**Internship Report: Data Analytics & Visualization Using Power BI**

**1. Introduction**

This report presents an overview of my internship experience focused on data analytics and visualization using Power BI. The internship allowed me to apply my academic background in computer science and web development to real-world data analysis tasks, enhancing my technical and analytical competencies.

**2. Background**

As a B-Tech student in Computer Science and Engineering at Aurora’s Technological and Research Institute, I have built a strong foundation in programming and problem-solving. During the internship, I worked with real Twitter datasets, using Power BI to create insightful dashboards, custom filters, and comparative analysis, building on my prior experience in HTML, CSS, Python, and Java.

**3. Learning Objectives**

* Understand and apply Power BI tools for data transformation and visualization.
* Build dynamic dashboards with time-based visibility controls.
* Create data models that support complex filtering and conditional logic.
* Develop measures using DAX for comparative and performance analysis.
* Interpret business KPIs using visual tools like line charts, combo charts, and scatter plots.

**4. Activities and Tasks**

Key tasks performed during the internship included:

* Cleaning and transforming tweet data using Power Query.
* Filtering tweets based on date ranges, time-of-day (IST), word count, and engagement conditions.
* Creating custom DAX measures such as engagement rate and visibility toggles.
* Designing visuals: clustered bar charts, line charts, scatter plots, and combo charts.
* Building dynamic visual controls to display charts based on current system time.
* Using conditional formatting to highlight data anomalies and performance spikes.

**5. Skills and Competencies**

**Technical Skills Gained:**

* Power BI (Data modeling, DAX, Visualization)
* Power Query (M Language)
* Data Cleaning and Preprocessing
* Conditional Logic in Dashboards
* Time-based Visualization Filters
* Performance Analysis with KPI indicators

**Soft Skills Improved:**

* Problem-solving and debugging DAX/Power Query formulas.
* Managing complex data transformation pipelines.
* Communicating data insights clearly using visual tools.
* Time management in project iterations.

**6. Feedback and Evidence**

* The final Power BI project (Project.pbix) includes dynamic visuals and user-focused dashboards which illustrate practical business intelligence use cases.
* Feedback from mentors highlighted accuracy in DAX measures and creativity in time-controlled visuals.
* Documentation and walkthroughs of filtering logic helped validate the approach taken for engagement-based tweet analysis.

**7. Challenges and Solutions**

| **Challenge** | **Solution** |
| --- | --- |
| Time filtering in IST instead of UTC | Applied time-zone conversion using Power Query and DAX time logic |
| Using measures in legends (not allowed in Power BI) | Replaced measures with calculated columns to enable legend use |
| Complex filtering based on engagement and tweet content | Used conditional columns and custom filters to separate tweet categories |
| Error values in datasets | Used Power Query’s "Remove Errors" and try...otherwise logic for safe transformation |

**8. Outcomes and Impact**

* Created a comprehensive, user-friendly Power BI dashboard capable of dynamic filtering and visualization.
* Developed a re-usable data model for analyzing tweet engagement, applicable to various social media reporting tasks.
* Demonstrated capability in using Microsoft BI tools to deliver business insights.
* Gained readiness for roles in data analytics, business intelligence, or software engineering.

**9. Conclusion**

This internship provided me with a solid foundation in real-world data analytics and visualization. It helped bridge the gap between academic knowledge and industry-relevant tools. By working with Power BI, I gained valuable insights into data modeling, business logic, and user-centric dashboard design. I am now better equipped to pursue opportunities in data analytics and software development, with enhanced confidence in managing real-world data challenges.