Basic Details of the Team and Problem Statement

TEAM NAME : PANTHERS

IDEA TITLE : TRAIN COLLISION AVOIDANCE SYSTEM

TEAM LEADER NAME : ARUNACHALAM.R

DOMAIN NAME : OPEN INNOVATION

PROBLEM STATEMENT TITLE : DEVELOP AN ADVANCED TCAS THAT CAN EFFECTIVELY PREVENT COLLISIONS AND ENSURE THE SAFE OPERATION OF TRAINS IN VARIOUS RAILWAY ENVIRONMENTS

IDEA:

- This TCAS (Train Collision Avoidance System) is used to detect trains activity and prevent collision between trains or objects
- RFID(Radio Frequency id) tags are placed in trains and RFID reader placed in railway tracks with unique id number respectively to track the activity of trains.
- If both train enters the same track in opposite or one after other manner, this is found using the RFID technology. This scenario can be prevented by activating the emergency break.
- LiDAR and laser sensors are being used in additional purpose for monitoring and measuring the obstacles on the track.
- Cameras can also be used for surveillance on inside and outside of train.

TECHNOLOGY STACK:

LiDAR Sensor

Laser Sensor

Arduino Uno & IDE

RF-id Tag

USE CASE:

- The search results suggest that a Train Collision Avoidance System could improve railway transit safety by averting collisions.
- TCAS looks for hazards and obstacles on rail lines and in the surrounding area using sensors, artificial intelligence, and sophisticated software processing.
- This makes it possible for repair truck and train drivers to be notified, for obstructions to be accurately detected, and for automatic adjustment.
- TCAS covers all train types as well as mainline and urban rail networks and weather circumstances.
- It gathers and examines information in order to comprehend the environment and initiate safety-focused actions.
- The technology aims to reduce the incidence of crashes by alerting drivers to possible hazards and triggering an automatic response in dangerous situations.

SHOWSTOPPER:

- Deployment of this TCAS takes time thought the Nation.
- Ensure that the TCAS can scale effectively to accommodate increasing numbers of trains and expanding railway networks.
- Consider future technological advancements and evolving railway infrastructures.
- An age where systems are increasingly connected, the Train Collision Avoidance System must be secure against cyber threats.

TEAM MEMBER DETAILS:

SR. NO.	NAME OF TEAM MEMBER	BRANCH	STREAM	YEAR	POSITION IN TEAM
1	ARUNACHALAM.R	BSC	INFORMATION TECHNOLOGY	III	TEAM LEADER
2	PRITHIVI.K	BSC	INFORMATION TECHNOLOGY	III	TEAM MEMBER