



Humananalytics

Muhammad Arslan, Muhammad Tayyab, Dallas Diaz, Ramya Thambababula

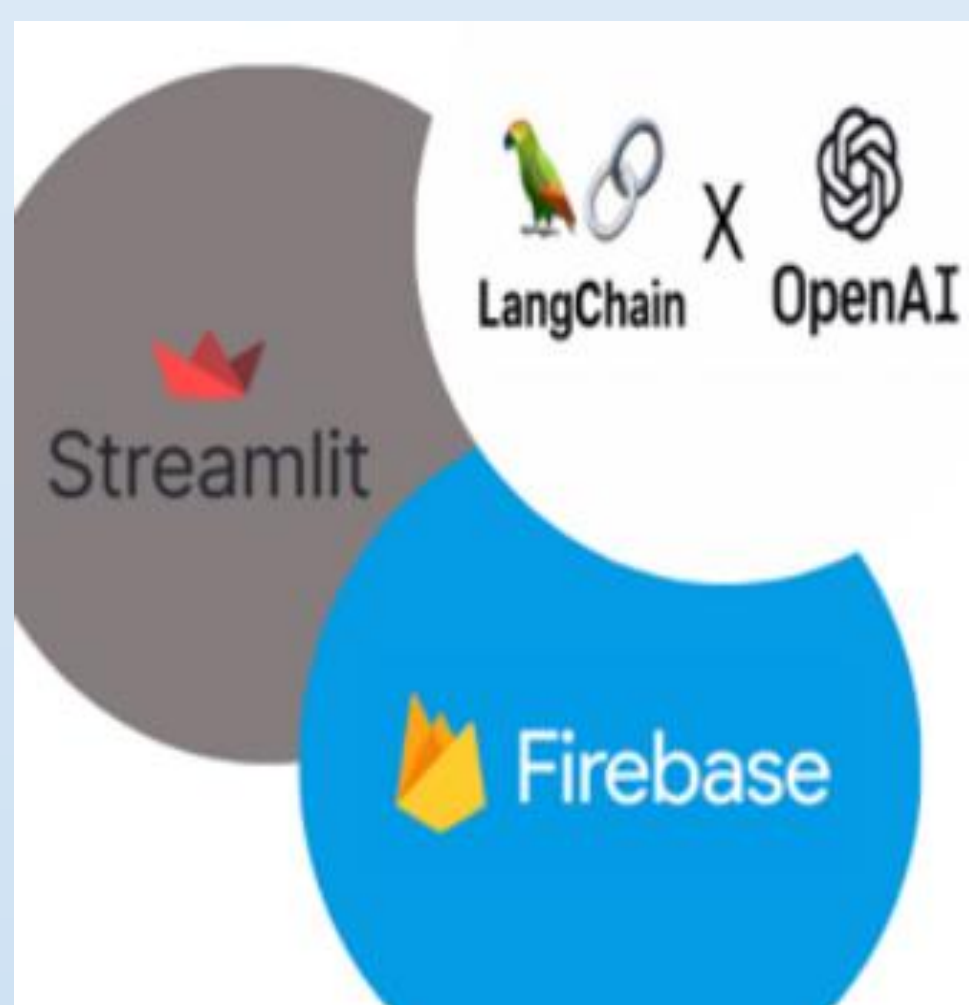
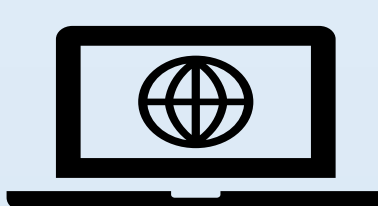
University of Missouri-Kansas City

Abstract

Integrating sentiment analysis into **HR dashboard** to understand employee reactions during **layoffs**. By analyzing feedback and social media posts, we gain insights into **emotional** impacts. This aligns with our goal of improving user experience, promoting mobility, and ensuring compliance. Our AI-driven analytics provide actionable insights for proactive decision-making.

Introduction

- **Humanalytics** addresses sentiment surrounding layoffs in organizational restructuring.
- **Utilizes datasets** containing employee feedback to delve into emotional impact.
- **Implements** advanced AI techniques like the Large Language Model (LLM).
- **Analyzes** textual data to extract sentiments and understand emotional responses.
- **Aims** to gain insights into morale implications of layoffs within the organization



Target Audience: Audience is mid-level company HR departments. Using sentiment analysis, they can understand layoff impacts and adjust policies for better management.

Empowering HR Departments: Empowers HR by providing insights to navigate layoffs sensitively. Data-driven approaches address concerns, fostering empathy and support.

Comparative Analysis for Affected Employees: Laid-off employees receive comparative analyses, aiding their transition.

