

CUTTING-EDGE TECHNOLOGY

SELF-DRIVING CARS



EPIC

EPIC

Action and adventure collide in **EPIC**.
Plunge into a universe of powerful
beasts, hair-raising tales, and high-speed
excitement. Astonishing explorations await.
Can you handle it?

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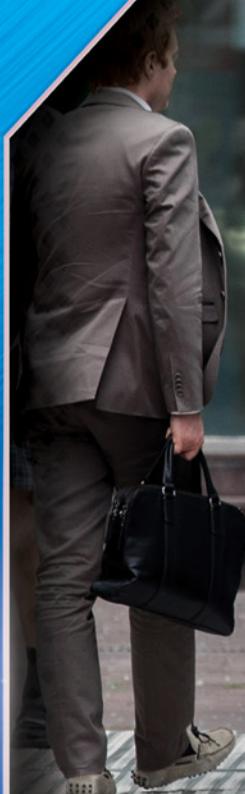
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RUNNING LATE

You are late for your flight! How will you make it on time?

A driverless van pulls up beside you. It zips across the airport. You make it to your flight. This self-driving vehicle saved the day!



COMPANY CARS

Most people cannot buy self-driving cars yet. But companies can. The cars are used by airports and farms!



WHAT ARE SELF-DRIVING CARS?

Self-driving cars have no drivers.
Computers guide them on their **routes**.



EARLY USERS



farmers



factories



airports



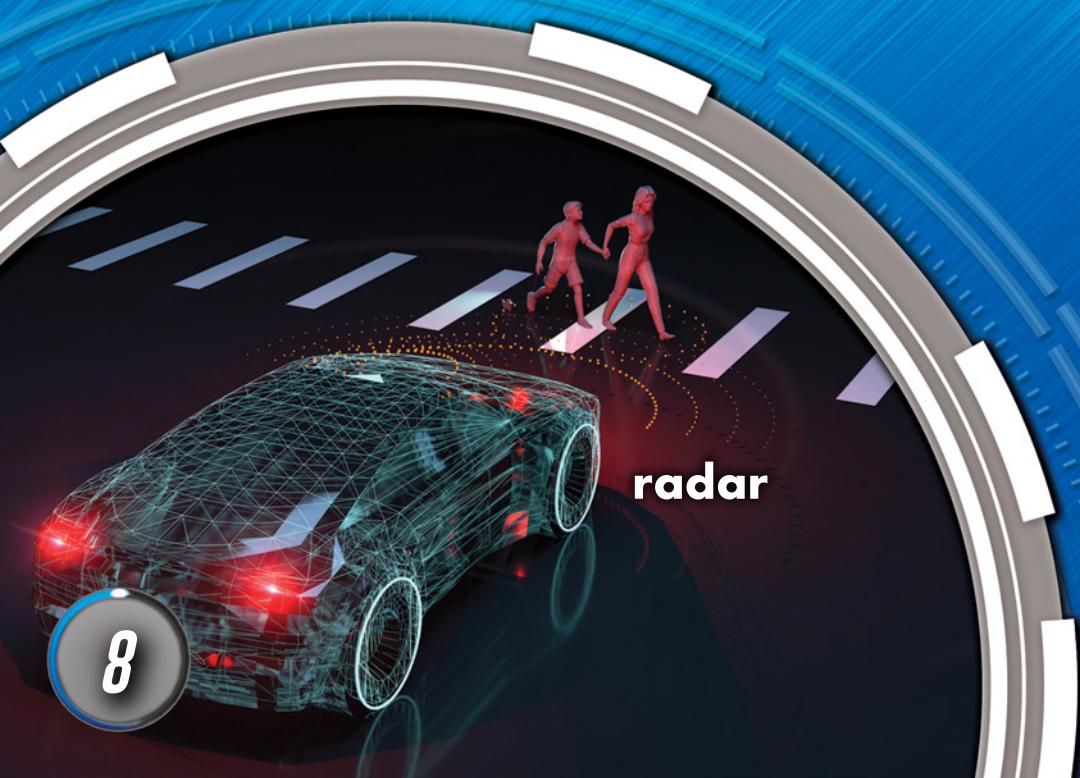
taxis services

True self-driving cars are not yet on roads. But most new cars have some self-driving features. Some can even park on their own!

HOW THEY WORK

Sensors help self-driving cars drive on their own.

Lidar looks for lane markings and distances. **Radar** looks for nearby people and cars.



