Self-driving Cars

Josh Howard
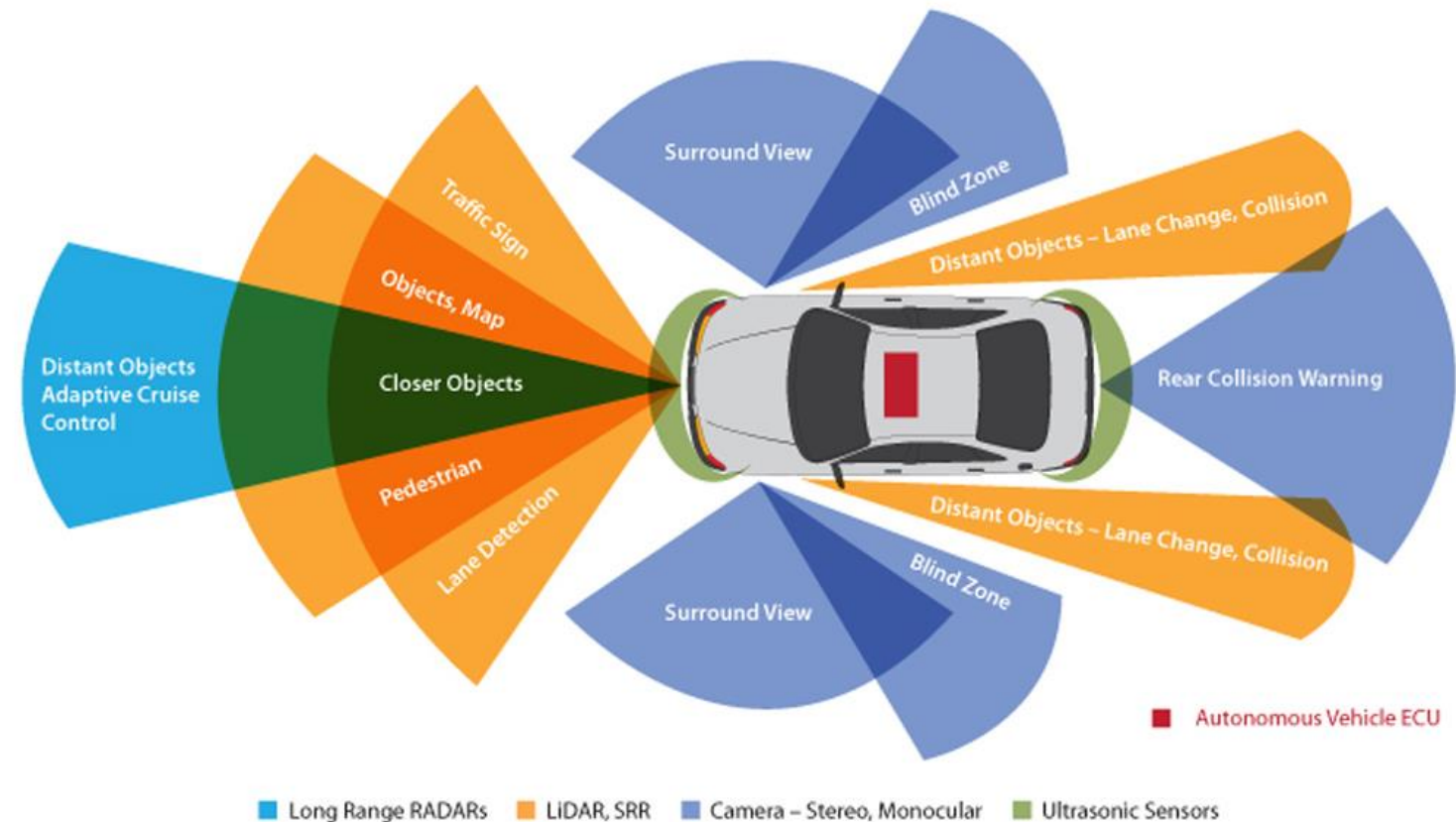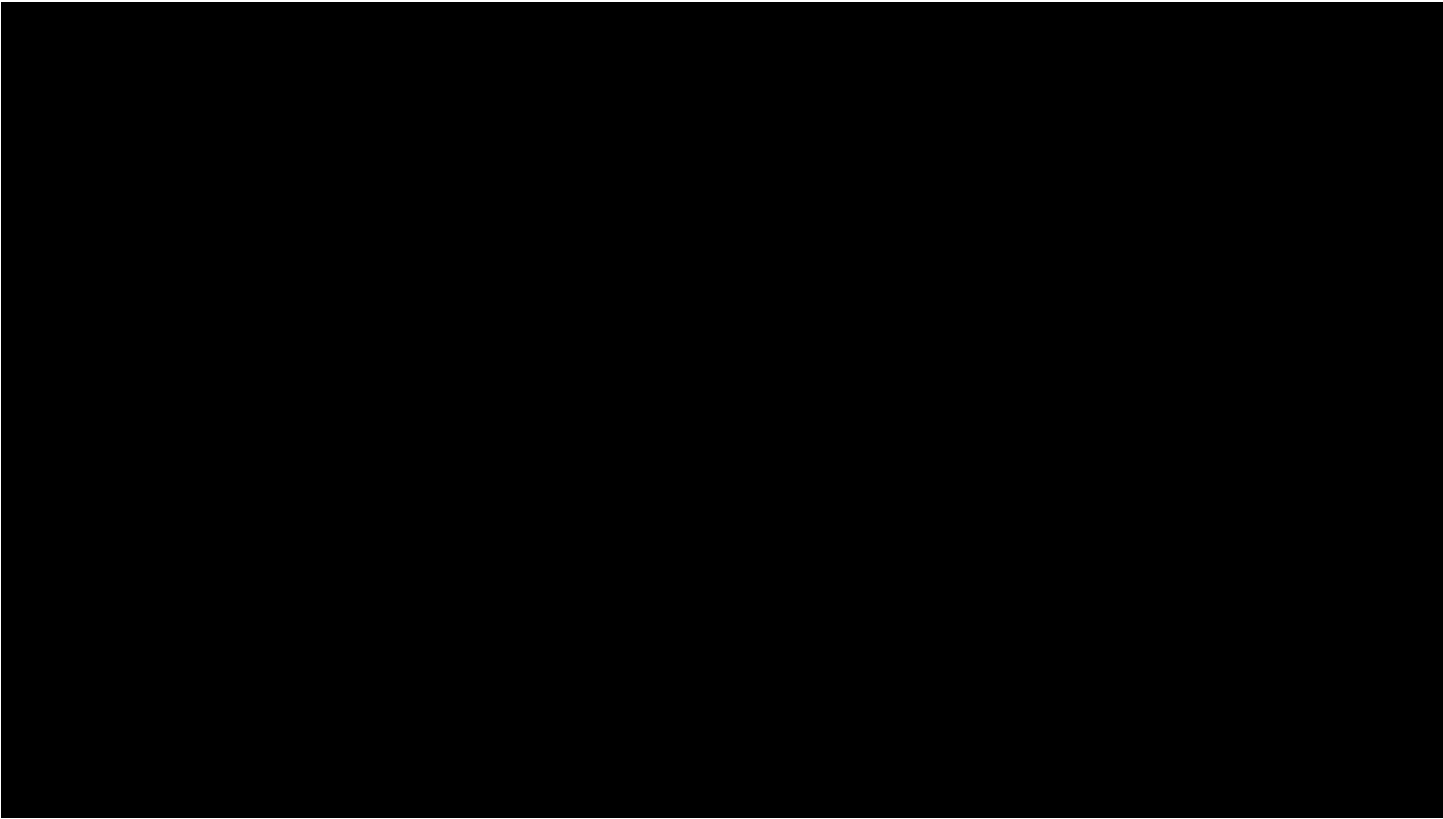
What are self driving cars?

