NEXT GEN EMPLOYABILITY PROGRAM

CREATING A FUTURE-READY WORKFORCE

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CAPSTONE PROJECT SHOWCASE

Project Title

DA - Exploratory Data Analysis on Space Exploration Missions using Power BI

Abstract | Problem Statement | Project Overview | Proposed Solution | Technology Used | Modelling & Results | Conclusion | Q&A

Abstract

1. Conducting Exploratory Data Analysis (EDA) on space exploration missions.
2. Leveraging Power BI for integration and visualization of diverse mission datasets.
3. Uncovering trends in mission success rates, distribution across celestial bodies, and impact of objectives.
4. Providing stakeholders with insights for strategic decision-making in space exploration endeavours.

Problem Statement

In an era of rapid advancements in space exploration, traditional methods of analyzing mission data fall short in providing actionable insights. There's a critical need for innovative approaches that harness the power of tools like Power BI to conduct comprehensive Exploratory Data Analysis (EDA), enabling stakeholders to unlock hidden patterns, optimize resource allocation, and drive strategic decision-making for future space missions.

Project Overview

The project aims to conduct an in-depth Exploratory Data Analysis (EDA) on space exploration missions using Power BI, a cutting-edge business analytics tool. It involves collecting and integrating diverse datasets related to past space missions, including launch dates, destinations, objectives, success rates, and funding allocations. Through interactive dashboards and visualizations created in Power BI, the analysis will uncover insights into mission trends, success factors, and correlations. The ultimate goal is to provide stakeholders with actionable insights crucial for optimizing resource allocation, strategic decision-making, and future planning in space exploration endeavors.

Proposed Solution

The proposed solution involves leveraging Power BI's robust data integration and visualization capabilities to conduct comprehensive Exploratory Data Analysis (EDA) on space exploration missions. By collecting and integrating diverse datasets, including mission objectives, success rates, and funding allocations, the solution will create interactive dashboards and visualizations. These visualizations will enable stakeholders to identify trends, correlations, and success factors in space missions, empowering informed decision-making. Additionally, the solution will offer scalability and flexibility to adapt to evolving data needs and facilitate ongoing analysis for continuous improvement in space exploration endeavors.

Technology used

1. Power BI: The primary tool for data integration, visualization, and interactive dashboard creation. Power BI offers robust capabilities for handling large datasets and creating dynamic visualizations to explore and analyze space mission data effectively.

2. SQL or NoSQL Databases: These databases will be utilized for storing and managing the diverse datasets related to space exploration missions. SQL databases like PostgreSQL or MySQL, or NoSQL databases like MongoDB, may be employed based on the nature and structure of the data.

3. Python: Python programming language will be utilized for data preprocessing, cleaning, and transformation tasks. Libraries such as Pandas and NumPy will be used for data manipulation, while libraries like Matplotlib and Seaborn may aid in generating additional visualizations if needed.

4. Data Visualization : While Power BI serves as the primary visualization tool, additional libraries may be used for creating custom visualizations or enhancing interactivity in specific scenarios.

By integrating these technologies effectively, the project aims to create a robust solution for conducting Exploratory Data Analysis on space exploration missions, providing stakeholders with actionable insights to drive decision-making in the field of space exploration.

Modelling & Result

₹ 13.96T	48	398
Sum of Budget	Failure Missions	Retired_count
1265	867	19
Total Missions	Active_count	Partial Failure Missions
1197	1	
Successful Missions	Prelaunch Failure Missions	

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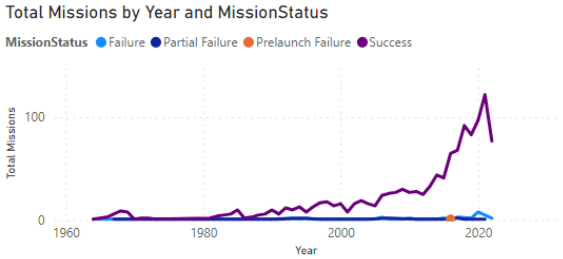
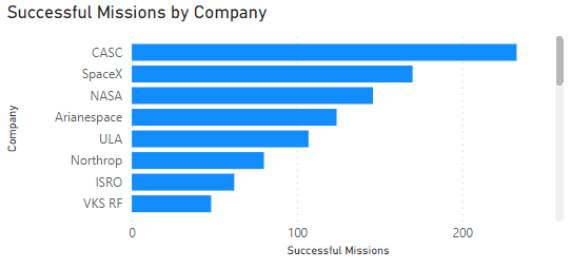
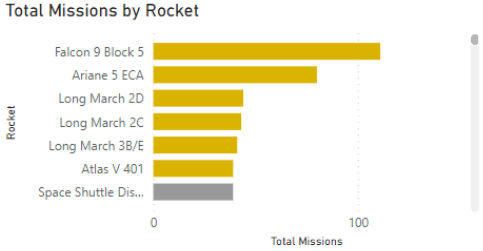
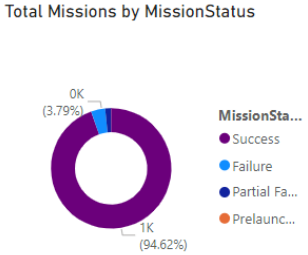
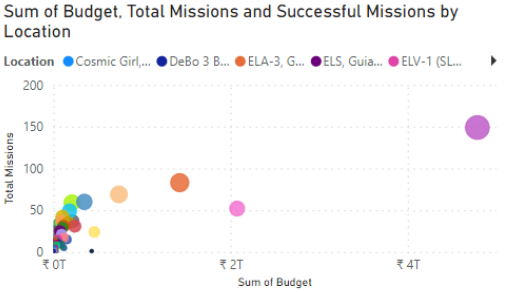
Modelling & Result











