Job Recommender System

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Goals and Objectives

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Problem Statement:

In the rapidly evolving job market, especially within the data science and analytics field, users are often overwhelmed by the vast number of job opportunities available. Many struggle to find positions that align with their specific skills, experience, and preferences in this specialized domain. The problem is exacerbated by traditional job platforms, which often lack the capability to provide personalized recommendations tailored to the unique demands of data science and analytics roles. This project aims to address this gap by developing a job recommender system that helps users find data science and analytics jobs that closely match their job title or description preferences, thereby increasing the chances of finding a suitable position more quickly.

Objectives

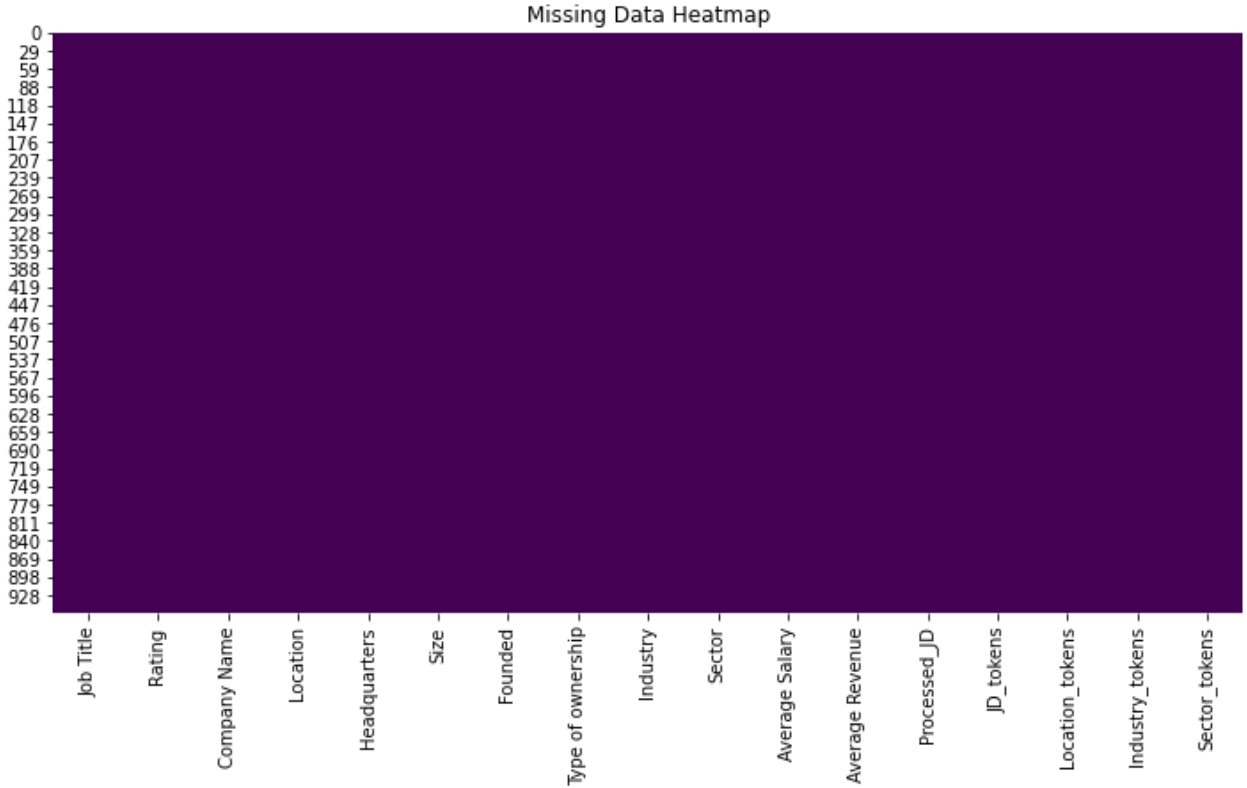
- Enhance Job Matching Precision

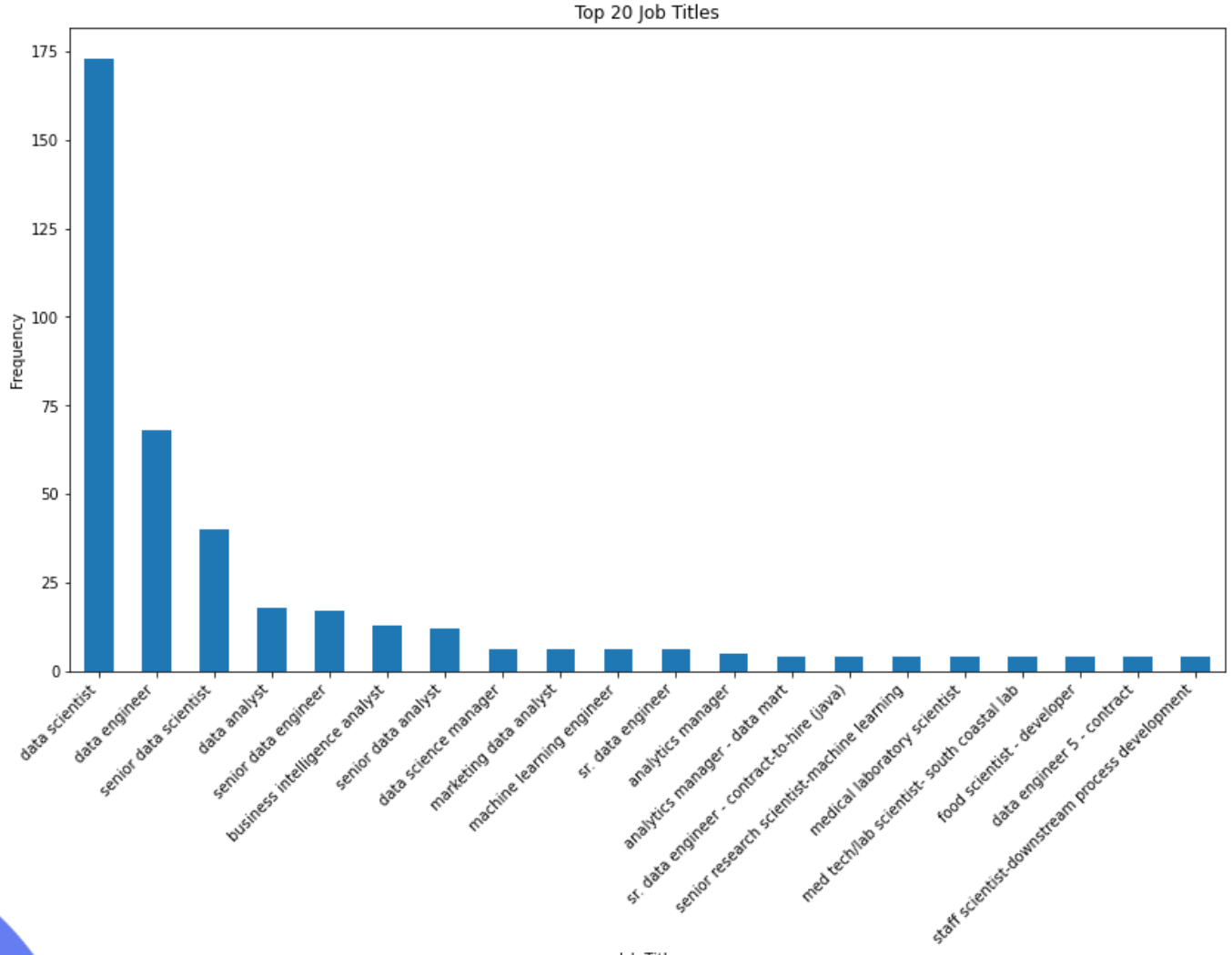
- Improve User Engagement

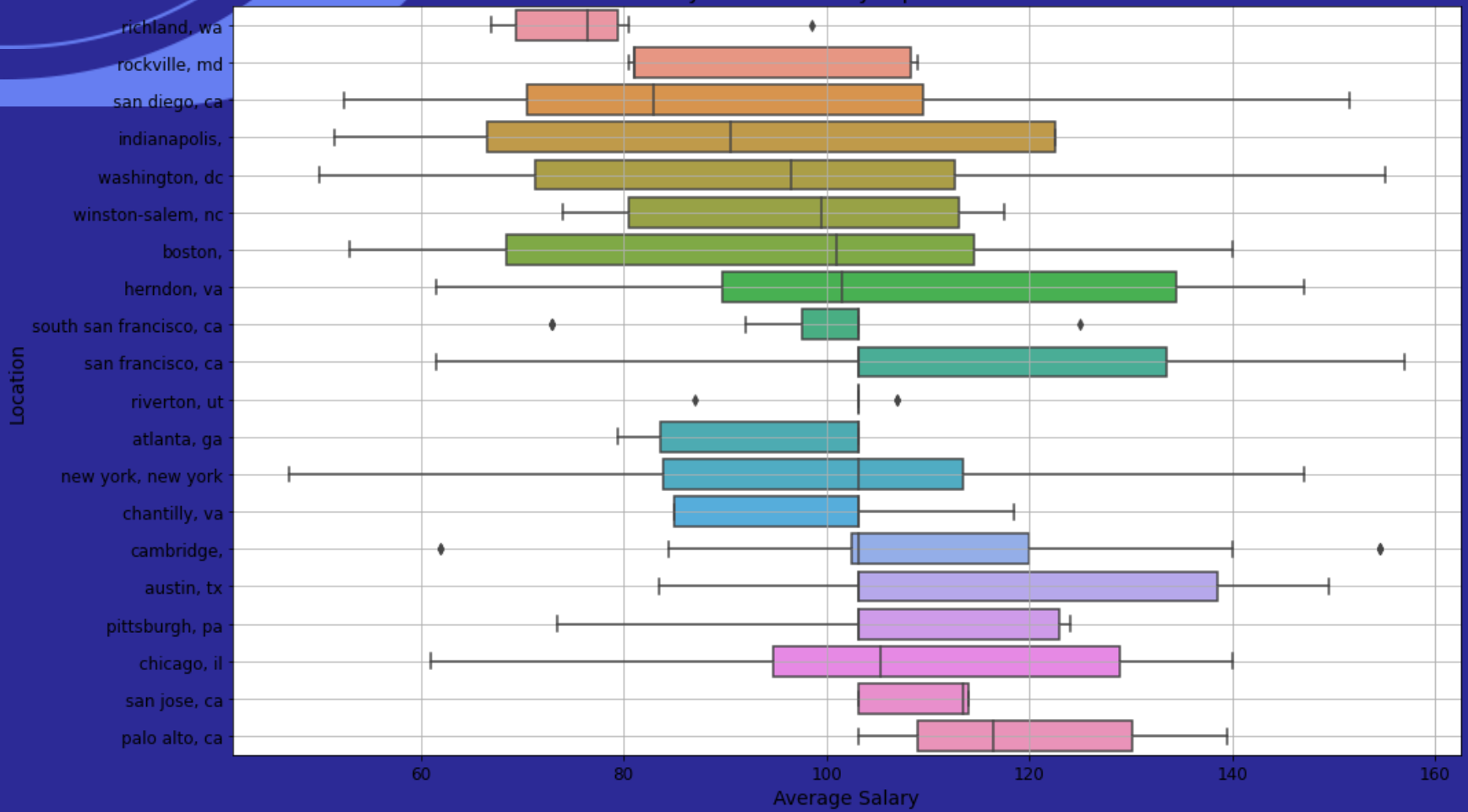
- Expand Service Offerings

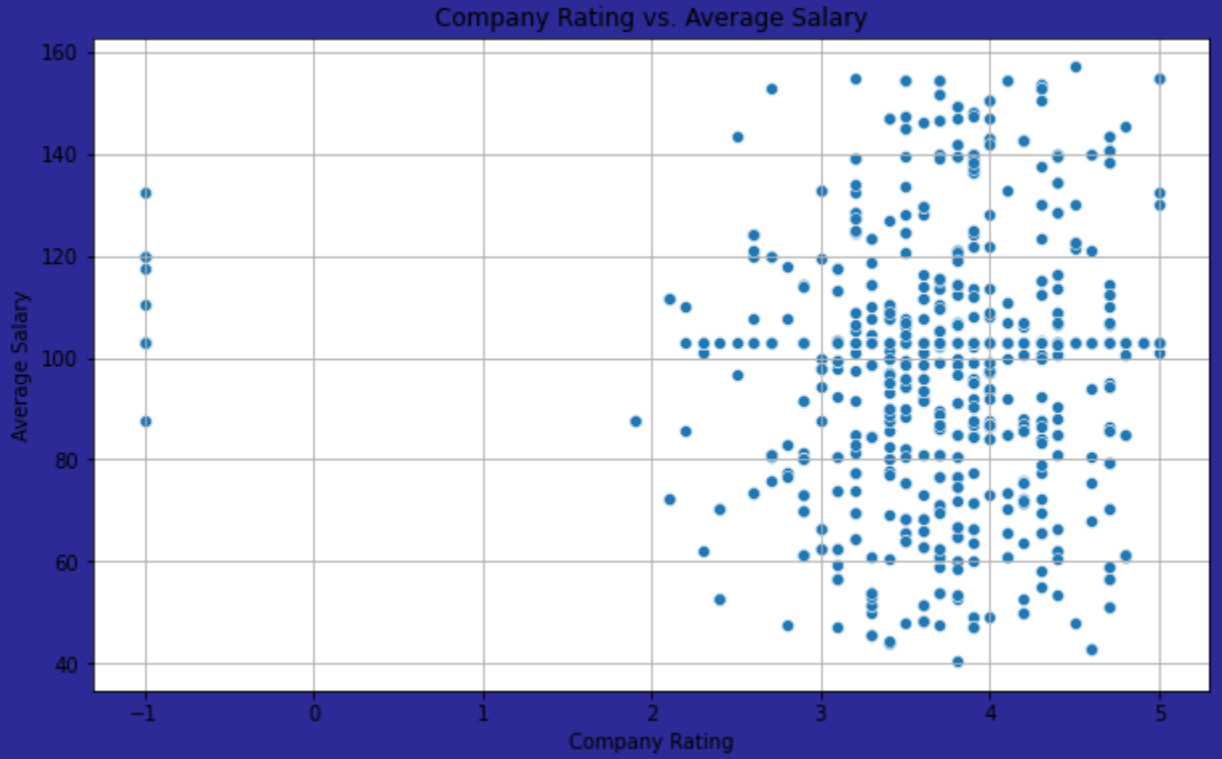
- Increase Platform Reach

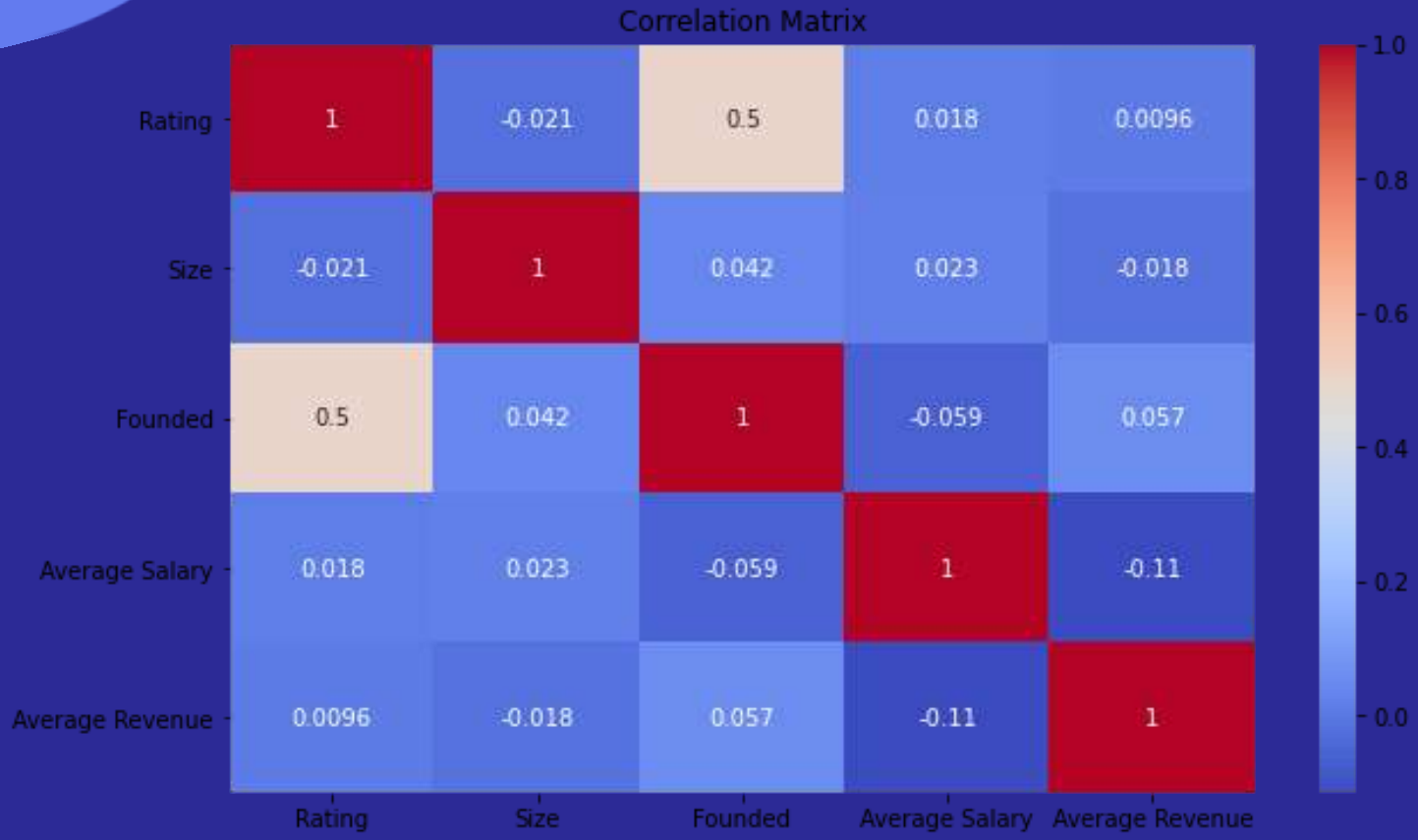
Visualizations




Top 20 Job Titles
Frequency
0
25
50
75
100
125
150
175
data scientist
data engineer
senior data scientist
data analyst
senior data engineer
business intelligence analyst
senior data analyst
data science manager
marketing data analyst
machine learning engineer
sr. data engineer
analytics manager
analytics manager - data mart
sr. data engineer - contract-to-hire (java)
senior research scientist-machine learning
medical laboratory scientist
med tech/lab scientist- south coastal lab
food scientist - developer
data engineer 5 - contract
staff scientist-downstream process development
