Basic Details of the Team and Problem Statement

Organization Name : Ministry Of Railways

PS Code: SIH1349

Problem Statement Title: Using existing CCTV network for crowd management, crime prevention, and work monitoring using AliML

Team Name: Cyber Samurai

Team Leader Name: Ramanath Prabhu V. B.

Institute Name: Madras Institute Of Technology

Idea/Approach Details

Idea:

- ***Smart Ticketing:*** Implement smart ticketing systems that require passengers to register their identity mainly aadhar when purchasing tickets. This can deter criminals and aid in tracking down suspects if needed.
- ***Biometric Ticketing***: Biometric technology like facial recognition or fingerprint scanning can speed up ticket verification processes, reducing congestion at entry points.
- ***Automated Counting Systems:*** Some railway stations use automated systems that count the number of passengers entering and exiting each coach. This data can help staff direct passengers to less crowded coaches.
- ***Virtual Queues:*** Passengers can join virtual queues through mobile apps, receiving notifications when it's their turn to board, reducing the need to stand in physical lines.
- ***Emergency Call Buttons:*** Install emergency call buttons or intercoms inside trains and at various points on platforms for passengers to alert authorities in case of emergencies or crimes in progress.

Idea/Approach Details

Idea:

- ***Platform Access:*** To reach the train platforms, you'll need to pass through designated access points. Some stations have ticket barriers or turnstiles where you'll need to scan or insert your ticket for access.
- ***CCTV Surveillance:*** Install CCTV cameras at critical locations for monitoring and security purposes.
- ***Crowd Density Alerts:*** Implement crowd density monitoring using AI-powered cameras at stations. The app can access this data to provide information on the crowd levels at different stations and recommend less crowded trains or platforms for boarding.
- ***Facial Recognition for Recognizing Known Offenders:*** Integrate facial recognition technology into the app to identify known offenders or individuals with a history of harassment or criminal behavior. If a match is detected, an alert can be sent to law enforcement.

Idea/Approach Details

TECHNOLOGY STACK:

- **Biometric sensors and hardware, signal processing & Biometric Algorithms.**
- **MySQL for database**
- **HTML, CSS, Java Script & PHP.**
- **Cloud based service for data storage.**
- **C, C++, Java, AI & ML.**
- **CCTV cameras & VMS.**
- **Block Chain technology, jQuery & Bootstrap**

Show Stoppers:

PERFORMANCE CONSTRAINTS:

- *Requires presence of large number of servers to provide best performance and results.*
- *The accuracy and quality of data from CCTV cameras can vary due to factors like lighting conditions, camera angles, and resolution. Poor data quality can hinder AI/ML model performance.*
- *Implementing AI/ML on a CCTV network can be expensive. Costs include hardware, software, AI model development, and ongoing maintenance.*
- *Technical issues, such as system failures, downtime, or integration problems, can disrupt operations and hinder the effectiveness of the system.*
- *Some jurisdictions may require specific permits or approvals to deploy AI/ML surveillance systems in public spaces. Legal restrictions can be a significant obstacle.*
- *Integrating AI/ML systems with existing CCTV systems and other legacy infrastructure can be complex and costly.*
- *Protecting against cyberattacks and ensuring data encryption is essential.*

Team Member Details

Team Leader Name: Ramanath Prabhu V. B.

Branch : BE **Stream : CSE** **Year : II**

Team Member 1 Name: Balasubaramaniyam T S

Branch : BE **Stream : CSE** **Year : II**

Team Member 2 Name: Pranesh V M

Branch : BE **Stream : CSE** **Year : II**

Team Member 3 Name: Sri Varshini G P

Branch : BE **Stream : CSE** **Year : II**

Team Member 4 Name: Sandhya D

Branch : BE **Stream : CSE** **Year : II**

Team Member 5 Name: Shubhakarini S

Branch : BE **Stream : CSE** **Year : II**

Team Mentor 1 Name: Dr. S. Muthurajkumar

Category : Academic **Expertise : AI** **Domain Experience (in years) : 12**