

# RailGuard

Team: Meta Minds

# The Problem Statement

Lost in Translation: Security and efficiency at railway stations

- Anomalies and overcrowding getting undetected and neglected on a daily basis leading to dangerous consequences.
- Misinterpretations, missed opportunities, and entire functional damage.
- Need for a bridge between events occurring and the on-ground railway staff for a prompt and swift action.

# Tech Stack

## Programming Languages:

- Python (primary language for backend development and model training)
- JavaScript (for frontend development and user interface interactions)
- Frameworks and Libraries: TensorFlow, scikit-learn, YOLO, matplotlib, seaborn, numpy, pandas, cv, imageio, keras

## Backend:

- Node.js (to create server side web applications)
- Express.js (web application framework for building RESTful APIs with Node.js)

## Frontend:

- React (JavaScript framework for building user interfaces)

## Cloud Platform:

- AWS (potential use for cloud storage, compute resources, and website deployment)

# Stage 1: Data Collection

- Gathering huge datasets of crowd and anomalous behaviour exhibited by individuals on railway platforms.
- Instantaneous alerts will be integrated into our system in real-time.

## Stage 2: Training AI Models

- Trained a YOLO v7 model for crowd detection.
- Leveraged RNN, CNN and LSTM networks for anomaly detection.
- Hyperparameter tuning for optimal performance:
  - Acquired an accuracy of 85% for the crowd detection model.
  - Acquired an accuracy of 68% for the anomaly detection model.

## Stage 3: Intuitive Frontend Development

- From Data to Action: Interactive Navbar to navigate through various pages.
- Dynamic Hero Section: User can view the analysis of various segments like crowd monitoring, work management etc by clicking on these.
- Feedback section: The user can contact us about any difficulties etc by sending a message.

—Add relevant screenshots from your application

# Results

## Improved Crowd Understanding:

Businesses can now accurately identify over crowd and manage it effectively through alerts, enabling targeted responses.

Enhanced safety and security of people: Proactive anomaly analysis and detection that allows businesses to compel the railway staff and authorities to take action and prevent the consequences.

## Better Work Monitoring:

Graphical display and analysis of crowd, anomaly trends over time. Also keeping an eye on increasing the efficiency of the physical level authorities for prompt actions.

We'll proceed to the live demo now