LITRATURE SURVEY

1. Chai K. Toh , Juan-Carlos Cano, Carlos Fernandez-Laguia, Pietro Manzon in their paper titled "**Wireless digital traffic signs of the future**" in the year 2015 proposed a method that recommends traffic signs have come a long way since the first automobile was invented. They have long served the purpose of warning and guiding drivers and also enforcing the traffic laws governing speed, parking, turns, and stopping. In this study, the authors discuss the issues and challenges facing current traffic signs, and how it will evolve into a next-generation traffic sign architecture using advanced wireless communications technologies. With technological advances in the areas of wireless communications and embedded electronics and software, we foresee that, in the future, digital traffic sign posts will be capable of transmitting the traffic sign information wirelessly to road users, and this will transform our roads into intelligent roads, where signs will appear promptly and automatically on in-vehicle displays to alert the driver. There is no longer the need to watch out for traffic signs since the detection will be automatic and performed wirelessly. This transformation will lessen burden on the drivers, so that they can then focus more on the traffic ahead while driving. Also, this evolution into wireless digital sign posts will fit well with the vision of future smart cities, where smart transportation technologies will be present to

transform how we drive and commute, yielding greater safety, ease, and assistance to drivers.

2. .Eric M. Masatu, Ramadhani Sinde in their paper titled **"Development and Testing of Road Signs Alert System Using a Smart Mobile Phone"** in the year 2017 propoed that road signs must be visible at a distance that enables drivers to take the necessary actions. However, static road signs are often seen too late for a driver to respond accordingly. In this study, a system for alerting drivers about road signs has been developed and tested using a smart mobile phone. The study was carried out in Tanzania along an 80 km highway stretch from Arusha to Moshi town. The Haversine formula was used to measure and estimate the distance between two pairs of coordinates using the smartphone-based navigation application, Google Map. The application provides a voice alert to a needed action that enhances driver's attention. According to the experimental results, the proposed methodology has the benefits of high accuracy within a user radius of 10 meters, minimum bandwidth, and low-cost application.

3. Fernando, S. Sotheeswaran in their paper titled **"Automatic road traffic signs detection and recognition"** in the year 2018 proposed that The traffic sign detection and recognition system play an essential role in the intelligent transportation system. On the other hand, most traffic signs

are situated on the side of the road, which may have contributed to the collision. Due to the existence of a large background, clutter, fluctuating degrees of illumination, varying sizes of traffic signs, and changing weather conditions, TSDR is an important but difficult process in intelligent transport systems. The objective of this study addresses road traffic sign detection and recognition using a technique that initially detects the bounding box of a traffic sign. Then the detected traffic sign will be recognized for usage in a speeded-up process. Since safe driving necessitates real-time traffic sign detection, the YOLOv4 network was employed in this research. Overall, the work adds by presenting a basic yet effective model for real-time detection and recognition of traffic sign

4. d Dr. Chuen Wan, Hasan Fleyeh in their paper titled **"Traffic and Road Sign Recognition"** in the year 2008 proposed that This thesis presents a system to recognise and classify road and traffic signs for the purpose of developing an inventory of them which could assist the highway engineers' tasks of updating and maintaining them. All algorithms are tested using hundreds of images and the shadow-highlight invariant algorithm is eventually chosen as the best performer. Based on four shape measures - the rectangularity, triangularity, ellipticity, and octagonality, fuzzy rules were developed to determine the shape of the sign. The final decision of the recogniser is based on the

combination of both the colour and shape of the sign. The recogniser was tested in a variety of testing conditions giving an overall performance of approximately 88%. The classification is carried out in two stages: rim's shape classification followed by the classification of interior of the sign. The performance of the SVM was tested using different features, kernels, SVM types, SVM parameters, and moment's orders.

5. G.Vasantha, B.Pavithra, R.Rajagopal in their paper titled **"IOT BASED SMART ROADS INTELLIGENT HIGHWAYS WITH WARNING MESSAGE AND DIVERSIONS ACCORDING TO CLIMATE CONDITIONS"** in the year 2014 proposed that vehicle accident location by means of sending a message using a system which is placed inside of vehicle system An intelligent Highway is an innovative concept for smart roads of future smart cities. It is a program of innovation that links a different way of looking at things with innovative ideas that apply the opportunities offered by new technologies in smart ways. Nowadays safety on road has become an important factor in our life because there is an increasing amount of accidents on the road and there are some places where accident occur frequently such as crossings, turns. Also there is a big problem of traffic jams on the road. So we are designing a system that is "An Intelligent Highway system with (Weather Accidents Landslides and traffic)

W.A.L.T".which is an innovative concept to maintain safety on roads. In this project, we present a low cost innovative technology for smart roads.