Dataset

Raw Data of Layoffs It contains essential information regarding employee layoffs, including details such as employee names, departments affected, dates of layoffs, and reasons for termination.

Raw Data from Employee Tweets The raw data collected from employee tweets constitutes another crucial dataset for our HR Dashboard project. This unstructured dataset captures textual nuances related to HR activities, including employee feedback, sentiments, and perceptions.

Dataset. A

- Code
- App.py
- Sentimental analysis.py
- Data
- Processed
- Raw
- Results/
- Figure.1
- Figure.2
- Models
- readme.txt

Methodologies

Frontend Development: Utilize VS Code for frontend development, providing a robust and efficient code editing environment.

Streamlit for building user-friendly web applications, enhancing accessibility and usability for HR professionals and recruiters.

Backend Infrastructure: Python as the backbone for the backend infrastructure, offering versatility and scalability. Leverage Firebase as the database solution, providing real-time data synchronization and seamless integration with frontend applications.

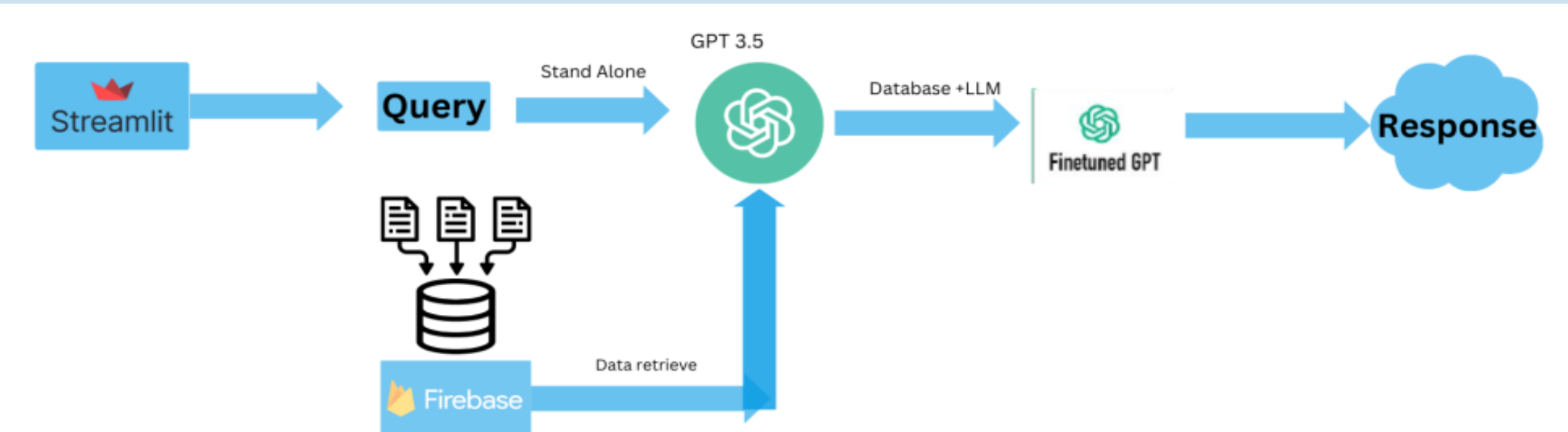
AI Model Integration: Incorporate GPT-3.5 and GPT-4 for advanced text generation and reasoning analysis, enabling natural language understanding and response generation.

Utilize LDA (Latent Dirichlet Allocation) for topic modeling, allowing HR professionals and recruiters to identify key themes and trends in textual data.

Integrate XLNet, BERT, and RoBERTa for sentiment analysis and text classification, enabling accurate assessment of candidate sentiments and categorization of textual data.

Enhancing Accessibility and Usability: Optimize user interface elements for mobile responsiveness, catering to users accessing the platform from various devices.

Provide comprehensive documentation and tutorials to assist HR professionals and recruiters in effectively utilizing the platform's features and functionalities.

