to **initialize the card recognizer**. Our first step is to turn the **video on**. For that, we are using the function **video([1],[2])**. Here [1] represents the video state and [2] represents the transparency.
- Now **enable a bounding box** to detect a particular car.
- Setting the threshold will tell us how **sure the machine** is of the object it has detected.

Sign Detection With AI

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- Now, we will be writing the while loop by providing the condition as **while True**. This implies that the loop should keep on executing until the given **boolean** condition is evaluated to False. The loop shall run forever in this condition.
- Now, to analyse from the camera, we will use the function **analysecamera()**.
- Next, we will create a variable **signal** to assign the **name of the class**.
- We will ask Tobi to say the class detected card.

Sign Detection With AI(Final code)

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```
sprite = Sprite('Tobi')
quarky = Quarky()
recocards = RecognitionCards()

recocards.video("on")
recocards.enablebox()
recocards.setthreshold(0.8)

while True:
  recocards.analysecamera()
  signal = recocards.classname()
  sprite.say(signal + ' detected')
```

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