



Development of an Electronic Measuring Device to Augment Driving Experience

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Abstract

This project is an investigation into the different types of distance measuring technologies relating to **Driver Assist Systems (DAS)** and developing a device based off these investigations. Testing of the various sensors may be carried out to determine the most suitable technology. Based upon these tests a **'DAS'** system will be designed and built with the selected technology.

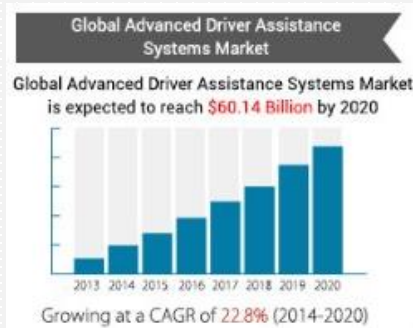


Fig 1: DAS Market Growth [1]

Background Information

There are many different sensor technologies used in the motor industry for distance measuring applications. Most of these systems come under the acronym **'DAS' (Driver Assist System)** [2]. **DAS** systems are in a rapidly growing market with projected figures of around \$ 60.4 billion by 2020 [1] (see figure 1). Currently developed are Blind spot monitors, collision avoidance systems, lane departure systems and parking sensors. Generally all these systems use similar measurement technologies or a combination of technologies (see figure 2 [3]). Ultrasonic sensors, optical cameras, laser, infrared and radar are the main technologies used in these systems [4].

Aims and Objectives

The aim of the project is to investigate distance measuring technologies used in **'DAS'** systems and develop an electronic device based upon these investigations. To achieve this aim the following objectives must be met:

1. Investigate various distance measuring technologies and systems used in **Driver Assist Systems**.
2. To experiment and test various sensors and components comparing them with relevant studies.
3. To write a design specification based on test findings.
4. To design and build **a Driver Assist System** based on design specification.
5. Analyse and evaluate the device with regard to the design specification.

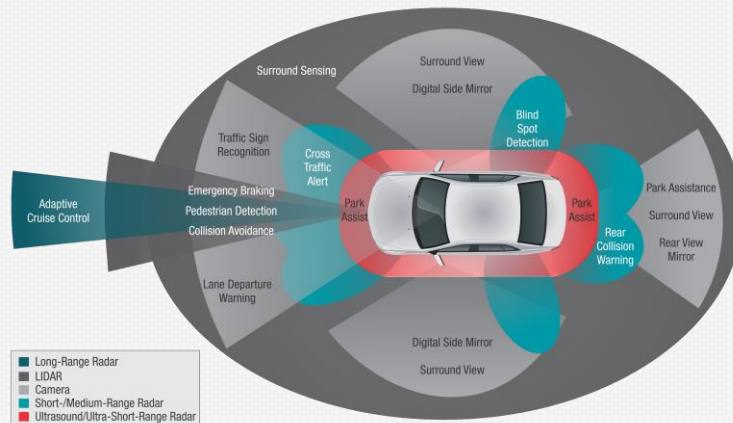


Fig 2: DAS Technologies Diagram [3]

Methodology

Research: A research philosophy of positivism with a deductive approach will be used as the research methodology for the project. This will allow for more structured testing and quantitative data to be analysed. Research will come from secondary sources such as articles and current studies.

Testing: Testing will be used to experiment with identified sensors and components. Sensors measurement range, accuracy, angle range and reliability will be tested. Results collected from the tests will be compared with results from related studies, providing best possible sensor selection.

Development: A development methodology of following the waterfall model and prototyping will be deployed. Prototyping method will be used as it will allow for different system design techniques to be explored.

Expected Outcomes

The expected outcome will be a finished working electronic measuring device which will operate as a **DAS** system. Potentially either a parking sensor or short range collision detection system are potential designs.

References

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