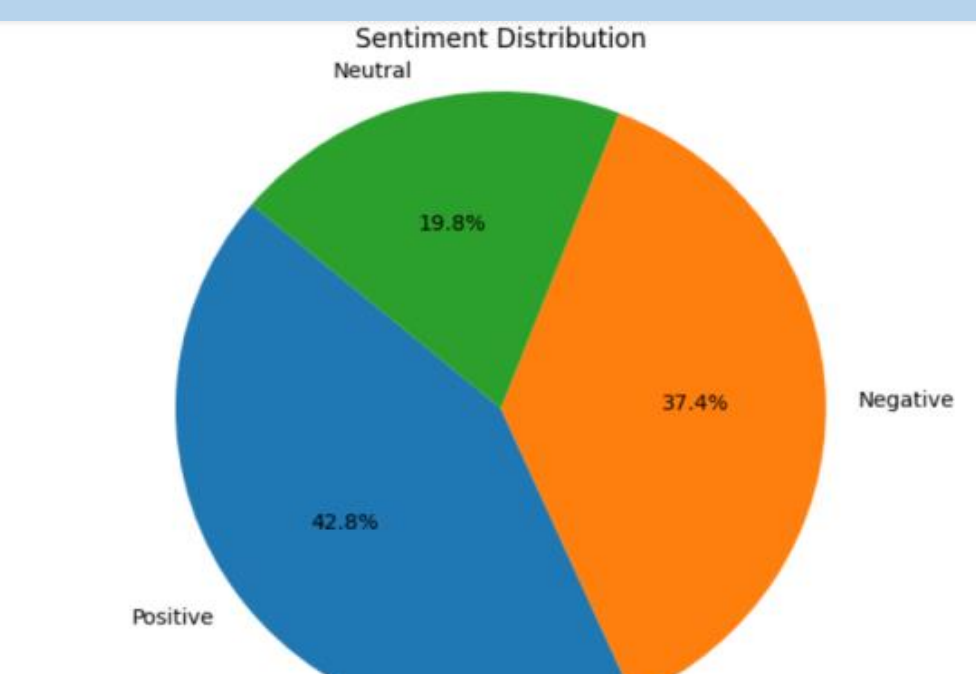
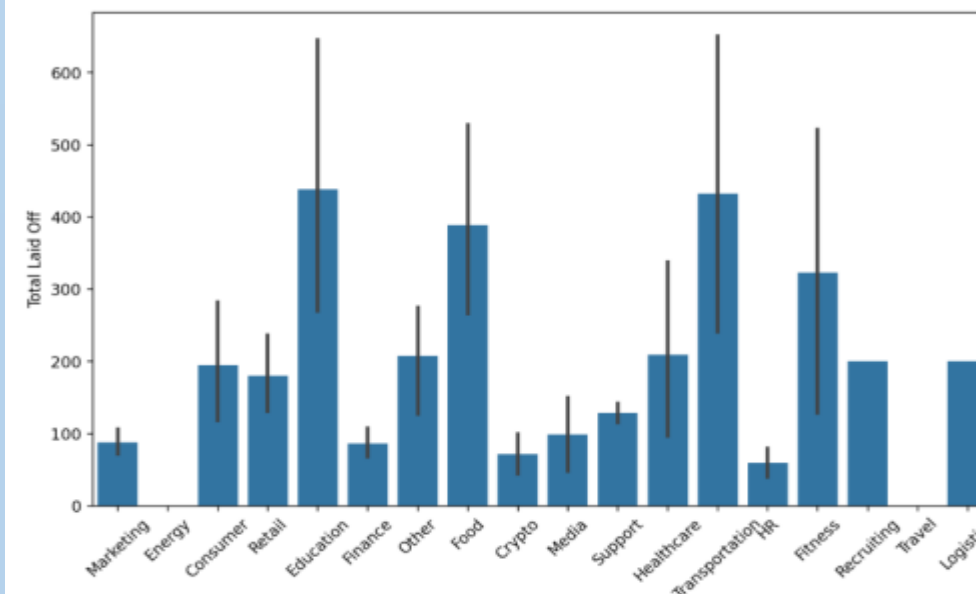


Results

- **Comprehensive** view of workforce dynamics Implemented two graphs in HR Dashboard for workforce analysis.
- First graph displays layoff percentage for departmental impact assessment.
- Second graph shows total layoff numbers for quantitative perspective.
- These graphs offer visual insights into workforce dynamics and organizational changes. Introduces innovative approach to HR practices with Recruitment Prediction Dashboard.

