

**ailway Complai**

# **Voice to text and bucketing of complaints into correct type/sub types through AI for Indian Railways**

# Problem Statement

- Railway stations face issues: uncleanliness, faulty infrastructure, staff behavior
- Current systems: Manual complaint filing is time-consuming
- Limited language support excludes diverse users  
Irrelevant complaints overload authorities
- Goal: Simplify complaint process, ensure authenticity, and improve resolution efficiency

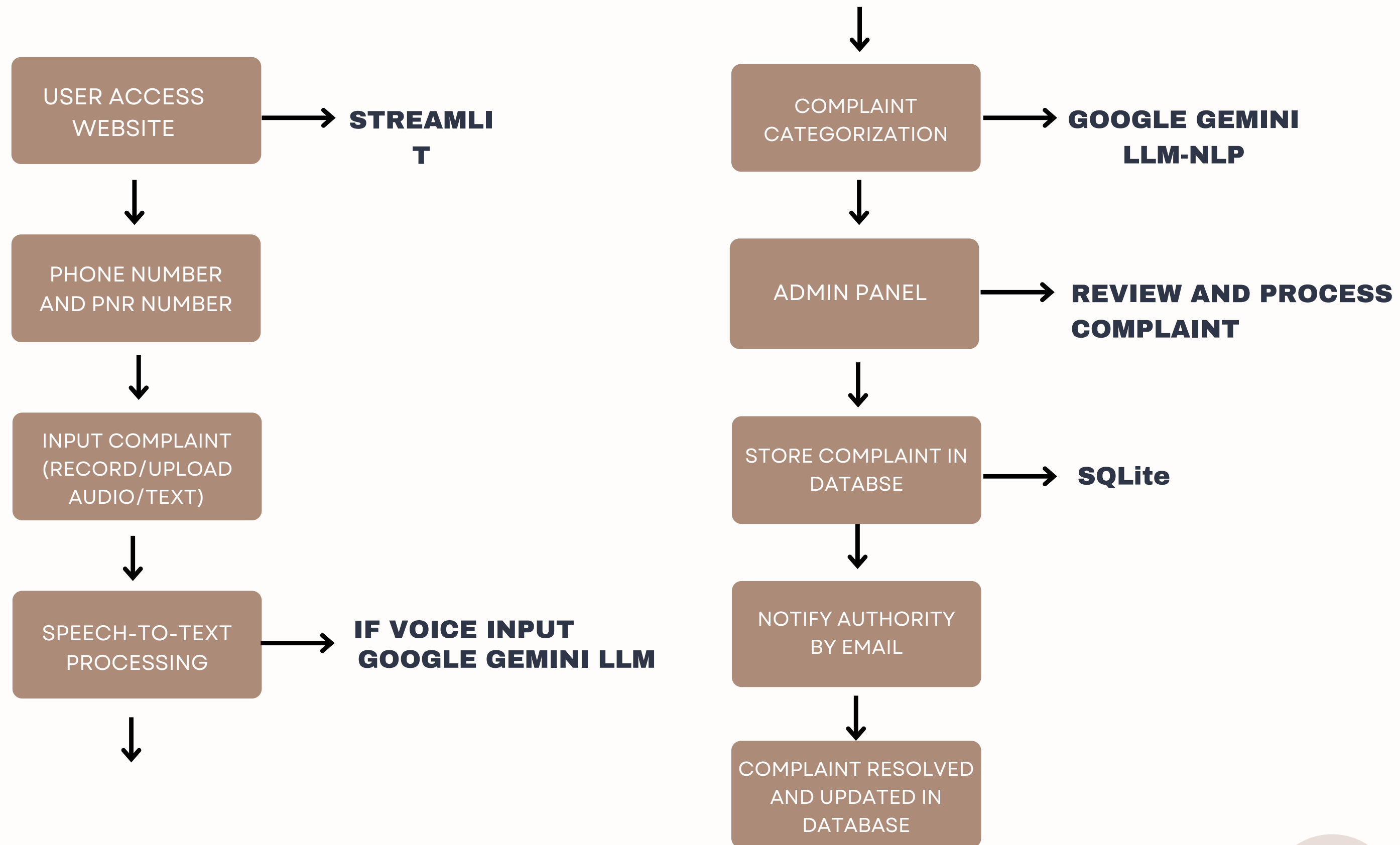
# Agenda

## Problem Statement

- Overall Solution Diagram
- Approach & Innovations
- Technical Stack
- LLM Integration & Challenges
- Individual Contributions
- Impact of the Solution
- Future Outlook



