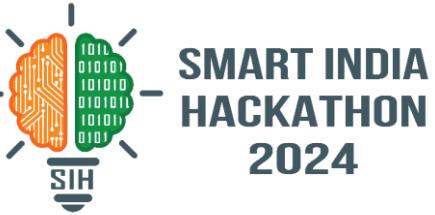


SMART INDIA HACKATHON 2024



TITLE PAGE

- **Problem Statement ID** – SIH1711
- **Problem Statement Title**- Enhancing Rail Madad with AI powered complaint management
- **Theme**- Smart Automation
- **PS Category**- Software
- **Team ID**- 45287
- **Team Name (Registered on portal)** - Yorozuya

RAIL MADAD 2.0

Proposed Solution

An AI-driven solution that **automates complaint categorization** using **multimedia recognition** (images, videos, and text) and routes them for faster resolution. It also includes **sentiment analysis** for feedback and predictive maintenance for recurring issues.

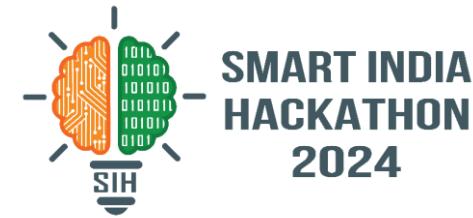
- AI-based **complaint categorization** from multimedia content.
- **Automated routing** for faster issue resolution.
- **Sentiment analysis** to improve customer feedback.
- **OCR** for extracting text from images/videos.
- Predictive analysis for proactive issue management.
- Scalable system for real-time complaint handling.

Problem Faced	Our Solution
Delays due to manual complaint categorization.	Automatically categorize complaints by content to streamline resolution.
Lack of customer satisfaction insights.	Implement the sentiment analyzer to assess customer feedback and identify improvement areas.
Ineffective recognition of multimedia complaints.	Build a system to categorize complaints based on user-submitted images and videos.
Missing contextual information from submissions.	Extract text from multimedia submissions for additional context.
Slow complaint processing times.	Integrate AI models for seamless complaint processing and management.

UVP(Unique Value Proposition):

- Instant AI-powered responses.
- Proactive maintenance to prevent issues.

TECHNICAL APPROACH



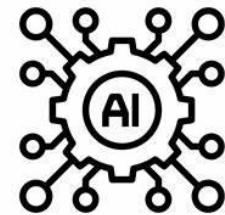
Technologies used



Front end
React.js & Redux



Backend
Flask (RESTful API)



