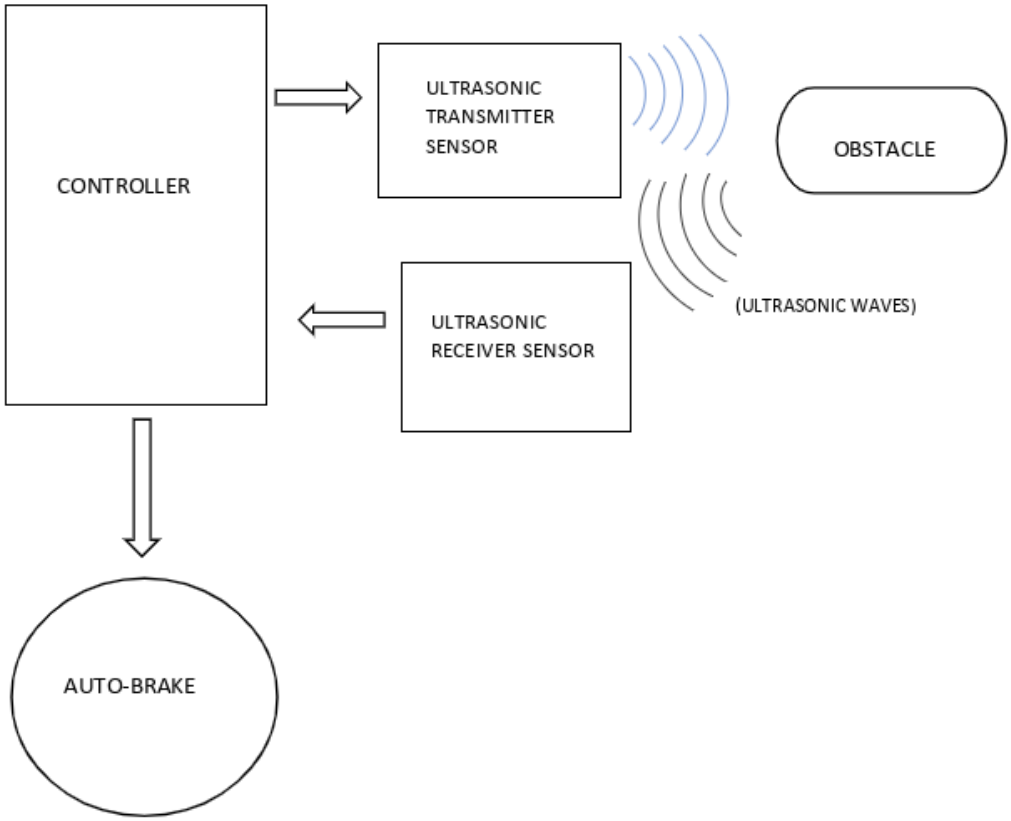
Solution Architecture

INTRODUCTION:

