



ENHANCING RAIL MADAD WITH AI-POWERED COMPLAINT MANAGEMENT

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Abstract

Rail Madad is an initiative by Indian Railways to address passenger grievances efficiently. However, traditional complaint management systems face challenges such as delayed responses, manual categorization, and lack of intelligent prioritization. This research proposes an AI-powered enhancement to Rail Madad using Artificial Intelligence and Natural Language Processing (NLP) to automate complaint classification and improve resolution efficiency. The system is developed using Kotlin for Android and Firebase for backend services including Authentication and Firestore. An AI chatbot enables real-time interaction with passengers, categorizes complaints such as food quality, ticketing issues, cleanliness, and safety concerns, and forwards them to relevant departments. The proposed system significantly reduces processing time and enhances passenger satisfaction.

Keywords

Artificial Intelligence, Rail Madad, Complaint Management System, NLP, Firebase, Android, Kotlin

1. Introduction

Indian Railways serves millions of passengers daily. Efficient complaint management is essential for maintaining service quality. AI technologies enable automation, intelligent classification, and real-time response mechanisms that enhance digital governance.

2. Literature Review

Existing grievance systems rely heavily on manual processing. Research indicates that AI-based classification models significantly improve efficiency and reduce operational workload.

3. Problem Statement

The current system lacks automated categorization and predictive prioritization, resulting in delayed responses and inconsistent service quality.

4. Proposed System

The proposed AI-powered system integrates a chatbot within the Rail Madad mobile application. It uses NLP to understand passenger input and classify complaints. Firebase ensures secure authentication and real-time database management.

5. System Architecture

The architecture consists of a user interface layer (Android Kotlin), an AI processing layer for classification, and a Firebase cloud backend for storage and notifications.

6. Methodology

The system follows requirement analysis, design, AI integration, implementation, testing, and evaluation phases. NLP techniques are applied for complaint analysis.

7. Implementation

The mobile app is developed using Kotlin in Android Studio. Firebase Authentication manages users, Firestore stores complaints, and AI logic classifies and prioritizes issues.

8. Results and Discussion

Testing shows improved response time, automated routing of complaints, and enhanced transparency through real-time updates.

9. Advantages

- Automated complaint categorization
- Reduced resolution time
- Improved user satisfaction
- Secure cloud storage
- Scalable architecture

10. Future Scope

Future enhancements include predictive analytics, multilingual chatbot support, and IoT integration.

11. Conclusion

AI integration significantly enhances the efficiency of Rail Madad. The proposed system demonstrates how intelligent automation can modernize public service complaint management.

References

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