# Simplified Solution Diagram



# Approach & Implementation

- **Analyzed requirements:**  
voice input, multi-language support
- **Designed architecture:**  
Streamlit frontend, Python backend
- **Integrated AI:**  
Speech-to-Text & categorization
- **Innovations:**  
Voice complaint submission  
AI-driven categorization  
PNR validation for authenticity

# Technical Stack



## ◆ Languages:

Python, HTML (UI styling)

## ◆ Frameworks/Libraries:

Streamlit(UI), SpeechRecognition, Google Generative AI , Smtplib (email), SQLite3 (database)

## ◆ APIs:

Google Gemini API, SMTP

## ◆ Database:

SQLite database



# LLM was used and frameworks

Railway complaint system uses Google Gemini for speech-to-text processing and possibly for complaint categorization.

## 5 Steps of frameworks

### 1. Task

- Predefined Categorization
- Restricted Scope

### 2. Context

- Context Awareness.
- Improved Accuracy

### 3. References

- Categorize Complaints
- Ignore Irrelevant Inputs

### 4. Evaluate

- Accuracy Checks
- Relevance Assessment
- User Feedback

### 5. Iterate

- Improve Classification Accuracy
- Enhance Multi-Language Support
- Optimize Processing Time & Response Quality



# Challenges faced

- ▶ **Speech Recognition Accuracy**

Issues with accents, background noise, and misinterpretation.

- ▶ **Categorization Accuracy:**

Ensuring correct classification of complaints.

- ▶ **Database Management:**

Handling large volumes of complaint data efficiently.

- ▶ **Integration Issues:**

Problems with connecting systems, email automation, and database.

- ▶ **User Interface & Experience:**

Ensuring ease of use for both users and admins.



# Individual Contributions

- Vismaya: SQLite database, language processing, categorization ,hands on report
- Thanushree NH: Email system, multi-category handling ,hands on report
- Sania & Manjushree: Report writing & formatting
- Mohit & Phalguna: PPT design & content structuring

# Impact of the Solution Proposed

## **1. Faster & More Efficient Complaint Handling**

- Automated speech-to-text
- Categorization & subcategorization

## **2. Improved Accessibility & User Experience**

- Multilingual support
- Voice-based complaint filing

## **3. Centralized & Organized Complaint Management**

- Database integration (SQLite)
- Admin panel for tracking & resolving complaints efficiently

## **4. Real-time Updates & Notifications**

- Automated email forwarding

## **5. Reduction in Manual Work & Costs**

- Automated processing reduces
- Focus on Resolutions

## **6. Data-Driven Decision Making**

- Identifies common complaint trends
- Helps in infrastructure planning

# Future Outlook

## **1. AI-Powered Complaint Resolution**

- AI chatbots
- Natural Language Processing (NLP)

## **2. Predictive Analytics for Issue Prevention**

- Analyze complaint trends
- Machine Learning for Prediction

## **3. Mobile App Integration**

- Mobile App for Easy Registration
- Push notifications

## **4. Integration with Railway Systems**

- Real-Time Train Status & PNR Verification
- Auto-Filing of Complaints

## **5. Multi-Channel Support**

- Extend support to WhatsApp, Telegram & IVR
- Social media integration

## **6. Sentiment Analysis for Urgency Detection**

- AI to detect urgency
- Prioritize high-severity issues

## **7. Blockchain for Transparency & Security**

- Blockchain-Based Tracking

## Demo link

[https://drive.google.com/drive/folders/1MAYDAIQLHCv9H5JOiPobE0sAAai7B9eb?usp=drive\\_link](https://drive.google.com/drive/folders/1MAYDAIQLHCv9H5JOiPobE0sAAai7B9eb?usp=drive_link)

## Repository link:-

- Vismaya - [https://github.com/Vismaya251/railway\\_complaint\\_AI.git](https://github.com/Vismaya251/railway_complaint_AI.git)
- Thanushree NH-  
[https://github.com/thanushree7102/railway\\_complaints\\_stations\\_trains-.git](https://github.com/thanushree7102/railway_complaints_stations_trains-.git)
- Sania - <https://github.com/sanianaveed700/railway-complaints-.git>
- Manjushree - [https://github.com/Manjushree2006/railway\\_complanits-123](https://github.com/Manjushree2006/railway_complanits-123)
- Mohit - <https://github.com/MOHIT11118888/Railwaycomplaint.git>
- Phalguna - <https://github.com/SPhalguna17/railwaycomplaint.git>



**THANK YOU!!!**