# Ai approach for road Safety

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**Abstract**

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# Dedication

To mum and dad

# Acknowledgements

I want to thank...

# Contents

# Chapter 1

# Introduction

*Recently, the development of advanced driver assistance systems (ADAS) has facilitated people's daily life from comfort to safety. However, these systems are complex [5], utilizing vehicle parameters, environmental observations, and traffic patterns to assist the driver. These systems are added cost-to-ownership due to the added expense of sensors and computing hardware needed to perceive the environment, especially in real-time monitoring. Thus, further development in this area is needed to improve reliability, performance, and decrease costs.*
*This work describes a driver assistance system based on computer-vision techniques.*

## 1.1 Motivation

According to the World Health Organization (WHO) [3] around 1.3 million people die each year as a result of road traffic accidents, in addition to 50 million serious injuries. This cost most countries 3% of their gross domestic product.In 2016

The report also highlights More than 90% of road traffic deaths occur in low- and middle-income countries. Road traffic injury death rates are highest in the African region. Even within high-income countries, people from lower socioeconomic backgrounds are more likely to be involved in road traffic crashes. Only a few car accidents are caused by bad weather and unsafe road infrastructure while most by human fault [1], such as: [3]
-Speeding
-Driving under the influence of alcohol and other psychoactive substances
-Nonuse of motorcycle helmets, seat-belts, and child restraints
-Inadequate law enforcement of traffic laws

According to [4] the most likely cause of the car accident is that the driver may lose concentrates on the road status when driving, no matter the driver is experienced or not. A study in the United States by the National Highway Traffic Safety Administration (NHTSA) [2], con-

firms that almost 80% of all types of vehicle accidents involve driver fatigue, driver drowsiness or driver distraction (in general, distracted driving), with the high speed may cause the driver to have no time to realize the road status, which leads to car accidents.

These shocking statistics highlight the importance of research and development of advanced driver assistance systems (ADAS) focusing on *"Driver Monitoring"* by driver behavior analysis as well as *"Road Monitoring"* by road hazards detection.

Various driving assistant systems have been developed in automotive engineering, the U.S. National Highway Traffic Safety Administration (NHTSA) defined five levels of automation

## 1.2   Related Work

Bla Bla Bla

# Bibliography

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[5]   Kunal Patil. *Speeding Up the Development of ADAS Systems with Model-Based Development*. 2016. URL: https://www.dspace.com/fr/fra/home/news/engineers-insights/blog_inc_adas_1607.cfm.