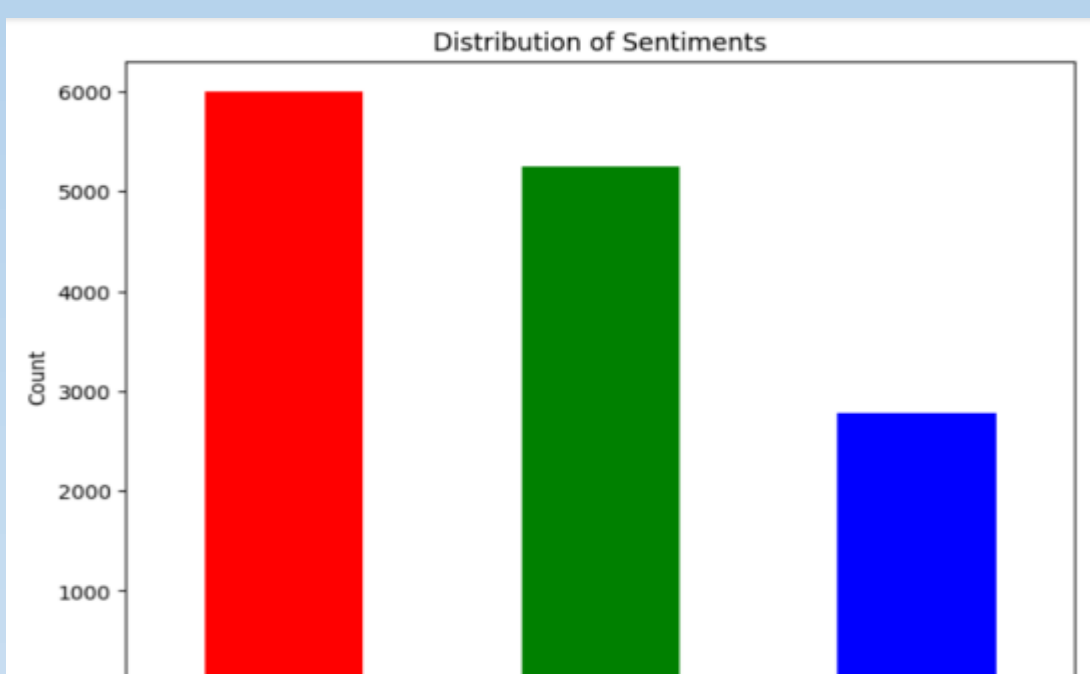
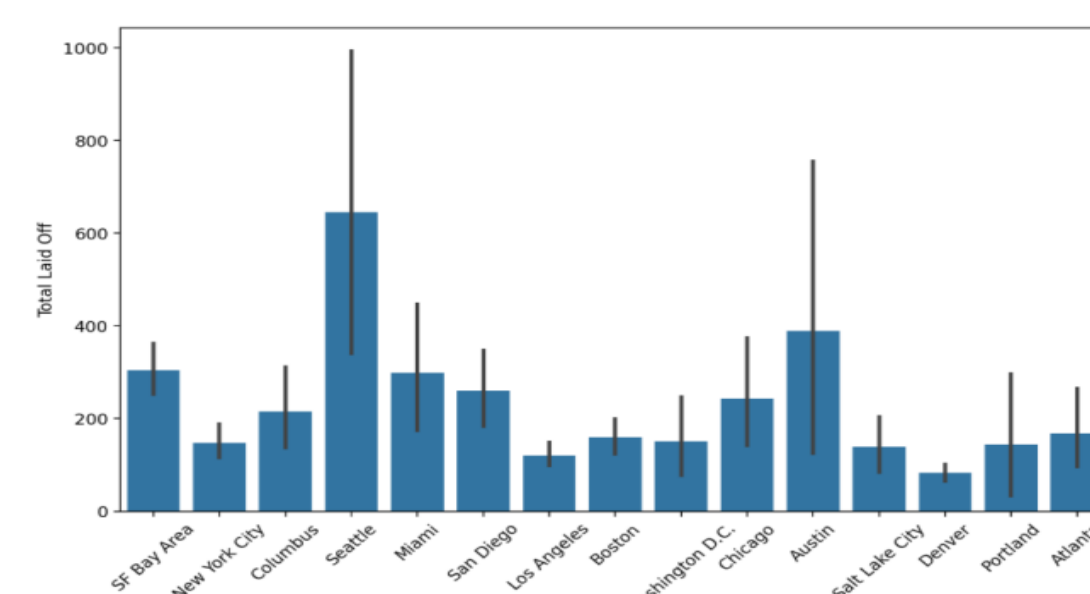
Interactive Analysis of Layoffs