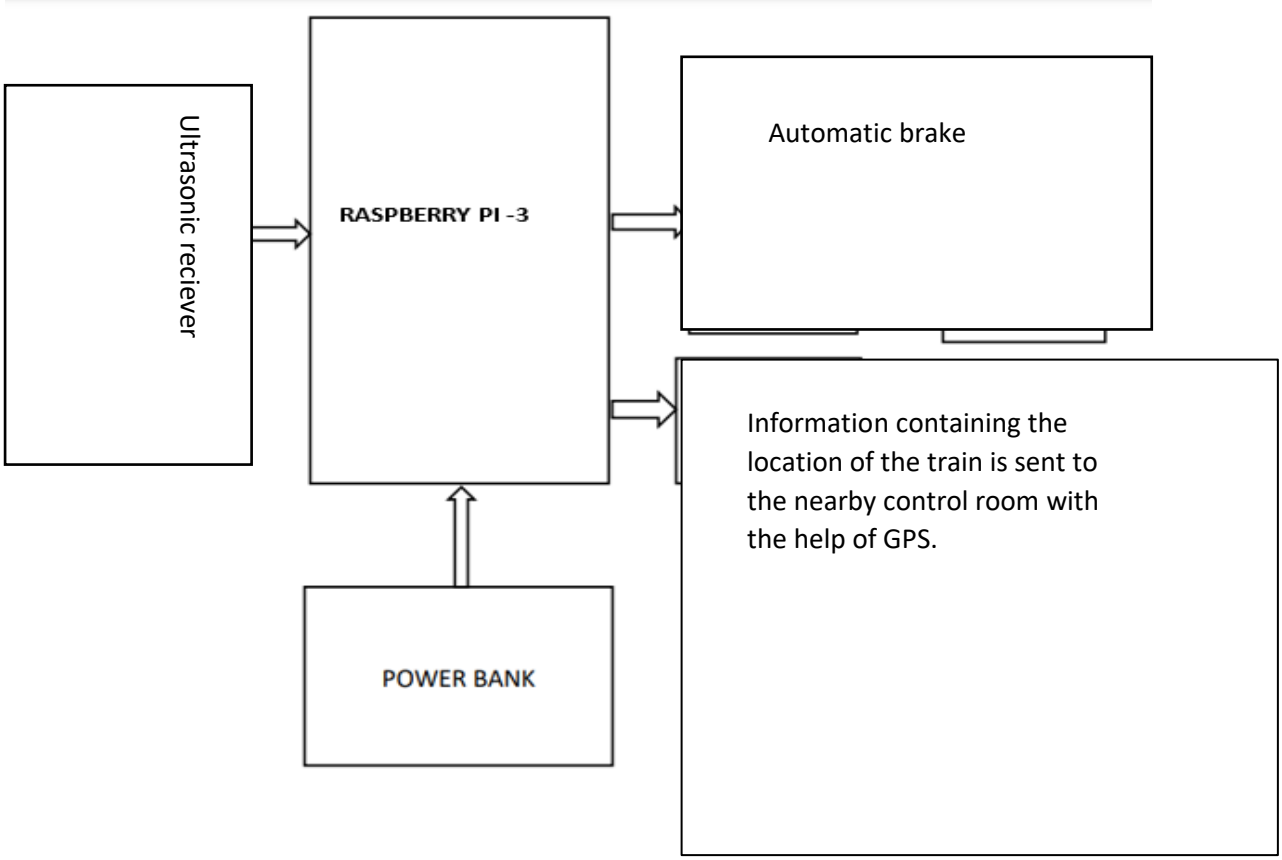
A report submitted by the Hindu quoted that TSB received 1,232 reports of rail transportation occurrences in 2021 (1,038 accidents and 194 incidents), including 60fatalities. The 1,038 accidents represent a 5% increase and among them nearly 45% accidents occur due to animals crossing the tracks. This creates a huge impact on Indian budgetary every year.

This invention will reduce the accidents and hence reduce the budget that is allotted for the recovery of such events. In this project the sensors that is attached to the train keeps emitting ultrasonic waves, whenever any object like any train in opposite direction or any animals or human beings crossing the tracks, these waves reflect back and hence automatic brake is applied which prevent train collisions and any accidents.

Block Diagram:



Hardware Architecture:



Working:

Autonomous lighting system power on lights while moving is dark zones sensing light density and vice versa. Ultrasonic wave transmitted through rail identifies manmade obstacles on the track and any movement of train in the opposite direction on the same track; will measure distance of the fault through variation of intensity of the wave there by automatically switching the power supply off. Restring the power only can be done through central control room after analyzing the situation. Auto piloting is envisaged in metro rails as it is well defined.

Here the sensors will be attached to the top of train facing straight covering a radius of 90 degrees. This will keep emitting waves, whenever it strikes any

obstacle, it reaches back to the receiver. The intensity if the wave is calculated by the processor and the brake is applied automatically. Through IoT the message will reach the nearest station which will contain the train number and the location where it is at present.