Internship Report: Power BI Twitter Engagement Analytics

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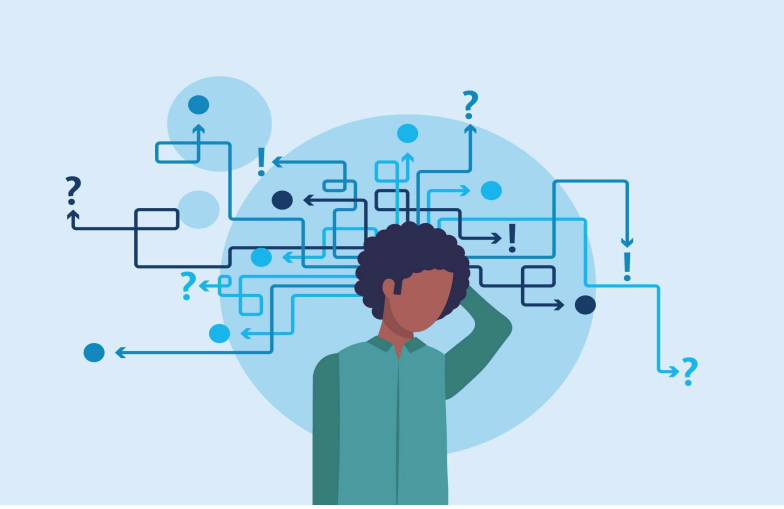
Role: Data Analyst

1. Introduction

In the modern landscape, businesses increasingly depend on data analytics and visualization to drive strategic decisions. This internship at NullClass centered around utilizing Power BI to assess Twitter engagement metrics, offering valuable insights into user interactions and content effectiveness. The core objective was to design an interactive dashboard that efficiently managed data transformations and filtering mechanisms to support decision-making.

Throughout the internship, I engaged extensively with Microsoft Power BI, Power Query, and DAX functions to process and visualize Twitter data. The project required data cleaning, transformation, and dynamic filtering, alongside implementing time-based visibility controls to ensure insights were available when needed.

This hands-on experience deepened my understanding of leveraging data analytics to enhance social media strategies by examining engagement patterns and audience behavior. The structured approach to data handling and visualization not only strengthened my technical proficiency but also refined my problem-solving skills. This report details the activities, challenges, and key takeaways from the internship, providing an in-depth reflection on the learning journey.



2. Background

NullClass is deeply committed to inclusivity and empowerment. The company firmly believes in offering opportunities to individuals who may be overlooked by traditional hiring practices due to a lack of experience or specific skill sets. Their approach focuses on identifying potential and nurturing talent rather than solely prioritizing pre-existing qualifications.

NullClass provides a supportive environment where individuals can develop and refine their skills. Through structured mentorship, tailored training programs, and hands-on experience, the organization empowers its team members to reach their full potential. This inclusive work culture ensures that everyone, regardless of their background, has the opportunity to succeed and contribute meaningfully.

The company's dedication to professional development aligns perfectly with the objectives of this internship, which emphasized skill-building through practical learning. The supportive framework offered by NullClass enabled me to gain valuable experience in data analytics and visualization, reinforcing my ability to apply theoretical knowledge to real-world challenges.

3. Learning Objectives

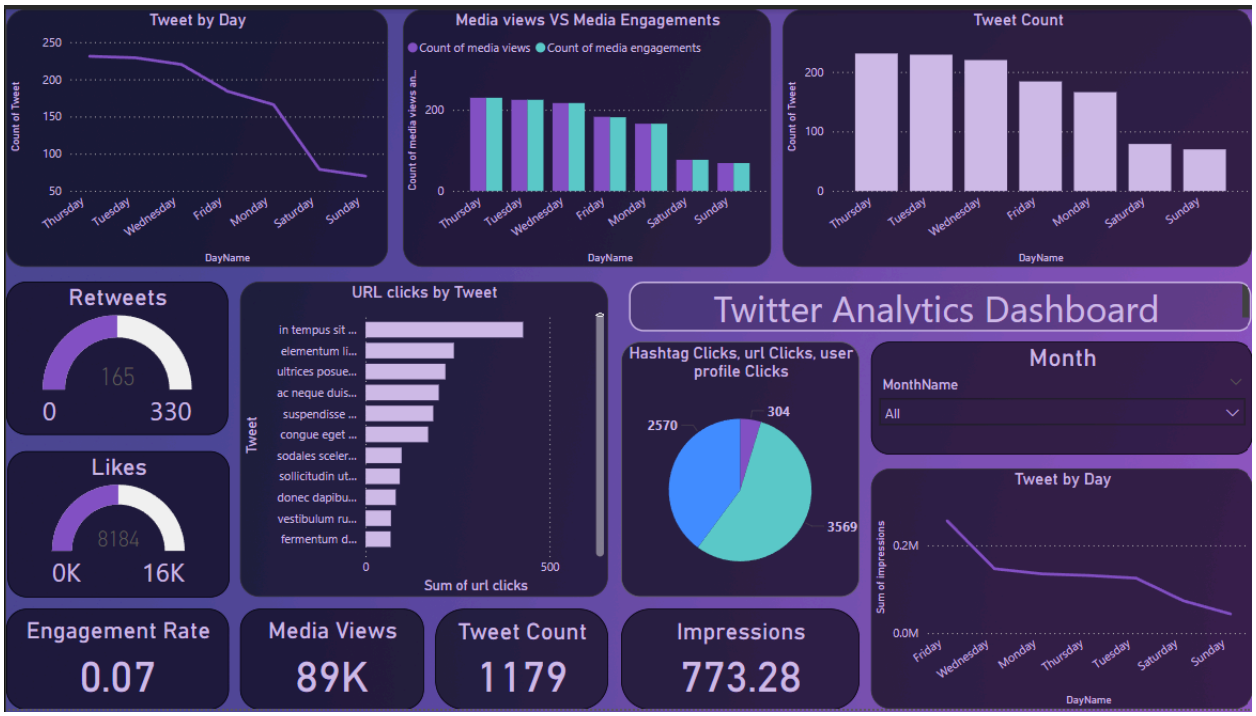
The projects aimed at:

