

Employee Sentiment Analysis – Final Report

1. Introduction

This report presents the results of employee sentiment analysis based on the company's internal communication dataset (test.xlsx). The analysis extracts sentiment scores, monthly trends, top positive/negative employees, and flight-risk predictions.

2. Data Overview

The dataset contains employee messages with timestamps. The data was loaded from an Excel file, cleaned, processed, and prepared for sentiment scoring.

3. Sentiment Labeling

Each employee message was analyzed using a sentiment model to classify it as Positive, Negative, or Neutral. Additional numeric sentiment scores were generated for further calculations.

4. Monthly Score Analysis

Monthly sentiment averages were computed to understand workforce morale trends. Visualizations such as sentiment distribution and monthly heatmaps were generated.

5. Top Employees by Month

Employees with the highest and lowest sentiment scores per month were identified. These insights help track performance, morale, and communication tone across time.

6. Flight Risk Detection

Flight-risk insights were derived using negative sentiment patterns, message frequency, and downward trends. A risk dataset was created to highlight employees needing attention.

7. Models Used

A simple regression model (Linear Regression) was trained to capture relationships between message sentiment and risk patterns. The trained model was saved as joblib.

8. Outputs Generated

• monthly_scores.xlsx • top_employees_by_month.xlsx • flight_risks.xlsx • Visualizations (PNG graphs) • Labeled messages dataset

9. Conclusion

The analysis provides actionable insights into employee sentiment, productivity trends, and retention risks. These insights can support HR decision-making and organizational planning.