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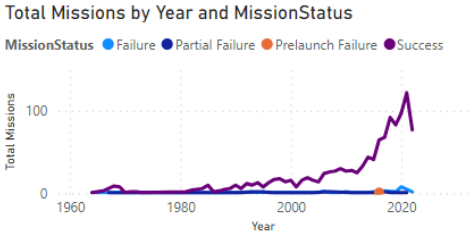
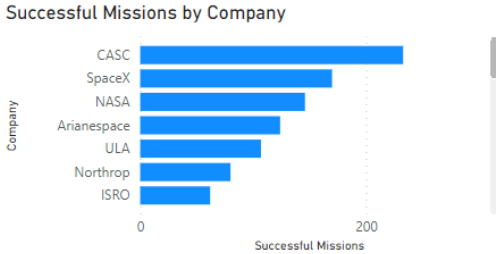
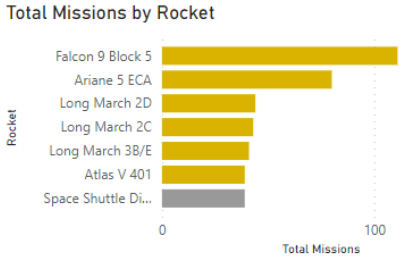
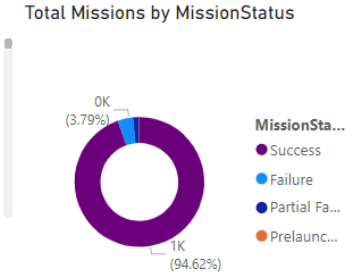
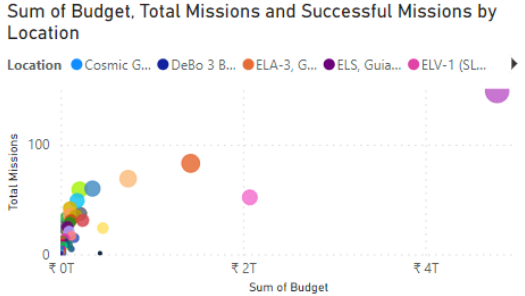


