Abstract:
Globally, trend has been observed of using private transport mean rather than using public transport which has resulted in increased number of vehicles. Therefore, number of road accidents have emerged drastically in the world and now it has gained attention of industries to develop such modern braking system which can reduce such mishaps and accidents. The aim of this project is to design and fabrication of Emergency braking system to avoid such mishaps. In four-wheeler which can help to solve this problem. In this automatic emergency braking system, we will use four wheelers as our model in which 4 motors are attached to each wheel. The brakes are operated by using motorized mechanism. Two ultrasound sensors will be mounted on front and back end of vehicle to sense any obstacle in pathway of vehicle. Once the obstacle detected it will automatically press brakes without waiting response from driver to stop the vehicle at once.

Aims & Objectives:
- To develop Automatic Emergency Braking (AEB) system to be used in vehicles to lower number of accidents.
- To design vehicle which will require fewer human intentions while depending upon control system being used in braking system.
- To propose cheap automation system which can easily be implemented in vehicles to ensure safety of humans as a top priority.

Methodology:
This project involves an ultrasonic radar plus transducer to broadest out the obstacle. When this signal is detected, a microcontroller will be operated. The radar can be programmed to operate the brakes on the front and back end of the vehicle.

Data Analysis:
The self-balance technique is done by using fabrication and engine transmission is shown in the Fig 3-2. Engine is selected by means of petrol drive and controlled by using the accelerator. The microcontroller will execute each and every step of program and it give the required output to move the DC motor. In sensor MPU9250, accelerometer and MEMS gyro meter are integrated in a single chip. The microcontroller we are using is mini Arduino ATmega328 running at 16MHz with external resonator. We are using DC motor to rotate the wheel. It can be used as a mini personal vehicle it can travel at a speed of 20 km/h. Power supply plays a vital role in any electrical system. Batteries are used to provide power to the system. In this paper, we design and develop a one wheel self-balancing personal transporter. The controller continuously processes the output and provide the relevant motor power required to drive the wheels in the certain direction which is shown in the Fig A.

Results:
Performance test was analyzed by applying forces to the links of chassis. Long links are called as side bar link while short links are horizontal links connected between long links on which sensor transmitter and receiver are mounted. We applied forces to both links. First, we choose the fixed end of the links to ensure continuous process to discretize, so we follow the procedure and performed analysis.

We put load on break and fixed ends to ensure the strength of the link. When we put load on one end of the link and start mesh then run study and after that we have some results which are shown below in the figures.

Sample Table of Findings and Observations:

Conclusions:
In this project we designed an emergency braking system using ultrasound sensor. After complete analysis of design, we modeled our system part by part in Solid-Works. This system will ensure the safety of vehicle and human beings by applying sudden brakes when detected any obstacle in pathway of motorcar. This braking system will be adapted by various automobile companies as many are struggling regarding safety factor.

References:
[1] H. Hadmone, "Issues and challenges for pedestrian active safety systems based on real world accidents".