Total Laid Off by Industry

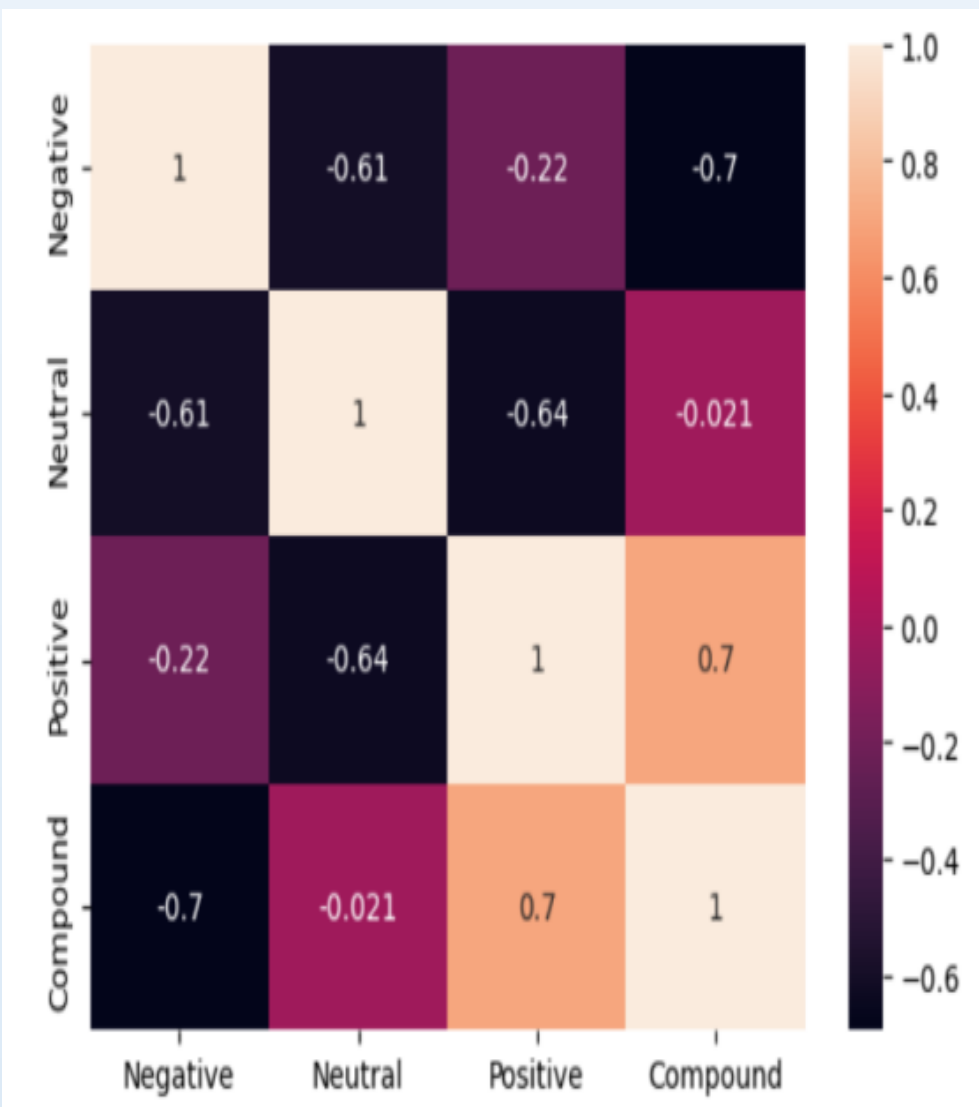


Interactive Analysis of Layoffs

Total Laid Off by Location (Top 15)