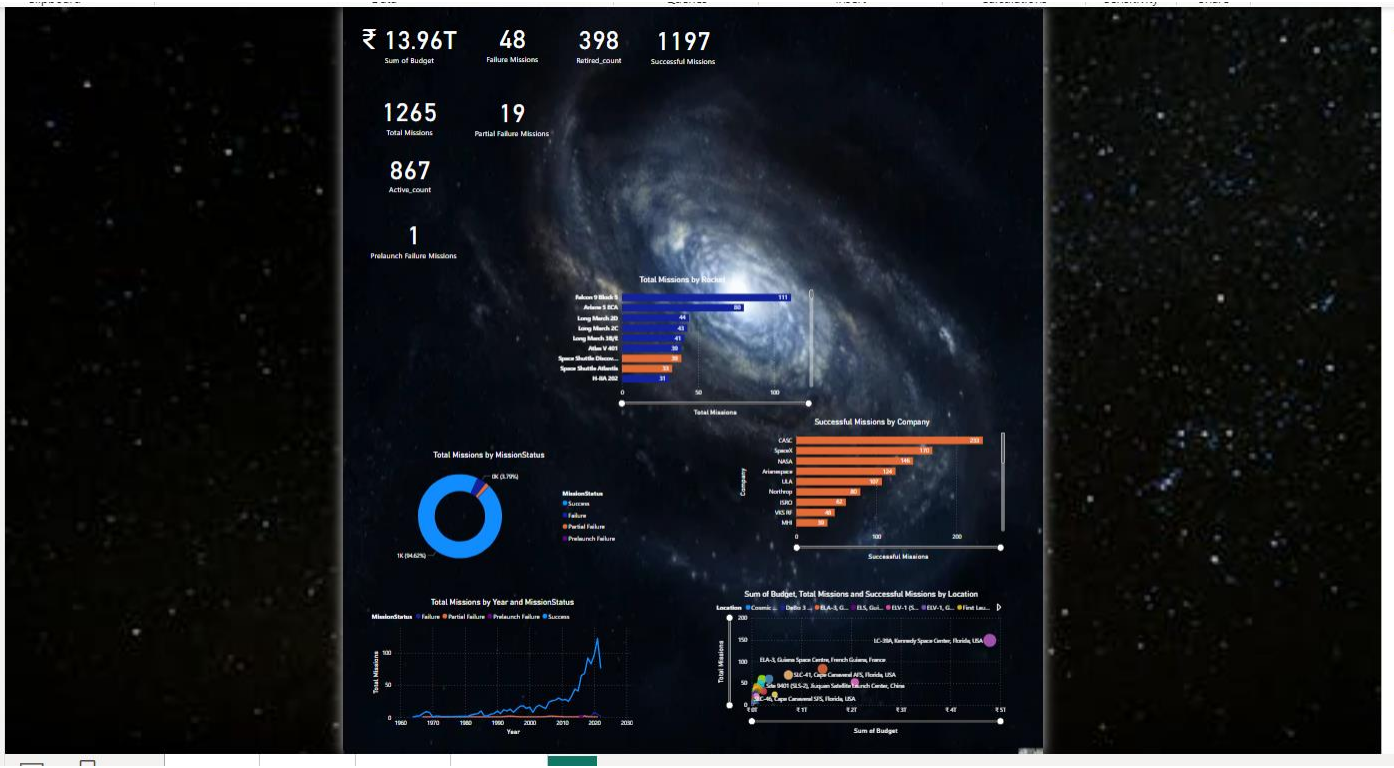








Modelling & Result



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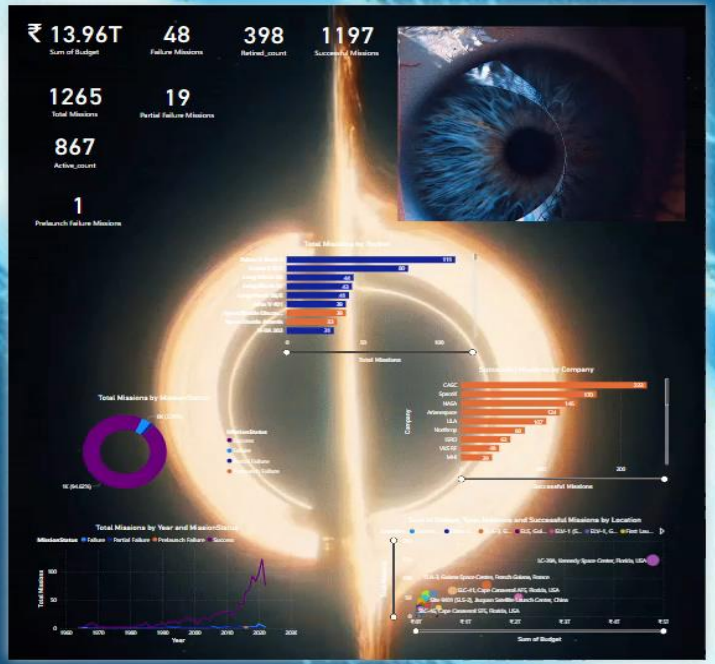
Modelling & Result Video

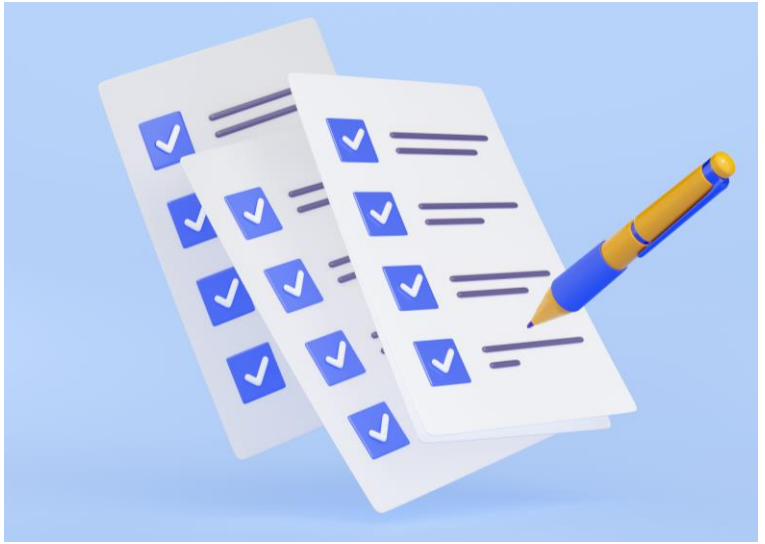


Conclusion

1. The integration of Power BI with complementary technologies like SQL or NoSQL databases, Python, web scraping tools, cloud services, and data visualization libraries offers a comprehensive solution for conducting Exploratory Data Analysis (EDA) on space exploration missions.

2. This integrated approach empowers stakeholders to extract valuable insights from diverse datasets related to space missions, including launch dates, objectives, success rates, and funding allocations. Interactive dashboards and visualizations aid in identifying trends, correlations, and success factors, facilitating informed decision-making and strategic planning.

3. Leveraging the capabilities of these technologies enables efficient data processing, scalability, flexibility, and reproducibility. Ultimately, it contributes to advancing our understanding of space exploration missions and optimizing resource allocation for future endeavors in the exploration of the cosmos.



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