Job Title


Salary Distribution by Top 20 Locations
richland, wa
rockville, md
san diego, ca
indianapolis,
washington, dc
winston-salem, nc
boston,
herndon, va
south san francisco, ca
san francisco, ca
riverton, ut
atlanta, ga
new york, new york
chantilly, va
cambridge,
austin, tx
pittsburgh, pa
chicago, il
san jose, ca
palo alto, ca
Location
60
80
100
120
140
160
Average Salary


Company Rating vs. Average Salary
Average Salary
160
140
120
100
80
60
40
−1
0
1
2
3
4
5
Company Rating


Correlation Matrix
Rating
Size
Founded
Average Salary
Average Revenue
1
-0.021
0.5
0.018
0.0096
-0.021
1
0.042
0.023
-0.018
0.5
0.042
1
-0.059
0.057
0.018
0.023
-0.059
1
-0.11
0.0096
-0.018
0.057
-0.11
1
Rating
Size
Founded
Average Salary
Average Revenue
1.0
0.8
0.6
0.4
0.2
0.0

Models

KNN Basic

The KNNBasic algorithm produced an RMSE of 0.9447 and an MAE of 0.5704, indicating decreased consistency and effectiveness. With an accuracy of 84.26%, the model required further tuning.

SVD

The SVD model achieved an RMSE of 0.8443, an MAE of 0.5149, and an accuracy of 89.45%. This improvement makes it the most robust model we've evaluated, so we recommend it as the best choice for our predictive task.

Parameter tuning

Did not as good a result as our SVD model at 85% accuracy

Our recommendation system

Our job recommender system helps users find job postings similar to the job title or description they enter. Here’s how it works:

1. User Input: You provide a job title or description (e.g., "Data Scientist").
2. Text Analysis: The system converts all job postings into numerical data that represents their content.
3. Similarity Matching: It compares your input with these numerical representations to find jobs with similar content.
4. Ranking: The system ranks job postings based on their similarity to your input.
5. Recommendations: It shows you the top job matches along with details like location and salary.

This approach helps personalize job suggestions and ensures you see relevant opportunities based on your interests.

Recommendations

- Incorporate User Feedback: Consider implementing a feedback mechanism where users can rate or interact with recommended jobs. This feedback can be used to refine the recommendation system by learning from user preferences over time.

- Diversify Filters: Expand the system to allow users to filter job recommendations based on additional criteria such as location, industry, company size, and salary range. This will make the recommendations more personalized and relevant.

- Improve Data Quality: Ensure that the job descriptions in the dataset are detailed and comprehensive. High-quality text data leads to better recommendations, as the system relies on text similarity.

Thank you

Any questions??