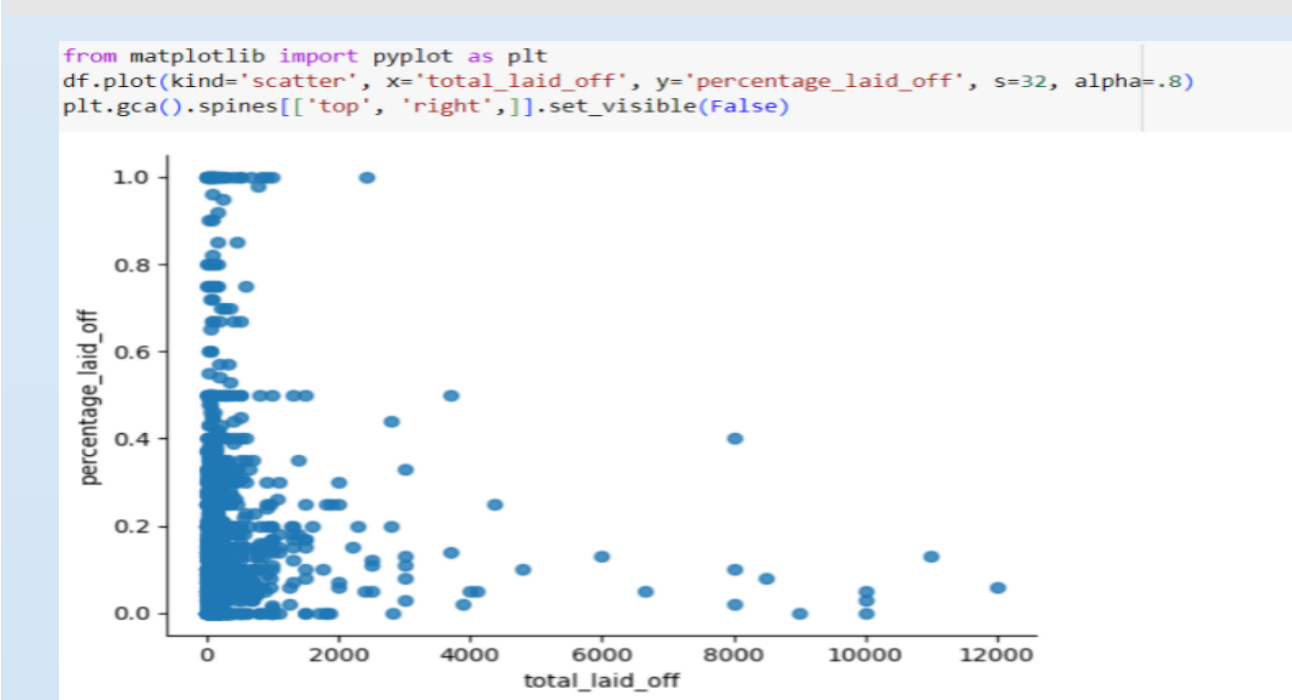


Results (cont..)

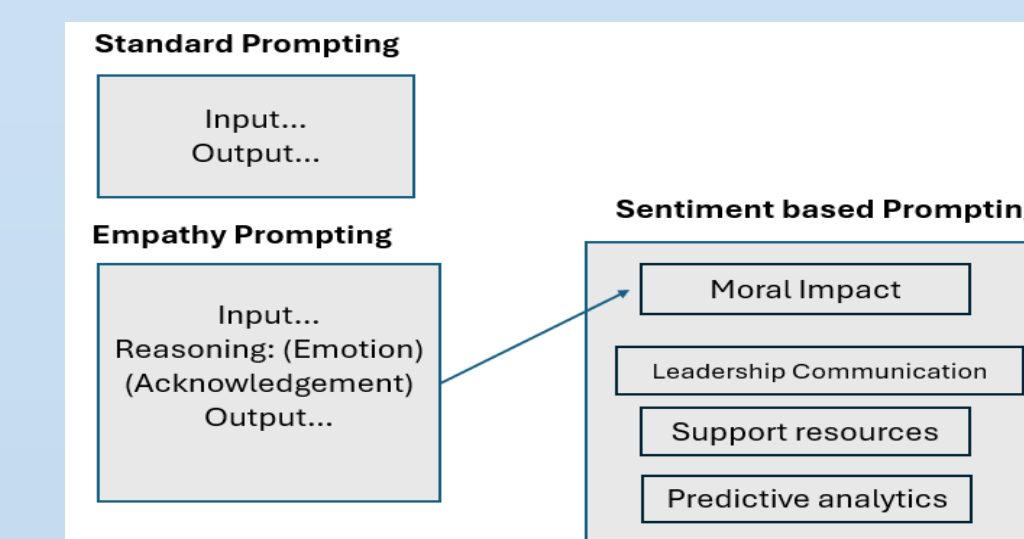
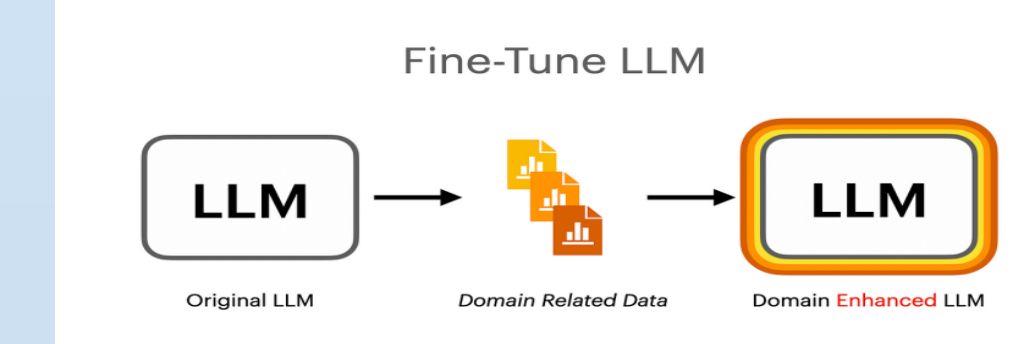


Sentiment analysis on layoff text data reveals a prevailing negative sentiment.