► Levels of automation

- Level 0 – No automation
- Level 1 – Driver Assistance
- Level 2 - Partial Automation
- Level 3 - Conditional Automation
- Level 4 - High Automation
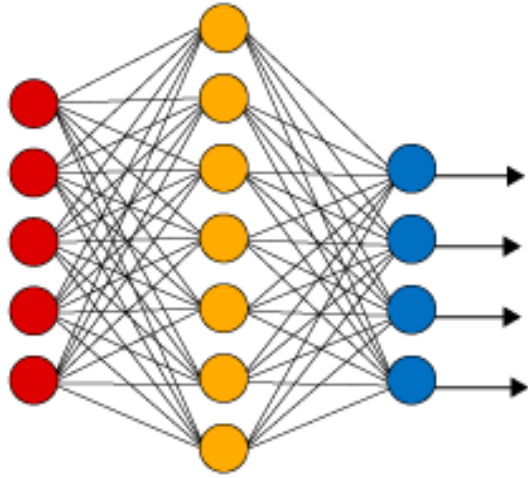- Level 5 - Full Automation

How do they work?

- Radar – Calculate distance
- Cameras – View the area around the car
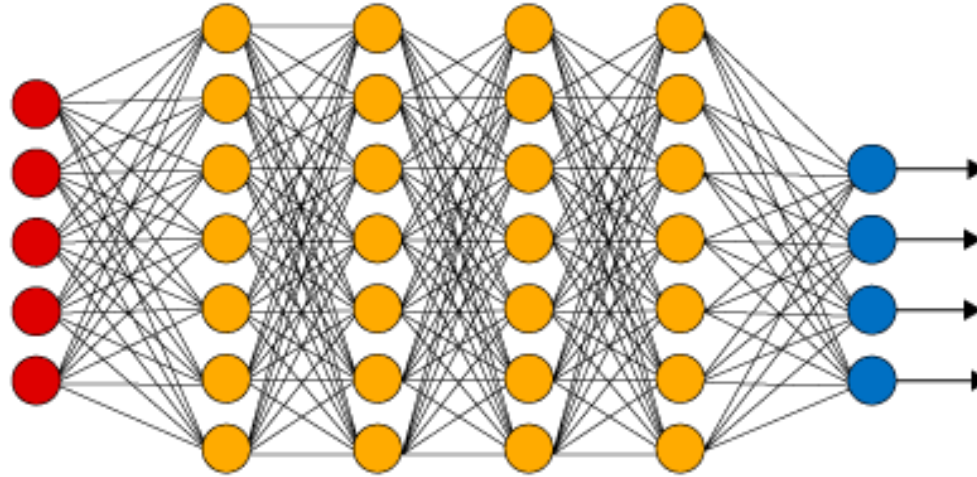- LiDAR – Builds a map of the world around you
- Sensors

