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# Analysis of historical accident data to determine accident prone locations and cause of accidents

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## Abstract

Road traffic accidents causes great distress and destroy the lives of many individuals. Inspite of different attempts to solve this problem, it still resides as a major cause of death. This paper proposes a system to analyse historical accident data and subsequently identify accident-prone areas and their relevant causes via clustering accident location coordinates. This system, once developed, can be used to warn drivers and also to aid fully autonomous automobiles to take precautions at accident-prone areas.

**Keywords:** Autonomous automobiles, Clustering algorithms, Data mining, Global positioning system, Road traffic accidents

## Introduction

With the growing population and the relatively peaceful global environment has provived an ideal eco system to raise the next generation of innovators. Certain items that were considered to be a luxury, have now become a common commodity among everyone. A case in point is the mobile phones, which were carried in briefcases earlier by few people, now have become a common accessory. Computers which filled rooms and could be afforded by only large corporations, is an accessory most people carry in their backpacks today. Cars can also be included in this category, with the number of people owning cards especially in Asia, increasing dramatically over the last decade or so. In 2011, it was reported that the worldwide vehicle population topped one billion units (Tencer, 2011).

With this rate of innovation, it is the responsibility of mankind to look back and try to rectify the indirect damages these innovations may have caused. This is also an important avenue of innovation. This research will be looking into vehicles that are causing physical damage to humans, apart from the numerous benefits it provides.

Road accidents are the main issue, other than pollution that can be associated with vehicles. Although we do not recognize this as a severe threat, road accidents leave a massive trail of death and severely disabled / injured people. Nearly 1.3 million people die in road crashes each year, which on average is 3,287 deaths per day. An additional 20-50 million are injured or disabled (Road Crash Statistics, 2016). This is an extremely severe situation and has a huge economic impact on society. It is difficult for countries to afford this impact as in most cases many of those directly affected are its prime workforce. There are many reasons for road accidents which include bad roads, porr training of drivers, bad weather, low visibility over speeding and drunk drinking.

Lack of caution at accident-prone locations, is also a major cause of accidents. For an example, if a specific part of a road has less visibility, and as a result, frequent accidents occur, the drivers may not anticipate such a threat unless the person is from that specific area (Esmaeili et al., 2007).