LIDAR AND RADAR

Lidar uses lasers. Radar uses invisible waves. Both measure the distance to an object!

lidar sensor

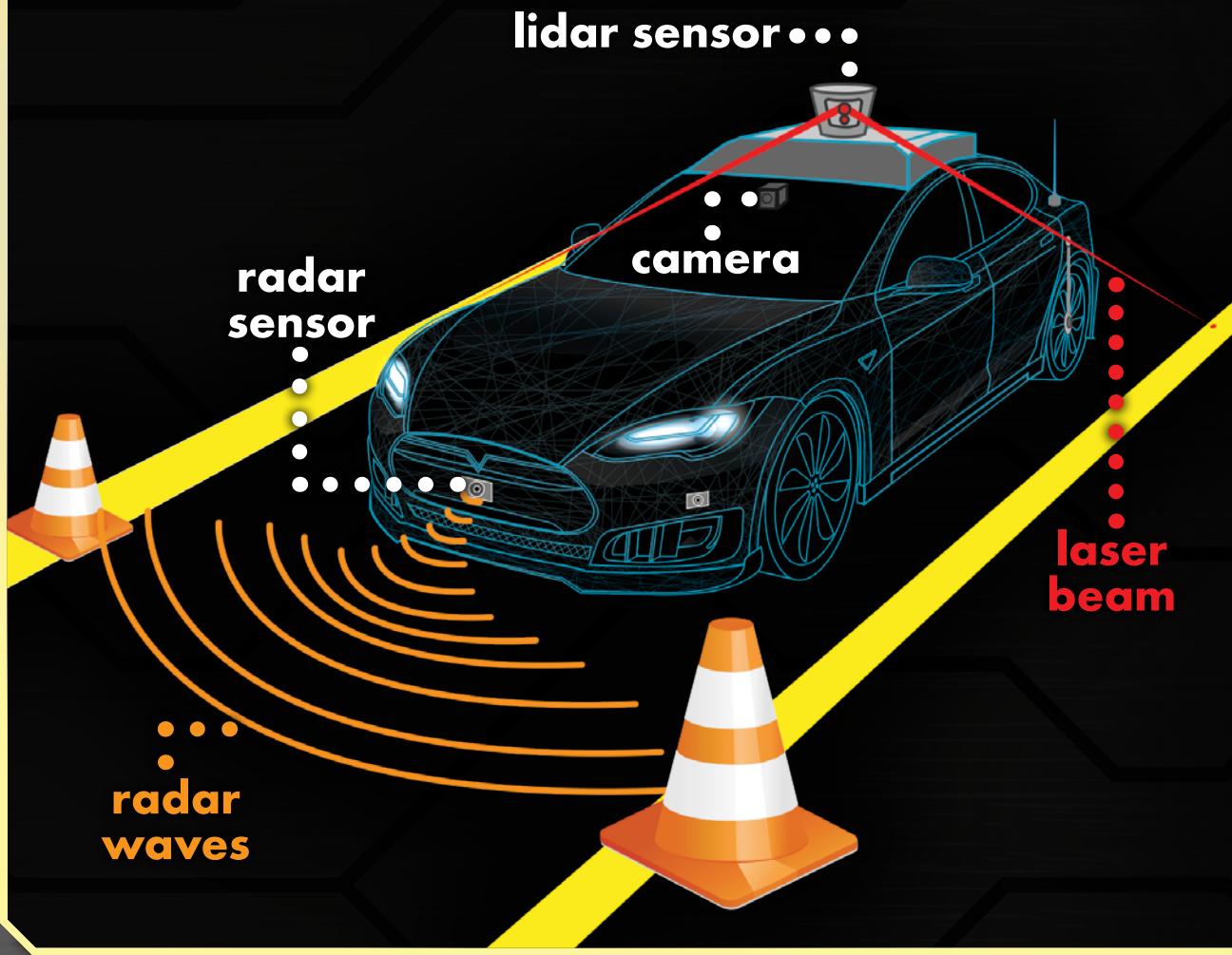


Cameras also help see surroundings. They watch for **obstacles**. They read traffic lights and signs.

The sensors and cameras send information to a computer in the car. The computer has **software** that makes it drive like a person!



HOW SELF-DRIVING CARS WORK



HISTORY

The first cars with computers were released in the 1960s.

That **decade** also brought the first **remote-controlled** cars. The Stanford Cart did not have a driver on board!

**1968 Volkswagen Type 3,
an early car with a computer**

⋮





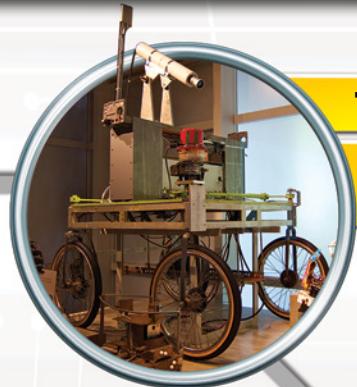
SLOW AND STEADY

The Stanford Cart was not fast. It moved less than 1 mile (2 kilometers) per hour!

Stanford Cart



SELF-DRIVING CAR TIMELINE



1960s

Researchers experiment with the Stanford Cart

1994

VaMP and VITA-2 driverless cars are introduced in Paris



1980s

Ernst Dickmanns leads the creation of the VaMoRs driverless van



Early self-driving vehicles could not drive in traffic. They were often too slow. They could not see all obstacles.

2015

Release of Tesla Autopilot lets Tesla cars steer and brake on their own



2013

New Audi A7 cars can park on their own



2017

Audi A8 Traffic Jam Pilot is released



2005

A self-driving car named Stanley wins the DARPA Grand Challenge



But in the 1990s, the VaMP and VITA-2 were introduced. These self-driving cars used cameras to drive in traffic!

