TEAM DETAILS

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PROBLEM STATEMENT

In this world of heavy traffic and fast life all the people are running for being at the time at their work. Thus, in this busy environment the chances of the collision of vehicles increases and significantly the motorcycle riders are more prone to involvement. Also according to the research done by U.S. the motorcycle fatalities increased every year for 11 year with rate of 5000 accidents per year. The major cause of the motorcycle fatalities/accidents is the blind spot form at the rear side of the rider. So there should be a system that will alert the rider for the approaching vehicles from its blind spot and will also determine the direction from where its heading.

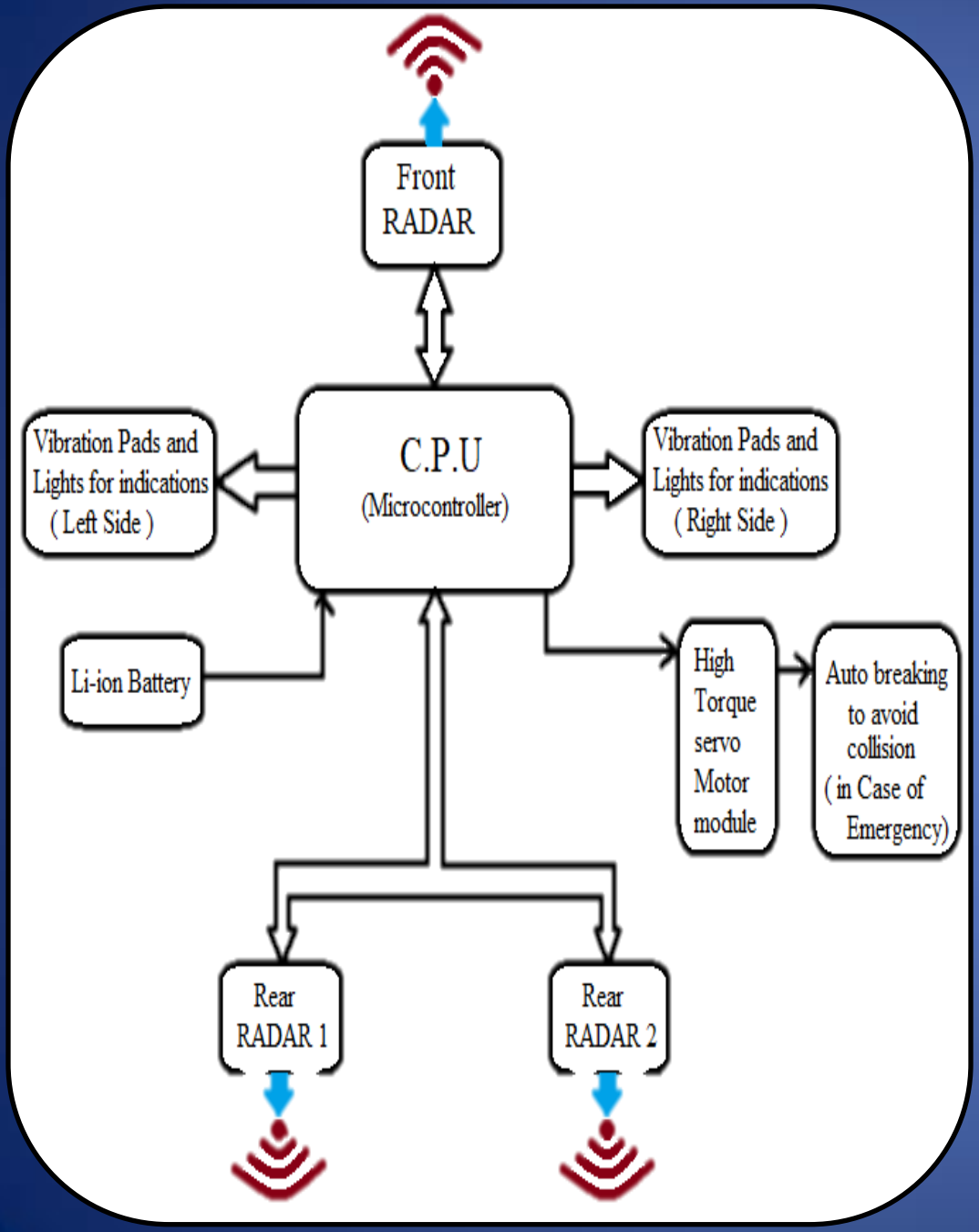
IDEA

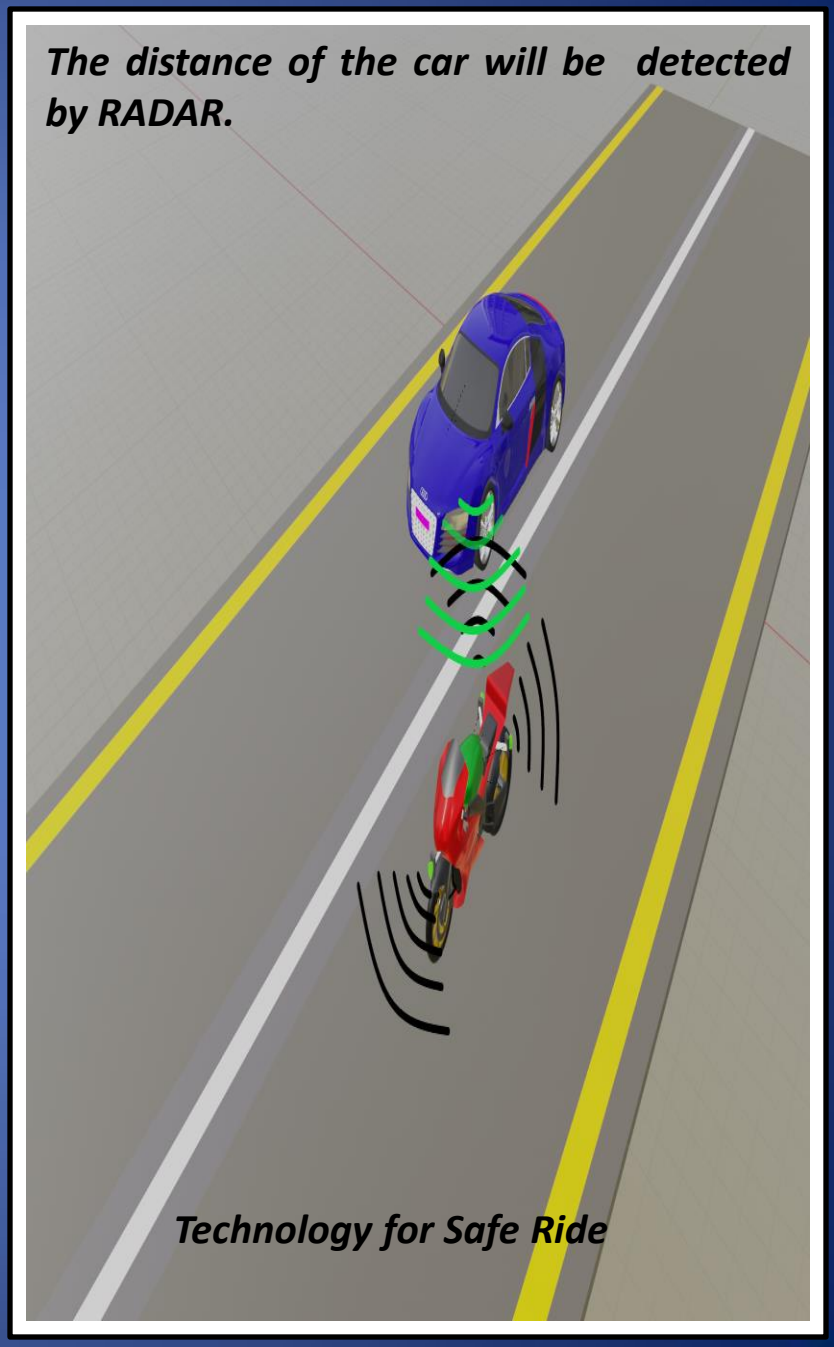
The idea is based on the principle of Transmission and reception of the signals like RADAR. The RADARS are used to transmit the electromagnetic waves and receives a Doppler frequency. These difference between the transmitted and received signal and the speed and distance of the target can be determined by processing the signal. These signals are used to determine the distance and location of the vehicles from the direction its approaching. By the help of these signals the rider can be made alert of the vehicle passing by with the direction from where its approaching. This will help the rider to get alert about the vehicle approaching towards it and will avoid the collision which may was going to take.

TECHNOLOGY STACK

The RADAR technology is completely used in the Collision Avoidance System. The phenomenon of Doppler frequency is important to calculate the exact distance of the approaching vehicle towards the rider. The Digital signal processing will be done by the high clock frequency controllers and the processed signal will help to give the commands to the hardware controlling system. The highly efficient Actuators and Displays will make the system more effective.

BLOCK DIAGRAM





WORKING PRINCIPLE

- The collision avoidance system is working on a simple principle of the transmission and reception of the signal .
- The high frequency electromagnetic waves will be transmitted from the transmitter section and the reflected signal will be detected by receiver section of onboard system.
- The Doppler effect will be calculated .
- Thus the distance of approaching vehicle will be estimated.
- Accordingly the command will be given to the hardware controlling system.
- The automatic safety actions (e.g. Auto breaking) will be taken by the system.

KEY POINTS

- The noiseless transmission and reception of the signal.
- Minimum delay in the processing of the signal.
- Effective and soft working of automatic breaking system

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- Long life, highly efficient Li-ion battery.
- High range RADAR.
- Alert system in case of low emergency (for manual breaking)

The Collision Avoidance system using RADAR technology is the simplest and cheapest way of the building the effective solution to the crucial problem of bike Accidents.