

# Volvo's Automatic Brake System

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**Abstract—To be written.**

## I. INTRODUCTION

Autonomous cars (i. e. self-driving cars) is right around the corner whether we like it or not. Will it revolutionize the world or not? Who knows, what we do know is that the development had to start somewhere. One piece of the puzzle is to make the car have a automatic brake system. In reality, a car will automatically brake if there is an object (e. g. cyclist, fallen tree, pedestrian) in front of the vehicle to prevent accidents.

Let's take an example. Imagine that you are driving in the suburbs when suddenly a child accidentally kicks a ball onto the streets. The kid make a run for the ball, not aware of it's surroundings. You hit the brakes as hard as you possibly can, but it's too late. The kid heavily injured. Now picture the same scenario with a automatic brake system. The car would this time be able to stop, by itself, in time and the kid is not harmed.

Mankind is constantly trying to invent devices or systems that are able to the remove the most hazardous factor, human error. Automatic braking is an example of that.

### A. Volvo Cars

- 1) General information:
- 2) Technical progress:

### B. Zenuity

- 1) General information:
- 2) What's Zenuity's role in Volvo Cars: Zenuity Stuff

## Saker relaterade till kursen:

### C. OSS

Open source software (OSS) is a software open for anyone to read, modify and distribute. However depending on the licence of the OSS, it might be more or less permissive.

### D. Business Plan

- 1) Business Idea:
  - Problem
  - Solution
  - Benefit / Value
  - Competition

### 2) Customer Segment and Market:

- Who is typical customer?
- How many are there?
- Where are they?
- What are they prepared to pay for?
- Why do they buy?
- How to reach customers?
- How pay?

### 3) Business Model:

- How are you going to make a profit?

### 4) Volvo's Business Plan:

### 5) Business Idea:

- Problem
- Solution
- Benefit / Value
- Competition

### 6) Customer Segment and Market:

- Who is typical customer?
- How many are there?
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### 7) Business Model:

- How are you going to make a profit?

### E. Patents

#### 1) General Information:

- Europe, Laws
- The US, Laws
- Rest of the world, Laws

#### 2) Volvo's Patents:

### F. Big Data

Nowadays a company's big struggle is not to store all collected data, it is how to use it. The data is called "Big Data".

Depending on the software, the collected data could be commute patterns, phone usage or as simple as the amount of user. With this kind of information the company can make smart decisions. The downside is, the more data one got, the

harder it is to process. To take fully advantage of the stored information the processing velocity is key. Another problem is the variety of data a company got. What information is in reality useful?

## APPENDIX

### CONTRIBUTION STATEMENT

#### II. DESCRIPTION OF THE SYSTEM

- Mobileye <http://www.mobileye.com/about/industry-firsts/>
- Delphi <https://www.delphi.com/media-old/pressreleases-old/2014/10/02/delphi-first-to-market-with-integrated-radar-and-camera-system-on-volvo-cars>
- No open source components
- Ground truth, inhouse data, move to neural networks -> user data (big data).
- 2017 moved ADAS to new joint venture Zenuity w/ autoliv. <https://www.media.volvocars.com/global/en-gb/media/pressreleases/202044/volvo-cars-and-autoliv-announce-the-launch-of-zenuity>

#### III. BUSINESS ASPECTS

- Value proposition, as a differentiation <2014, now commodity.
- Lines up with business strategy to provide the most reliable and best safety features, part of intellisafe.
- Strengthens brand
- Zenuity (see article p. 47)
- Lines up with goal to be seen as part of the premium segment.
- Open Source Software

#### IV. ETHICAL ASPECTS

- Data collection.
- incorrect brake.
- missed brake.

City Safety should not be used to alter the way in which the driver operates the vehicle. The driver should never rely solely on this system to safely stop the vehicle.

#### V. LEGAL ASPECTS

- Data collection.
- incorrect brake.
- missed brake.
- Open Source Software

#### VI. SUMMARY

#### REFERENCES

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