- Employees express feelings of disappointment, frustration, and sadness.
- Negativity is heightened in texts discussing ramifications on careers and financial stability.
- Sentiments of uncertainty and anxiety about the future are evident.
- Employees express apprehensions about securing new job opportunities and navigating post-layoff challenges



LLM Fine Tuning



Standard ML

Training loss: 0.159377925790462	Validation loss: 0.10481542224685352	Validation Accuracy: 0.9761904761904762
Training loss: 0.12775422893391562	Validation loss: 0.09983878232361305	Validation Accuracy: 0.9642857142857143
Training loss: 0.07426510453454138	Validation loss: 0.0408062104333062	Validation Accuracy: 0.9888952388952389

		precision	recall	
0	0.93	1.00	0.96	150
1	0.00	0.00	0.00	11
accuracy				
macro avg	0.47	0.50	0.48	161
weighted avg	0.87	0.93	0.90	161

		precision	recall	f1-score
0	0.93	1.00	0.96	150
1	0.00	0.00	0.00	11
accuracy				
macro avg	0.47	0.50	0.48	161
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		precision	recall	f1-score	supp
0	0.93	1.00	0.96	150	
1	0.00	0.00	0.00	11	
accuracy					
macro avg	0.47	0.50	0.48	161	
weighted avg	0.87	0.93	0.90	161	

SVM:

		precision	recall	f1-score	supp
0	0.93	1.00	0.96	150	
1	0.00	0.00	0.00	11	
accuracy					
macro avg	0.47	0.50	0.48	161	
weighted avg	0.87	0.93	0.90	161	

LDA & Comparison GPT 3.5, 4 Bert, RoBERTa



Discussion

Utilizes natural language processing for sentiment analysis.

- Provides valuable data for informed decision-making.
- Leverages GPT models to uncover emotional responses during transitions.
- Enables organizations to tailor support initiatives effectively.
- Encourages integration of innovative approaches for managing layoffs.
- Prioritizes empathy and proactive support for employee

Interactive Analysis of Layoffs

Filter by Country

Select Country

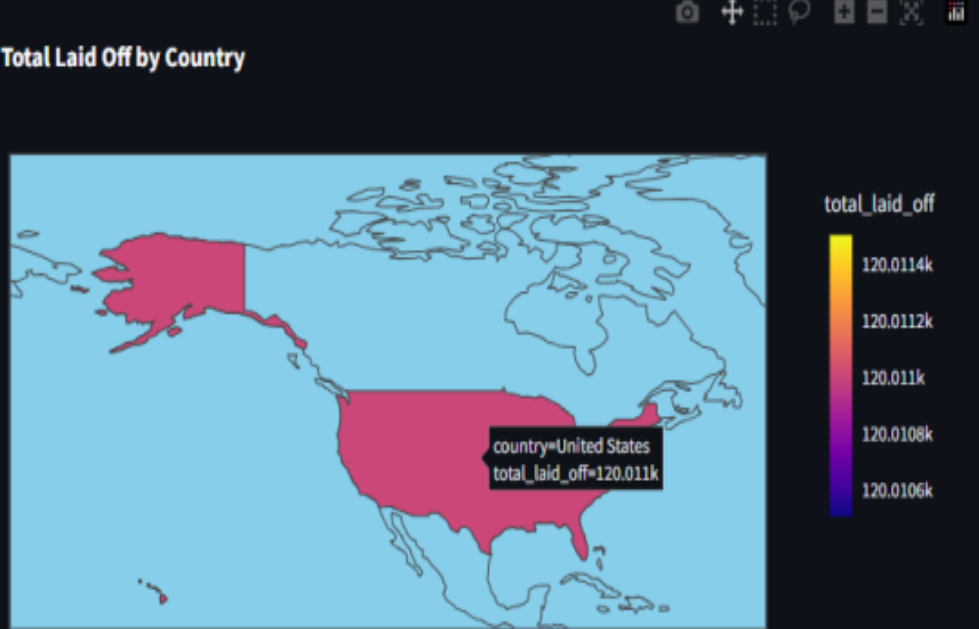
United States

Start Date

End Date

2023/04/01

2024/04/07



Let's Talk with Data!

