Literature Review

Salameh A. Sawalha, faulty of Engineering Technology, Al- Balqa Applied University- Jordan has proposed special braking control system. It aims to control vehicle's speed in accordance with the street and road speed limit. When the vehicle runs, the GPS finds the location of the vehicle then it sends the longitude and the latitude to the control unit to identify the speed limit of the street. If it has been found that the vehicle's speed exceeds the limit, a signal will be sent to the brake system to reduce the speed until it drops to the limits. One of the most important characteristics of the system that it senses the distances between two vehicles by (Ultrasonic sensor) allowing a certain distance between them which is in correspondent to their speed and that results in non-occurrence of accidents and crashes.

Rizianiza1 et all , Institute of Technology, Balikpapan, Indonesia have used Fuzzy Logic method. This research focuses on design of an autonomous car control system that can reduce the rate of traffic accident. Car prototype is designed by using Fuzzy Logic Control. Fuzzy logic is as main component of artificial intelligence has significantly influenced the design-controlled system. Fuzzy logic system is integrated with the Arduino Mega 2560 microcontroller. The Fuzzy logic used Mamdani method and 28 rule base. Fuzzy logic has a variable input and output variables. Input variables used in this research is the distance between car and obstacle; the speed of car prototype and the output variable is the brake angle.

Hyunmin Chae from Hanyang University with his teammates has proposed a new autonomous braking system based on Deep Reinforced Learning, which can intelligently control the velocity of the vehicle in situations where collision is expected if no action is taken. The agent (vehicle) interacts with the uncertain environment where the position of the obstacle could change in time and thus the risk of collision at each time step varies as well. The agent receives the information of the obstacle's position using the sensors and adapts the brake control to the state change such that the chance of accident is minimized. The design is for urban road scenario where a vehicle faces a pedestrian who crosses the street at a random timing. They have allocated proper reward function for each state-action pair to find the desirable brake action for the given pedestrian's location and vehicle's speed.

Jiri David, Department of Mechanical and Electrical Engineering, SKODA AUTO University has used Adaptive Cruise Control with Deep learning for the efficient brake control. The article describes the basic functionality of Adaptive cruise control and creates a mathematical model of braking, which is one of the basic functions of adaptive cruise control. The advantage of this approach is the original use of neural networks, which refines the determination of the deceleration value of the vehicle in front of a static or dynamic obstacle, while including a number of influences that affect the braking process and thus increase driving safety. The NN model predicts the deceleration value of the vehicle based on them and provide this value to the ACC control unit. The article represents a comprehensive approach, which is focused on ACC.

Deepanshu Prashar et all Research Scholar, Automobile Department, Gulzar Group of Institute, Ludhiana, Punjab have implemented a technology where they have used deep neural network or Convolutional Neural network, which can classify signs or signals present in the image into different categories. They introduced a real time traffic sign/light detecting system using Open CV and CNN. With this approach, they could able to recognize different kinds of traffic lights/signs and with their output, the accuracy of the braking system has increased. This approach is mainly based on implementation of the Automatic brake actuating system and Automatic throttle controlling system during detecting the signals. They have used a camera vision sensor for detecting the traffic lights/signs and they have also combined the Radar sensors for detecting the other obstacles like pedestrians as well as other vehicles and their distance.

Pushkar P. Bhat, Department of Mechanical Engineering, Faculty of Technology & Engineering, M. S. University, Baroda, Gujarat along with their subordinates have introduced A.O.C.S system, which stands for Automatic Over Speed Control System. It basically controls the speed of the vehicle continuously checking it through sensors which sends the signal to the input of microcontroller. Whenever the speed is increased above the predefined critical speed, the microcontroller through its logic circuits sends the signals to the actuators via its output pins. The actuators apply necessary force on the brakes and reduce the speed.

Dhanya K. R. has proposed a technology of an advance automatic braking system with sensor fusion concept. In this they used the properties of both capacitive & ultrasonic sensor for detecting the obstacle & also for calculating the distance between the vehicle & the obstacle. This distance measurement is used to control automatic braking system for safety application. In this system they used the 32-bit microcontroller with ARM processor (LPC2138) as the brain of this system for controlling process. The programming is done by using c-language. The additional feature included in the system are automatic retarding & automatic horn disabling in restricted area, this is done through RF signal communication. The RF transmitter is placed in restricted area, where the speed is limited & horn is restricted.

S. P. Bhumkar presents a system of about accidents avoidance & detection on highways. This system is about advance technology in cars for making it more intelligent & interactive for avoiding accidents on roads. ARM7 is using for making this system more efficient, reliable & effective. In this system, they have described real-time online safety prototypes that control the vehicle speed under driver fatigue. The purpose of this system is to avoid accidents. The main component of this system consists of number of real time sensor like gas, eye blink, alcohol, fuel impact sensor & a software is interface with GPS & Google maps APIs for location. Through this research work, they have proposed an intelligent car system for accident prevention & making the world a much better & safe place to live.