

Requirement Analysis Phase Report

Project Title:

Streamlining Ticket Assignment for Efficient Support Operations

Category:

ServiceNow System Administrator

Skills Required:

- TensorFlow
- ServiceNow
- Python
- REST API
- Data Analysis

1. Introduction

In large organizations, support operations often face challenges in efficiently managing and assigning tickets. Manual ticket assignment leads to delays, workload imbalance, and reduced customer satisfaction.

This project, *Streamlining Ticket Assignment for Efficient Support Operations*, aims to automate the ticket assignment process in **ServiceNow** using **machine learning models (TensorFlow)** integrated through **ServiceNow APIs**.

The system will analyze ticket data, categorize issues, and automatically assign them to the most suitable support agents based on expertise, workload, and ticket priority.

2. Objective

The main objective of this project is to:

- Automate ticket assignment using AI and data-driven decision-making.
 - Improve support efficiency and reduce response time.
 - Eliminate manual intervention and ensure optimal workload distribution.
 - Enhance customer satisfaction by ensuring faster and accurate ticket resolutions.
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3. Problem Statement

Traditional ticket assignment in ServiceNow is often manual or based on static routing rules. This leads to:

- Delays in ticket resolution due to inefficient allocation.
- Uneven workload among agents.
- Inaccurate ticket routing caused by lack of intelligent analysis.
- Reduced customer satisfaction and operational inefficiency.

The system aims to overcome these issues by creating an **intelligent, automated, and adaptive ticket assignment model**.

4. Existing System

The current ServiceNow ticketing system supports manual and rule-based assignments. However, it lacks:

- Predictive capability to match tickets with the best-suited agents.
- Dynamic load balancing based on real-time data.
- Integration with machine learning frameworks.

This results in inefficiency and higher operational costs.

5. Proposed System

The proposed system integrates **TensorFlow-based machine learning** with **ServiceNow** to automate ticket assignment.

Key Features:

- **Intelligent Assignment:** Uses trained models to predict the best agent.
- **Dynamic Load Balancing:** Considers real-time workload.
- **Category Prediction:** Automatically identifies ticket category.
- **API Integration:** Communicates with ServiceNow for data exchange.

Expected Outcome:

- Reduction in average ticket resolution time.
 - Enhanced accuracy in assignment.
 - Increased agent productivity and customer satisfaction.
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6. Functional Requirements

Requirement ID	Description
FR1	System shall fetch incoming tickets from ServiceNow via REST API.
FR2	System shall extract key attributes like ticket type, priority, description, and requester.
FR3	System shall preprocess and analyze historical ticket data for training.
FR4	System shall predict the most suitable agent using TensorFlow.
FR5	System shall assign the ticket automatically to the predicted agent in ServiceNow.
FR6	System shall maintain a dashboard to monitor assignment performance.
FR7	System shall allow manual override by administrators if required.

7. Non-Functional Requirements

Requirement ID	Description
NFR1	The system must ensure data privacy and comply with ITSM policies.

Requirement ID Description

NFR2	The response time for assignment prediction should be less than 2 seconds.
NFR3	The model should achieve at least 85% accuracy in agent prediction.
NFR4	The integration with ServiceNow must use secure API tokens.
NFR5	The system should be scalable for increased ticket volumes.

8. System Requirements

Hardware Requirements

- Processor: Intel i5 or higher
- RAM: 8 GB or above
- Storage: 256 GB SSD minimum

Software Requirements

- Operating System: Windows / Linux
 - ServiceNow Developer Instance
 - Python 3.x
 - TensorFlow Framework
 - REST API Configuration
 - Jupyter Notebook for Model Training
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9. Data Requirements

The dataset will be derived from ServiceNow historical ticket data, including:

- Ticket ID
- Category/Subcategory
- Priority Level
- Description Text
- Assigned Agent
- Resolution Time

This dataset will be used for model training and testing. Data preprocessing includes cleaning, feature extraction, and encoding textual descriptions.

10. System Design Overview

The system consists of:

1. **Data Extraction Module:** Fetches ticket data via ServiceNow API.
 2. **ML Model Module:** Trains and predicts agent assignment.
 3. **Integration Layer:** Connects TensorFlow model output with ServiceNow ticketing workflow.
 4. **Monitoring Dashboard:** Displays performance analytics and model accuracy.
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11. Constraints

- Model accuracy depends on the quality and quantity of available historical data.
 - Integration requires ServiceNow developer access with API permissions.
 - Privacy concerns in handling internal support data.
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12. Expected Deliverables

- Requirement Specification Document (SRS)
 - Trained Machine Learning Model
 - API Integration Scripts
 - ServiceNow Workflow Automation Setup
 - Performance Dashboard
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13. Conclusion

The requirement analysis phase establishes the technical and functional groundwork for developing an **AI-powered ticket assignment system** in ServiceNow.

By automating the allocation process using TensorFlow, the project will significantly enhance **support operation efficiency, accuracy, and scalability**, leading to improved customer experience.

14. References

1. ServiceNow Developer Documentation
2. TensorFlow Official Guide
3. ITIL Best Practices for Incident Management
4. REST API Integration Manuals