**COLLISION AVOIDANCE SYSTEM FOR HAIRPIN BENDS IN GHATS**

**USING PROXIMITY SENSORS**

**Abstract:**

 Hairpin bend accidents occur mostly because of the driver unable to see the vehicle coming from the opposite sides of the road curves. Our system uses sensors to detect any vehicles reaching hair pin bend and alerts immediately on other side vehicles by red signal and also producing alert sound. If hair pin bend road is clear green signal is produced. Thus this system provides safety for drivers to prevent hill side accidents and ride safely in hill side roads..

Often modern cars have a collision avoidance system built into them known as Pre-Crash System, Forward Collision Warning System, or Collision Mitigation System in order to reduce the severity of a collision. But majority of vehicles on the road, especially heavy motor vehicles lack in such a system. In this paper, the implementation of the Collision Avoidance System is aimed to reduce the risks of collisions at the hairpin bend on a Hilly track, Ghats, or other Zero visibility turns. The proposed system contains a set of proximity sensors, warning lights installed by the side of the road. It uses IR sensor, which are placed on either side of the hairpin bend. The sensors are mutually exclusive and are connected to microcontroller/comparator through wires. Based on the output of sensors, position of vehicles on either side of the bend is detected which is provided as an input to the comparator/microcontroller. The priority algorithm intelligently controls the movement of the vehicles at the hairpin bend based on the sensor values giving appropriate warnings on detection. For different conditions appropriate warning LED is triggered thereby prioritizing the vehicles’ movement. In case of a system breakdown a caution LED is triggered also sending a signal to notify the maintenance department about the same.

Major Building Blocks of this project are:

1. 7805 Voltage regulator based Regulated Power supply
2. Comparator or Microcontroller
3. LED Indicator
4. IR Obstacle Sensor
5. Buzzer

Block Diagram:

