General

1. https://en.wikipedia.org/wiki/Autonomous_car
2. Mapping a technology revolution / advanced driver-assistance systems (ADAS)—including emergency braking, backup cameras, adaptive cruise control, and self-parking systems http://www.mckinsey.com/industries/automotive-and-assembly/our-insights/self-driving-car-technology-when-will-the-robots-hit-the-road
3. Self-driving car technology: When will the robots hit the road?
   By Kersten Heineke, Philipp Kampshoff, Armen Mkrtchyan, and Emily Shao
   Bron: http://www.mckinsey.com/industries/automotive-and-assembly/our-insights/self-driving-car-technology-when-will-the-robots-hit-the-road
4. Map-Based Precision Vehicle Localization in Urban Environments (Lidar , GPS, IMU, wheel odometry)
   Bron: http://driving.stanford.edu/papers/RSS2007.pdf
5. Using Artificial Intelligence to create a low cost self-driving car
   Bron:

http://budisteanu.net/Download/ISEF%202%20Autonomous%20car%20Doc%20particle.pdf

6. End to End Learning for Self-Driving Cars
   Bron:
7. Using Artificial Intelligence to create a low cost self-driving car
   Bron:
   http://budisteanu.net/Download/ISEF%202%20Autonomous%20car%20Doc%20particle.pdf

8. PDF - April 2016 - End to End Learning for Self-Driving Cars
   Bron: (https://arxiv.org/pdf/1604.07316.pdf)
9. Obstacle Detection for Self-Driving Cars Using Only Monocular Cameras and Wheel Odometry
   Bron: October 2015 -Obstacle Detection for Self-Driving Cars Using Only Monocular **(**http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7354095)

Technologies

1. Bayesian Simultaneous localization and mapping (SLAM) algorithms

   Bron: PDF - September 2016 Simultaneous Localization and Mapping (SLAM) Part II

2. Convolutional Neural Networks (CNN) deeplearning object detection
   Bron: https://devblogs.nvidia.com/parallelforall/deep-learning-self-driving-cars/
3. December 2016 - Accurate object distance estimation based on frequency-domain analysis with a stereo camera
   Bron: PDF - December 2016 - Accurate object distance estimation based on frequency-domain analysis with a stereo camera

Sensors

1. **Lidar** (also called **LIDAR**, **LiDAR**, and **LADAR**) is a surveying method that measures distance to a target by illuminating that target with a pulsed laser light, and measuring the reflected pulses with a sensor. Differences in laser return times and wavelengths can then be used to make digital 3D-representations of the target

Bron: https://en.wikipedia.org/wiki/Lidar
Bron: https://medium.com/waymo/introducing-waymos-suite-of-custom-built-self-driving-hardware-c47d1714563

2. **Global Positioning System** (**GPS**) is a space-based radionavigation system owned by the United States government and operated by the United States Air Force. It is a global navigation satellite system that provides geolocation and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.

Bron: https://en.wikipedia.org/wiki/Global_Positioning_System

3. **Monovision cameras** cameras are very simple devices and the video feed is usually used for understanding basic surroundings—typically fixed infrastructure like lane markings, speed limit signs, etc. The hardware itself is pretty simple and cheap. Automotive monovision cameras are less sophisticated and have lower pixel density than cameras on smartphones. However, the challenge is on the software side, which involves fast image processing to recognize common roadside infrastructure from a simple black and white relatively low-resolution image.

Bron: https://orfe.princeton.edu/~alaink/SmartDrivingCars/PDFs/Nov2013MORGAN-STANLEY-BLUE-PAPER-AUTONOMOUS-CARS%EF%BC%9A-SELF-DRIVING-THE-NEW-AUTO-INDUSTRY-PARADIGM.pdf

4.

Open Source

1. Open-source software for urban self-driving mobility / Based on Caffe (deep learning)
   Bron: https://github.com/CPFL/Autoware
2. The Udacity open source self-driving car project
   Bron: https://github.com/udacity/self-driving-car
3. Open Source Self Driving Car Initiative
   Bron: https://github.com/OSSDC

Deeplearning

1. Tracking-Based Semi-Supervised Learning (Lidar 3D images)

Bron: http://cs.stanford.edu/people/teichman/papers/rss2011.pdf

2. Traffic Light Mapping, Localization, and State Detection for Autonomous Vehicles
   Bron: http://driving.stanford.edu/papers/ICRA2011.pdf

3.

Tesla : (geen lidar!)
Hardware:

1. Twelve ultrasonic sensors.
2. Eight surround cameras provide 360 degree visibility.
3. Forward-facing radar. (3D spatial mapping)
4. GPS
5. (IMU) inertial measurement unit

Software:

1. ANN (Artificial neural networks) for vision
2. sonar processing software
3. radar processing software

Bron:
https://www.tesla.com/blog/all-tesla-cars-being-produced-now-have-full-self-driving-hardware
https://www.tesla.com/blog/upgrading-autopilot-seeing-world-radar
https://www.wired.com/2016/10/elon-musk-says-every-new-tesla-can-drive/
https://www.wired.com/2016/10/teslas-self-driving-car-plan-seems-insane-just-might-work/

Google:
Hardware:

1. Lidar on roof (3D image of its surroundings)
2. Four radars, mounted on the front and rear bumpers
3. A camera, positioned near the rear-view mirror
4. GPS
5. (IMU) Inertial measurement unit
6. Wheel encoder

Software:

1. High definition inch-precision maps
2. Machine learning algorithms

Bron: http://spectrum.ieee.org/automaton/robotics/artificial-intelligence/how-google-self-driving-car-works
https://www.theatlantic.com/technology/archive/2014/05/all-the-world-a-track-the-trick-that-makes-googles-self-driving-cars-work/370871/