

Technical Report: AI-Powered Employee Feedback Analysis Platform

Introduction:

In this project, we have designed a proof-of-concept for an AI-powered platform that is intended to analyse employee feedback in order to better understand what problems they experience and improve workplace satisfaction. The project also helps in finding the basic skills for the data science domain roles. This end helps in addressing some of the prevalent ills of companies in these times, such as disengagement of employees, toxic work environments.

Key Objectives:

1. Problem Identification:

- The organizations lack insights into dissatisfaction at real time.
- There is a requirement of solution that could analyse feedback at scale with actionable insights.

2. Our Solution:

- We built an AI-driven platform using Natural Language Processing (NLP) to analyse employee feedback in predicting common grievances.
 - The platform can predict basic skills required and extract insights.
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Implementation Plan Step-by-Step

1. Data Gathering

- It began collecting employee feedback data across various sources; these include internal surveys, social media (Twitter), among other employee communication means.
- More examples of inputs may include job-related feedback or work experiences through social media posts (From Twitter).

2. Pre-processing

- It cleaned up and pre-processed the text data to make it applicable for proper analysis by the NLP model.
- This meant that the text was converted to lower cases, the special characters were removed, and stop words were used for filtering the word meanings etc. done on the text for making it suitable for the implementation.

3. Skill Prediction Model:

- In this model, there is a prediction related to the skills based on the description given by the employee for the specific job title in the Data science domain according to trained data.

- For instance, "Data Scientist, employee then the model predicts the skills based on the task at hand would be related to "data analysis" or "machine learning", i.e. python, SQL etc.

4. NLP-Based Feedback Analysis

- Explorations of employee feedback based on common themes or grievances about the toxic culture at work or issues with the management.
- Some of the examples of the output are: "Employees resign due to dissatisfaction with the management or fear of being fired due to any growing technology i.e. AI for now" and "Most commonly, toxic work environments lead to burnouts among employees."

5. Insights Generation

- The platform provides insights to the HR departments so that measures can be taken to improve engagement.

6. MongoDB Storage:

We used MongoDB for the storage of input text, processed results, and timestamps, that permits us to build a searchable database of employee feedback and insights.

Innovative Method:

- It is unlike any other employee feedback tool in that it relies on AI and machine learning for analysing large, voluminous chunks of data quickly and accurately.
- It can be adapted according to the industry and the particular roles of employees.
- NLP models with predictive skill analysis make the platform comprehensive yet highly adaptive to the variety of responses.

Challenges and Barriers:

- Data Privacy: Handling of employee data should be completely ethical and in compliance with the legal requirements.
- Training the First Model: There must be sufficiently large data available for model training and providing accurate predictions.
- Scalability: With further scalability, integration with the existing HR system will be more crucial for extensive adoption if we want to deploy in a production environment.

Conclusion

- After deploying the platform in a real world environment after training on large volume and chunks of the data, this AI-enabled platform can transform the firm's interaction process with the employees, and it will allow the HR department to know about complaints at an early stage and have improved retention.

- Hopes for later applying this platform with further knowledge in other sectors to achieve even higher accuracy levels and should probably be integrated into the customers' feedback systems