The early 2000s brought more advances. The DARPA Grand Challenge offered a prize for self-driving cars. Many were created!

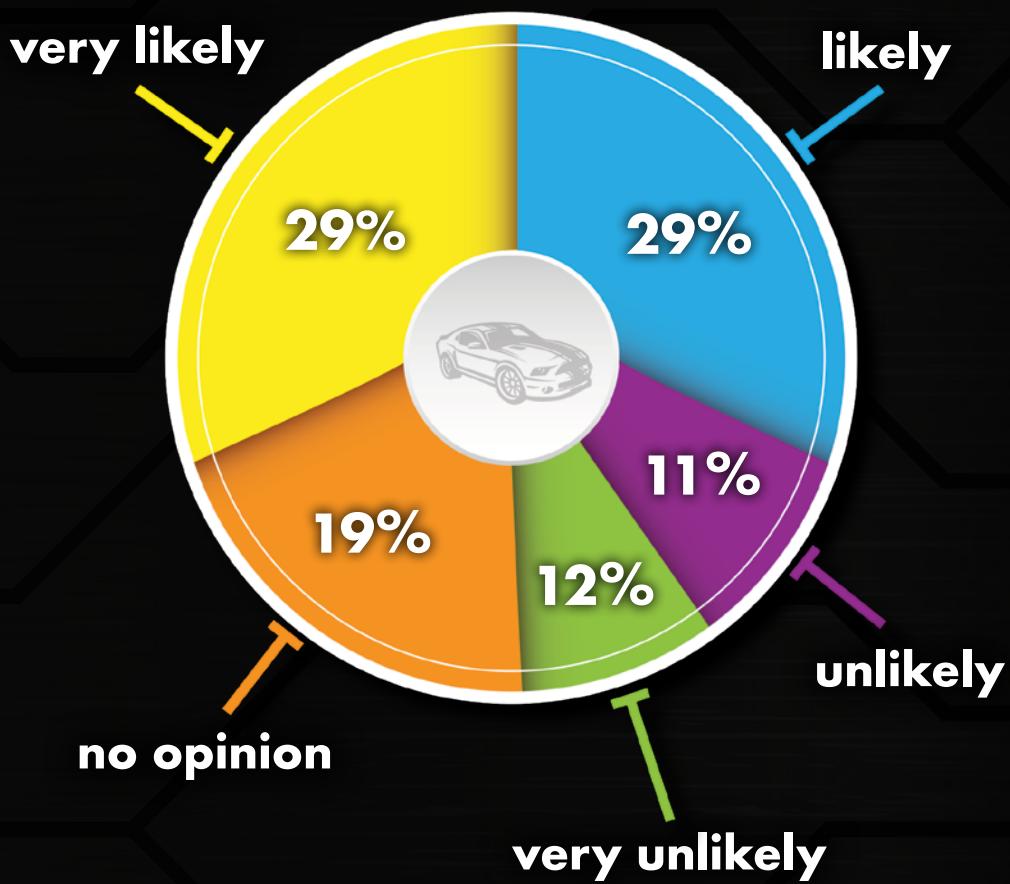
In 2013, a new Audi A7 was released. It could park on its own. By 2015, Tesla cars came with **autopilot**!

DARPA Grand Challenge



GO FOR A RIDE

29 percent of people said they were very likely to ride in a self-driving car. Would you?



TECHNOLOGY OF TOMORROW

Self-driving cars are not yet available to **consumers**. But they are being tested.

They may make roads safer. They could cut down on traffic jams. They will help more people get around!



TRAFFIC JAM PILOT

In 2017, the Audi A8 was released with Traffic Jam Pilot. This let the car drive on its own at speeds up to 37 miles (60 kilometers) per hour!

Audi A8 •••



Researchers must find ways to make self-driving cars safer. They must make sensors that can see in all weather. They must also protect the cars against **hackers**.

Self-driving cars may one day take over the roads!



PROS AND CONS

Pros



fewer crashes



fewer traffic jams



help people who cannot drive

Cons



could be hacked



human drivers could lose jobs



less privacy

GLOSSARY

autopilot—a software that allows a vehicle to move without a driver

consumers—people who buy things

decade—a period of ten years

hackers—people who illegally gain access to computers, often with the purpose of causing harm

lidar—a device that sends out lasers to measure distance

obstacles—things that get in the way of the movements of other things

radar—a device that sends out invisible waves to measure distance

remote-controlled—steered by a device that sends signals to the vehicle

routes—ways taken to get to other places

sensors—small devices that tell computers where something is

software—computer programs that do specific tasks

TO LEARN MORE

AT THE LIBRARY

Chandler, Matt. *The Tech Behind Self-Driving Cars*. North Mankato, Minn.: Capstone Press, 2020.

Chow-Miller, Ian. *How Self-Driving Cars Work*. New York, N.Y.: Cavendish Square, 2019.

Sonnad, Haydn. *Self-Driving Cars*. Ann Arbor, Mich.: Cherry Lake Publishing, 2019.

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