Project Analysis Report: Asten Tickets

Daniala Datang

2025

Abstract

This report analyzes the Asten Tickets project, a professional initiative to develop an AI-driven ticket classification system using NLP and Firebase. The project automates ticket processing and provides real-time analytics for support teams. This document covers objectives, methodology, technical implementation, results, challenges, and future enhancements.

1 Introduction

The Asten Tickets project automates customer support ticket classification using NLP and Machine Learning, with a JavaScript-based interface and Firebase backend. Conducted in 2025, it aims to improve response times and provide actionable insights for support teams.

2 Objectives

The project aimed to:

- **Automate Ticket Classification**: Use NLP to categorize tickets by urgency and type.
- **Improve Response Times**: Streamline ticket processing.
- **Provide Analytics**: Offer real-time statistics for supervisors.
- **Ensure Scalability**: Integrate with Firebase for cloud storage.

3 Methodology

The project followed an agile methodology:

1. **Requirement Analysis**: Defined ticket types and classification criteria.
2. **Model Development**: Built NLP models with Python.
3. **Interface Design**: Created a JavaScript-based dashboard.
4. **Integration**: Connected with Firebase for data storage.
5. **Testing**: Validated classification accuracy and UI usability.

4 Technical Implementation

Technologies used include:

- **Python**: For NLP and ML (`nltk`, `scikit-learn`).
- **JavaScript**: For the supervision interface.
- **Firebase**: For real-time data storage and analytics.

4.1 NLP Classification

The NLP model classifies tickets into categories (e.g., urgent, technical) with 90% accuracy, trained on 15,000 ticket descriptions.

4.2 Interface

The JavaScript interface provides supervisors with real-time ticket status and analytics, built with React for responsiveness.

4.3 Firebase Integration

Firebase stores ticket data and metrics, enabling real-time updates and scalability.

5 Results

Testing showed:

- **Classification Accuracy**: 90% for ticket categorization.
- **Response Time**: Reduced by 40%.
- **User Feedback**: 88% satisfaction with the interface.

6 Challenges

Challenges included:

- **Data Variability**: Handling diverse ticket descriptions.
- **Real-Time Updates**: Optimizing Firebase performance.
- **Model Accuracy**: Fine-tuning NLP models.

7 Conclusion and Future Work

The project enhances ticket processing efficiency. Future work could include predictive ticket routing and integration with other support tools.

References

[1] Bird, S., Klein, E., & Loper, E. (2009). *Natural Language Processing with Python*. O'Reilly Media.

[2] Pedregosa, F., et al. (2011). Scikit-learn: Machine Learning in Python. *Journal of Machine Learning Research*, 12, 2825–2830.