Enter your query

what are sentiments of the people laid off

Submit

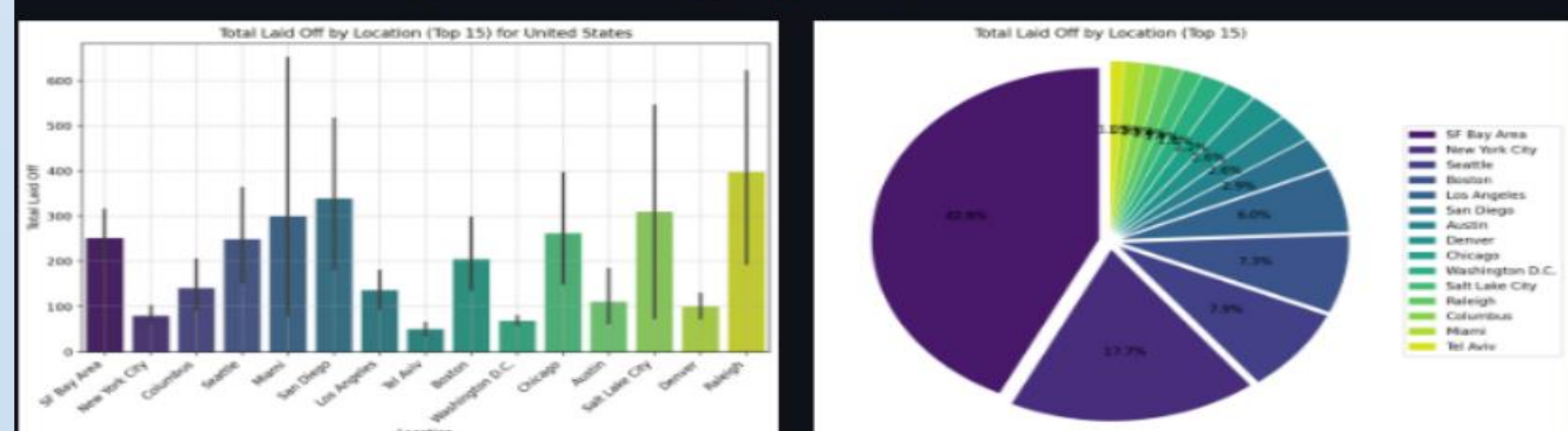
Result:

The sentiments of the people laid off may vary. Some may feel depressed and resentful towards their company for their decision to lay them off. Others may feel grateful for still having a job. Some may also feel motivated to find a new job, while others may feel discouraged by the job market. Overall, the sentiments of individuals who have been laid off may be a mix of emotions such as anger, sadness, uncertainty, and hope.

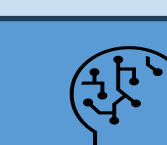
Lay off Stories analysis

- Common Themes analysis:
1. Shock and Disbelief: Many individuals who experience layoffs often express feelings of shock and disbelief, especially if they have been with the company for a long time or have been performing well in their role. They may have a hard time processing the sudden loss of their job and struggle to come to terms with the decision.
 2. Emotional Impact: Layoffs can have a significant emotional impact on individuals, causing feelings of sadness, anger, and disappointment. This is especially evident in stories where people describe feeling depressed or demotivated after surviving a round of layoffs and witnessing their colleagues lose their jobs.

Total Laid Off by Location (Top 15) for United States



Total People Laid Off in United States: 120,011



Conclusion

- Introduces innovative approach to HR practices with Recruitment Prediction Dashboard.
- Combines frontend, backend, and AI components for real-time insights.
- Streamlines recruitment processes and enhances user experience.
- Ensures data security and compliance.
- Integrates features like resume analysis and sentiment analysis for enhanced functionality.

Resume Analyzer

Upload Resume (PDF or DOCX)

Drag and drop file here

Browse Files

MS_Computer_Science.docx 27.9KB

Enter Job Description

Excellent written and oral communication skills, with the ability to effectively communicate technical information to both technical and non-technical stakeholders

Highly effective organizational skills, time management, responsibility, and motivation

Analyze Resume

Based on the comparison between Penny Programmer's qualifications and the job description, here is a relevancy score breakdown:

1. Education: Penny holds a Master's Degree in Computer Science, which aligns well with the preferred qualification for a Master's degree or above in Data Science, Computer Science, or related field. (100% relevance)
2. Programming Experience: Penny has experience in ASP, HTML, VBScript, JavaScript, and MS SQL Server, but lacks specific experience in Python and R, which are preferred for the role. (50% relevance)
3. Data Analysis Skills: Penny has experience with data cleaning and preprocessing, which is relevant for handling large scale datasets, but specific experience with clinical datasets is not mentioned. (50% relevance)
4. Database Skills: Penny has experience with Microsoft SQL Server and SQL, which aligns with the requirement for experience with SQL and database. (100% relevance)
5. Handling Large Scale Datasets: Penny's experience with data cleaning and preprocessing could be relevant for handling large scale datasets, but specific experience with clinical datasets is not mentioned. (50% relevance)
6. Communication and Organizational Skills: Penny's experience in technical support and providing instruction could showcase good communication skills, but further details in communicating technical information to stakeholders are needed. (75% relevance)

Overall Relevance Score: 70%



References

- [1] <https://streamlit.io/>
- [2] <https://colab.research.google.com/>
- [3] <https://platform.openai.com/docs/models>
- [4] <https://www.reddit.com/r/Layoffs/>
- [5] <https://www.kaggle.com/datasets/theakhilb/layoffs-data-2022>