AI/ML Models
LLaMA, LLaVA,
Tesseract

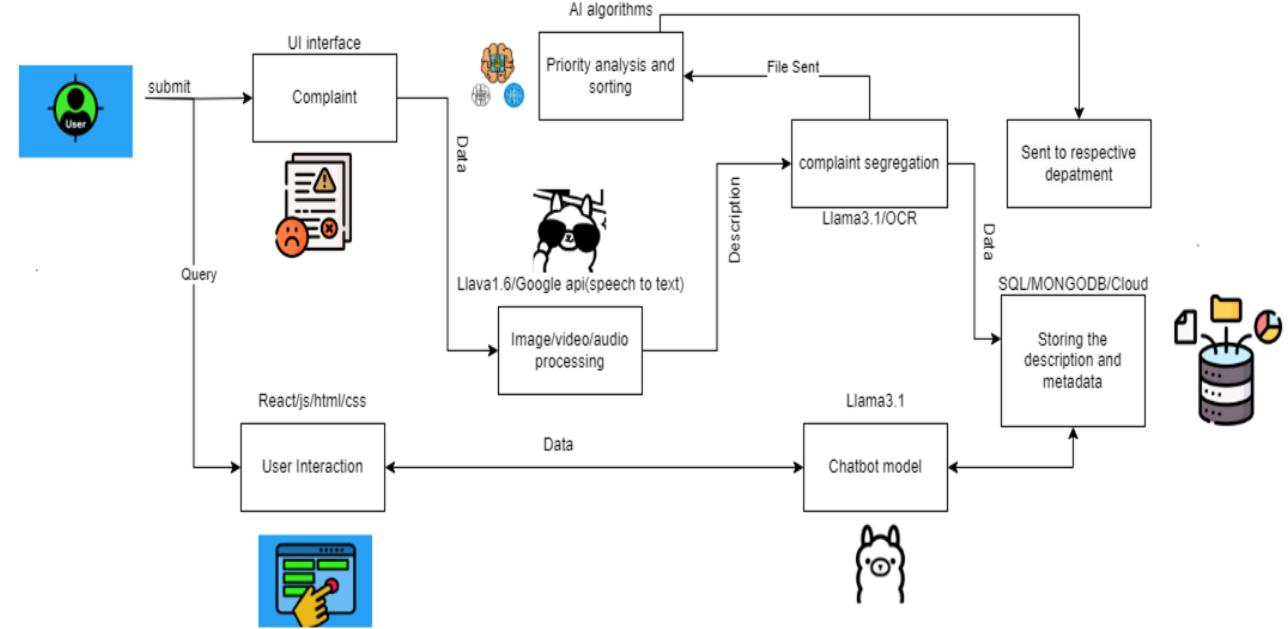


Data Processing
Pandas &
NumPy



Deployment
Docker,
Kubernetes,AWS

Methodology



Product Status: 30% product built completed and further build is on progress.
Testing and validation process are next to be undergone ([Link](#)

Feasibility

- ✓ Utilizes open-source tools for cost efficiency.
- ✓ Browser-based execution ensures easy access.
- ✓ Cross-device compatibility across platforms.
- ✓ Client-side operations reduce server load.
- ✓ Model optimization with pruning and quantization.
- ✓ Secure implementation for data privacy compliance.
- ✓ Scalable deployment on cloud platforms.
- ✓ Enhanced UI designed to improve user experience.

Challenges and Strategies

Data Privacy



Robust encryption,
compliance with data laws.

AI Prediction
Accuracy



Continuous training, fine-
tuning models

High Complaint
Volumes



Dynamic scaling, AI-driven
prioritization.

IMPACT AND BENEFITS



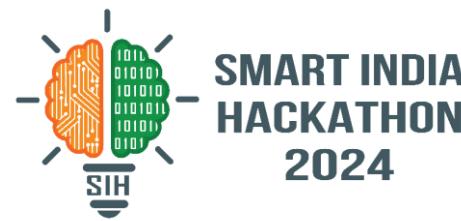
Potential impact on the target audience

- Faster and accurate complaint resolution.
- Enhanced user experience and satisfaction.
- AI-driven automation increases efficiency.
- Proactive maintenance reduces recurring issues.
- Scalable system to handle increased demand.

Benefits of solution

- Faster and more accurate complaint resolution.
- Instant responses reduce wait times.
- Efficient complaint routing to relevant departments.
- Proactive issue prevention through predictive maintenance.
- Scalable system handles increasing demand seamlessly.
- Actionable insights for continuous system improvement.
- Strong data privacy and regulatory compliance.

RESEARCH AND REFERENCES



- “Building and better understanding vision-language models: insights and future directions” - Hugo Laurençon, Andrés Marafioti, Victor Sanh, Léo Tronchon, 22 Aug 2024
Link:<https://arxiv.org/abs/2408.12637>
- “The Llama 3 Herd of Models” - Abhimanyu Dubey, Abhinav Jauhri, Abhinav Pandey, Abhishek Kadian, 31 July 2024
Link:<https://arxiv.org/abs/2407.21783>
- “On Decoder-Only Architecture For Speech-to-Text and Large Language Model Integration” - Publisher: IEEE, Jian Wu; Yashesh Gaur; Zhuo Chen; Long Zhou
Link:<https://ieeexplore.ieee.org/abstract/document/10389705>