



# Google Autonomous Car

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# Human

# Machine

## LEVEL 0

No Active Assistance System

Hands On  
Eyes On



## LEVEL 1

Longitudinal or Transverse Guide

Longitudinal or Transverse Guide

Hands On  
Eyes On



## LEVEL 2

Traffic Control

Longitudinal and Transverse Guide

Hands Temp Off  
Eyes Temp Off



## LEVEL 3

Awareness for Take Over

Take Over Request

Hands Off  
Eyes Off



Autobahn (SA)

## LEVEL 4

No Driver Intervention

No Take Over Request

Hands Off  
Mind Off



## LEVEL 5

No Driver

Hands Off  
Driver Off



City (Ride Sharing)



# *Google Has Developed A Self-Driving Car*



## Firefly

- Google driverless car project started in 2009.
- A self driving taxi predicted to arrive by 2017.



This project was actually kick started by

Sebastian Thurn  
Founder of Google X lab

Project Chauffeur  
running secretly for 2 years

Long Range Camera + Radar

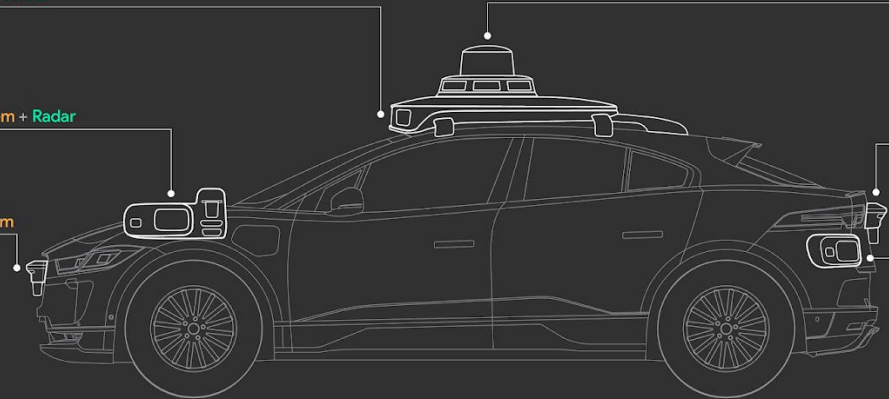
360 Lidar + 360 Vision System

Perimeter Lidar +  
Peripheral Vision System + Radar

Perimeter Lidar +  
Peripheral Vision System

Perimeter Lidar +  
Peripheral Vision System

Peripheral Vision System  
+ Radar





## Firefly



- Firefly, the car was intended to serve as a platform for experimentation and learning, not mass production

## Waymo



- Waymo was derived from its mission, "a new way forward in mobility."

## Waymo Via



- "Waymo Via" is the trucking division of Waymo, which launched in March 2020

This project has started under Google X and then turned into Waymo.



This has eventually helped Google Street View project







General Motors' Firebird III,  
1962



Robo Taxi



Spirit of Berlin, 2007





# Why we need Autonomous Car or Do we need Autonomous Car ?

- Yes, As the statistics say humans are more prone to make errors than autonomous vehicles.
- Taxi services can be automated to make more safer and secured journey for obvious reasons.
- Traffic can be reduced drastically if everything works out as planned.
- It might reduce accidents to 90%.

## Many Taxi Complaints, Little Action

*By Andrew Grossman*

July 25, 2011

 PRINT  TEXT

New Yorkers don't hide how they feel about cabbies: Every day, an average of 20 people complain to the city about a rude or dangerous taxi driver.

For many of those people, such venting is enough. Most complaints called in to 311—including drivers offering marijuana and whiskey and pulling away before riders get both legs out of the car—don't lead to charges because passengers don't bother to follow up.

Since Uber released its [first ever safety report](#) on Dec. 5, the [media](#) has raised alarms for the 5,981 instances of sexual assault included in the document.

This also includes 464 reports of rape over a two-year period – 2017 to 2018.

Uber also reported [97 fatal car accidents and 107 total deaths](#) during the same period.

[From my perspective](#) as a data scientist, [however](#), the numbers may not be as alarming as some reports have claimed.



# *Serving the purpose only make sense*

As far as I understood, Driverless vehicles are not for commercial use but by making commercial product involves more complex issues like road safety regulations related AI, driver Job market and etc.,

Commercial Autonomous Driverless car is not a way to progress.



Elders



Physically  
challenged



Public  
Transport



Long distance  
travelling





- As far as I understood, Google autonomous car is product of American perspective.

**WHAT DO YOU THINK..?**

