Welcome at Anteryon!

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Something about Anteryon…
A long history

First Philips Glass factory @ “Strijp S”

1977 Product overview
1986

Aspheric lenses for CD players
2000’s

Opto-mechanical assemblies
Structuring glass & ceramics

Optical assembly

R&D

Manufacturing

Testing

Replication of optical structures
2001 Wafer Optics

- Camera Modules
- Collimator with integr. periscope
- Micro lens array (MLA) with integrated aperture
Anteryon @ Brainport Industry Campus

- **Facilities**: 4000 m² manufacturing
- **Clean Room**: 1800 m² (classes ISO 7, 6, 5)
- **Employees**: 180 FTE
Anteryon / WLCSP @ Suzhou Industrial Park

Clean Room  10.000 m² (classes ISO 5)
Employees  starting up
...and something about LiDaR
A changing world…

Amazon has expanded their self-driving robot delivery system to Southern California. (Photo: Amazon)

Amazon Self-Driving Robots Hit Irvine Sidewalks
Trials trials trials...

We Took a Ride on NYC’s First Self-Driving Shuttle
New York City just got its first autonomous vehicles. Futurism was on the scene.

Ford Launching Self-Driving Vehicles For Domino’s Pizza Delivery In Miami
by Claudia M. Harte, March 2, 2018

Ford is bringing self-driving cars to the streets of Miami and Miami Beach to deliver pizzas from Domino’s.

In collaboration with Miami-Dade County, Ford is testing to prove out a business model, according to Sherif Marakby, vice president, autonomous vehicles and electrification at Ford.

"What we learn from this customer experience research will be applied to the design of our purpose-built, self-driving vehicle that we plan to launch in 2021 to support the expansion of our service," Marakby stated in the Ford.

Trials "trials "trials...
In the US alone

Over 1,400 self-driving vehicles are now in testing by 80+ companies across the US

Darrell Etherington  @etherington / 2 months ago

In a talk at the Uber Elevate Summit in Washington, D.C., today, U.S. Department of Transportation Secretary Elaine Chao shared a total overall figure for ongoing testing of autonomous vehicles on U.S. roads. More than 1,400 self-driving cars, trucks and other vehicles are currently in testing by more than 80 companies across 36 U.S. states, plus DC itself.
Challenges to reach Level 5 autonomy and enjoy personal driving freedom

Data Storage
Self-Driving Cars to generate a tremendous amount of data. According to Intel, autonomous vehicles can create 4TB of raw data every day. Imagine 2500 vehicles are on the road, Petabytes of data can be easily generated. Such massive amounts of data require extensive data storage architecture.

Data Transportation
Such massive amounts of data need to be extracted from cars, often Self-Driving cars are not equipped with high bandwidth internet and transferring heavy amounts of data over-the-air possess quite a lot of challenges.

Expense of Sensors
Self-Driving Cars utilize camera images and LiDAR technology to perceive its environment, LiDAR is extremely expensive. LiDAR sensor from Velodyne costs around 75k$/unit, compared to the price of an entire car which makes SDC difficult to afford.

Acquisition of Corner Case Data
Corner cases are situations which rarely happen, e.g. a pedestrian unexpectedly stepping on the street or placing a concrete block in the middle of the street. It’s good to have data from driving on the highway, but much value lies in corner case training data.

Training
Self-Driving Cars need to be driven about 100 million miles to capture sufficient data to safely navigate autonomously. Companies also drive millions of virtual miles on a daily basis but collecting results in the real world is time-intense.

Understanding why or why not a Self-Driving Car identifies another car is paramount to convince regulators that these cars are safe enough for public use. SDCs rely on Deep Learning algorithms, which are notorious for not explaining why they decide one way or another.

Source: visual capitalist
Automotive LiDAR market: LiDAR shipments for ADAS vehicles – split by ADAS level - In million unit

(Source: LiDAR for Automotive and Industrial Applications report, Yole Développement, 2019)

10 years from now - 25M units

Note: LiDAR for ADAS 1 and 2 are non-scanning LiDAR used for AEB (Automatic Emergency Braking).
Large variety in solutions...