# Software Proposal Document for project Anti-Collision System for Vehicles

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**Abstract**

The main idea of this project is to early detect and prevent collisions of vehicles on the road by using a set of technologies such as cameras and sensors. The system is able to control the vehicle in case of an emergency to stop the car and avoid an accident that may lead to an serious injury to the driver and the passengers of the vehicle. moreover, the system will able to prevent pedestrian accidents by detecting passing people.

## 1 Introduction

### 1.1 Background

According to the Association For Safe International Road Travel every year 1.3 million humans loses their lives in a car accidents and this contribute by 2.2 percentage in the total deaths globally which is not a small number. So what we want to do is to reduce this death numbers drastically by implementing some techniques like: image processing and Artificial intelligence.

### 1.2 Motivation

although the world have progressed much in technology, the rate of deaths because of car accidents is still high and the new solutions that has emerged to solve this problem are rather expensive and impractical. Our aim is to solve this problem with a fast, simple and cheap solution.

### 1.3 Problem Definitions

We aim to use cameras and other sensors to capture the road and the surroundings of the car. Also, an Artificial intelligence system takes the feed from the cameras and the other sensors and determine if a car is approaching fast using image processing to be able to avoid it also to stop if the car was going to crash into a car ahead of it.

## 2 Similar System Information

1. A Vehicle Collision Warning System Employing Vehicle-to-infrastructure Communications [4]
2. GPS based Vehicular Collision Warning System using IEEE 802.15.4 MAC/PHY Standard [2]
3. Measured Joint Doppler-delay Power Profiles for Vehicle-to-vehicle Communications at 2.4 GHz [1]
4. A Vehicle-to-Vehicle Communication Protocol for Cooperative Collision Warning [5]
5. An anti-car collision system using GPS and 5.8 GHz inter-vehicle communication at an off-sight intersection [3]

## References


[1] G. Acosta, K. Tokuda, and M. A. Ingram, "Measured joint doppler-delay power profiles for vehicle-to-vehicle communications at 2.4 ghz," in *Global Telecommunications Conference, 2004. GLOBECOM'04. IEEE*, vol. 6. IEEE, 2004, pp. 3813–3817.

[2] D. Anurag, S. Ghosh, and S. Bandyopadhyay, "Gps based vehicular collision warning system using ieee 802.15. 4 mac/phy standard," in *ITS Telecommunications, 2008. ITST 2008. 8th International Conference on.* IEEE, 2008, pp. 154–159.

[3] Y. Morioka, T. Sota, and M. Nakagawa, "An anti-car collision system using gps and 5.8 ghz inter-vehicle communication at an off-sight intersection," in *Vehicular Technology Conference, 2000. IEEE-VTS Fall VTC 2000. 52nd*, vol. 5. IEEE, 2000, pp. 2019–2024.

[4] S.-Y. Wang, Y.-W. Cheng, C.-C. Lin, W.-J. Hong, and T.-W. He, "A vehicle collision warning system employing vehicle-to-infrastructure communications," in *Wireless Communications and Networking Conference, 2008. WCNC 2008. IEEE.* IEEE, 2008, pp. 3075–3080.

[5] X. Yang, L. Liu, N. H. Vaidya, and F. Zhao, "A vehicle-to-vehicle communication protocol for cooperative collision warning," in *Mobile and Ubiquitous Systems: Networking and Services, 2004. MOBIQUITOUS 2004. The First Annual International Conference on.* IEEE, 2004, pp. 114–123.