Surround View
Blind Zone
Distant Objects – Lane Change, Collision
Traffic Sign
Objects, Map
Distant Objects Adaptive Cruise Control
Closer Objects
Rear Collision Warning
Pedestrian
Lane Detection
Distant Objects – Lane Change, Collision
Blind Zone
Surround View
Autonomous Vehicle ECU

Long Range RADARs LiDAR, SRR Camera – Stereo, Monocular Ultrasonic Sensors

What does this look like to a car?
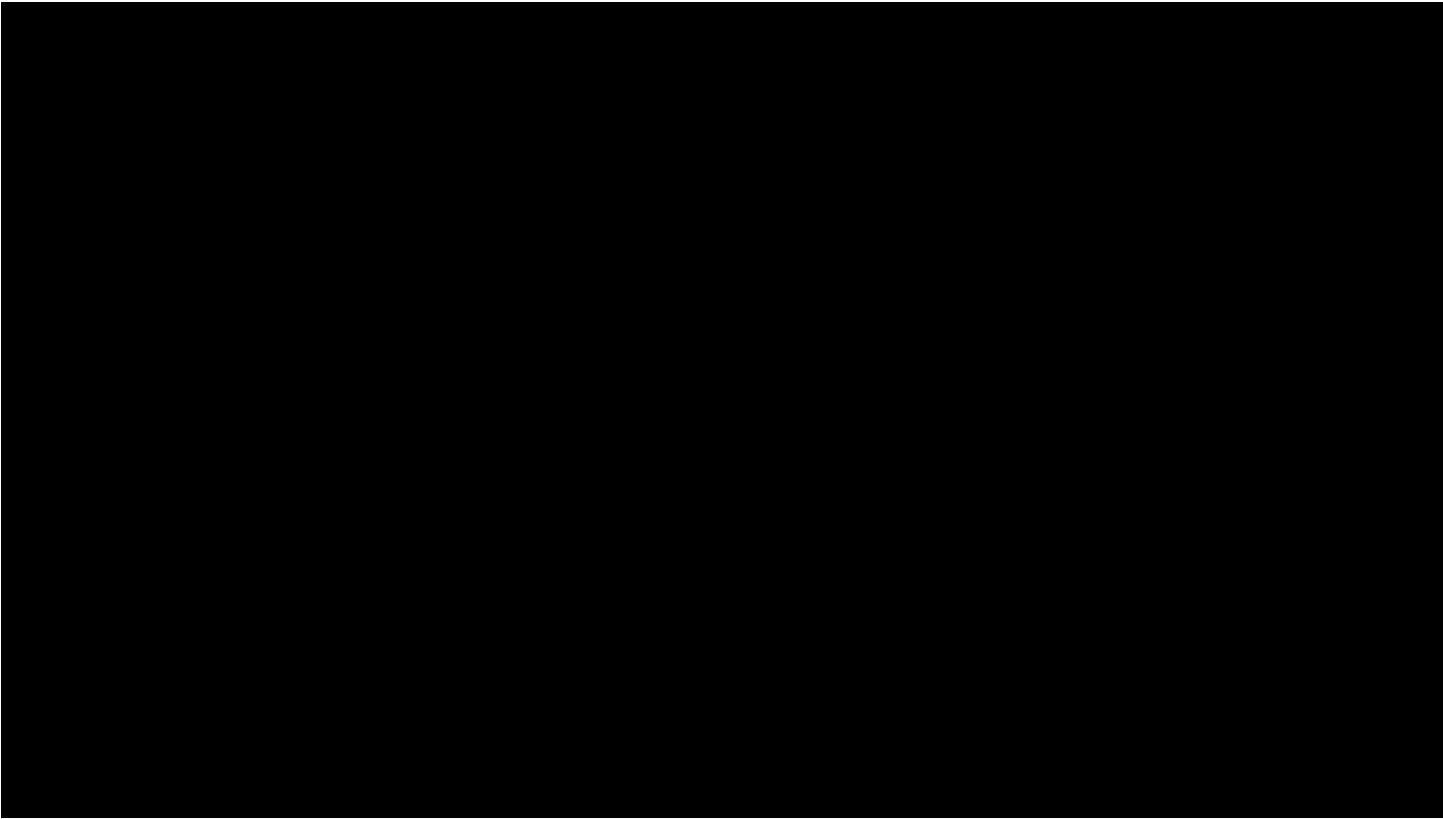
Simple Neural Network

Deep Learning Neural Network

🔴 Input Layer   🟠 Hidden Layer   🔵 Output Layer

How is this achieved?

How is this tested and does it work?

References

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