- Power BI visualizations
- Data transformation (Excel & Power Query)
- Filtering based on tweet metadata
- Creating time-based restrictions in dashboards

Project Title: Data-Driven Twitter Analytics Using Power BI
Objective: Develop an interactive Power BI dashboard for analyzing tweet engagement.
Scope: Data cleaning, transformation, visualization, and filtering based on tweet attributes and time-based restrictions.

Before undertaking the project, the following prerequisites were essential:

- **Technical Skills:** Proficiency in Power BI, DAX, and Power Query.
- **Data Understanding:** Familiarity with tweet metadata, including impressions, retweets, likes, and clicks.
- **Software Tools:** Microsoft Power BI, Excel, and Power Query.
- **Logical Thinking:** Ability to apply complex filtering and time-based visibility controls.

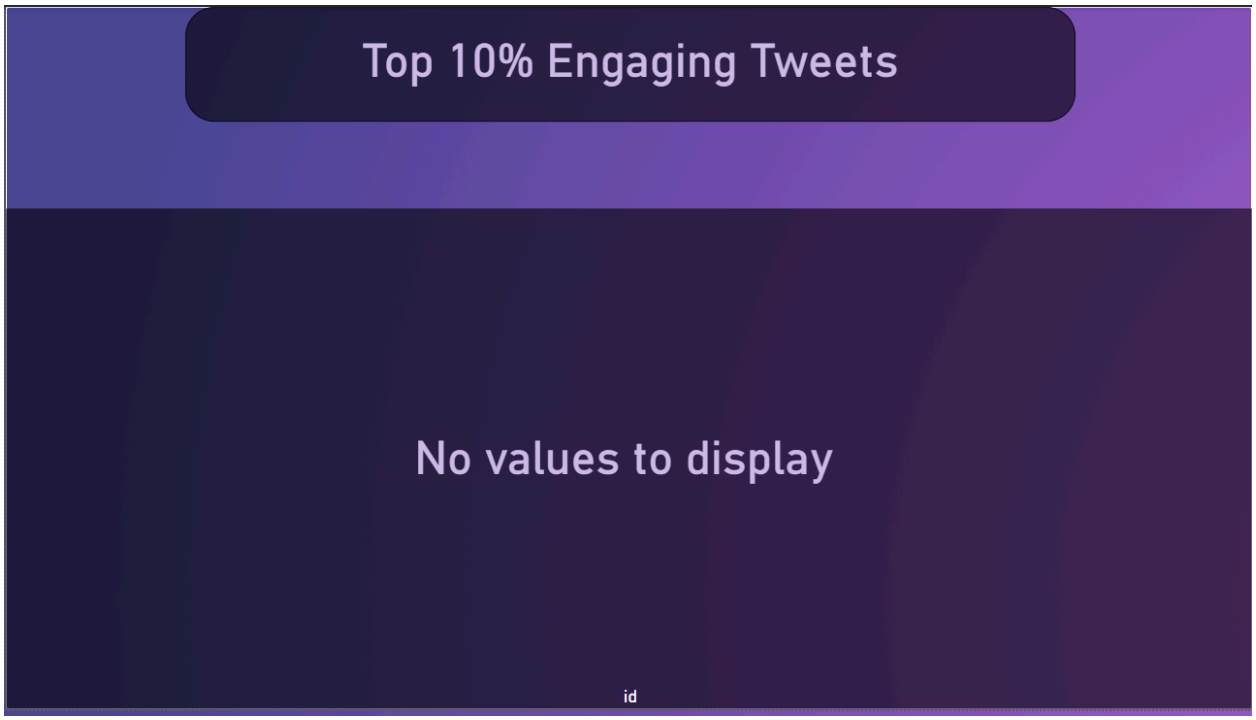


4. Activities and Tasks

Task 1: Identifying High-Engagement Tweets

Filters Applied: Tweets with engagement rate in the top 10%, more than 50 likes, posted on weekdays, and a character count below 30.
Time Restriction: 3 PM - 5 PM IST.
Implementation:

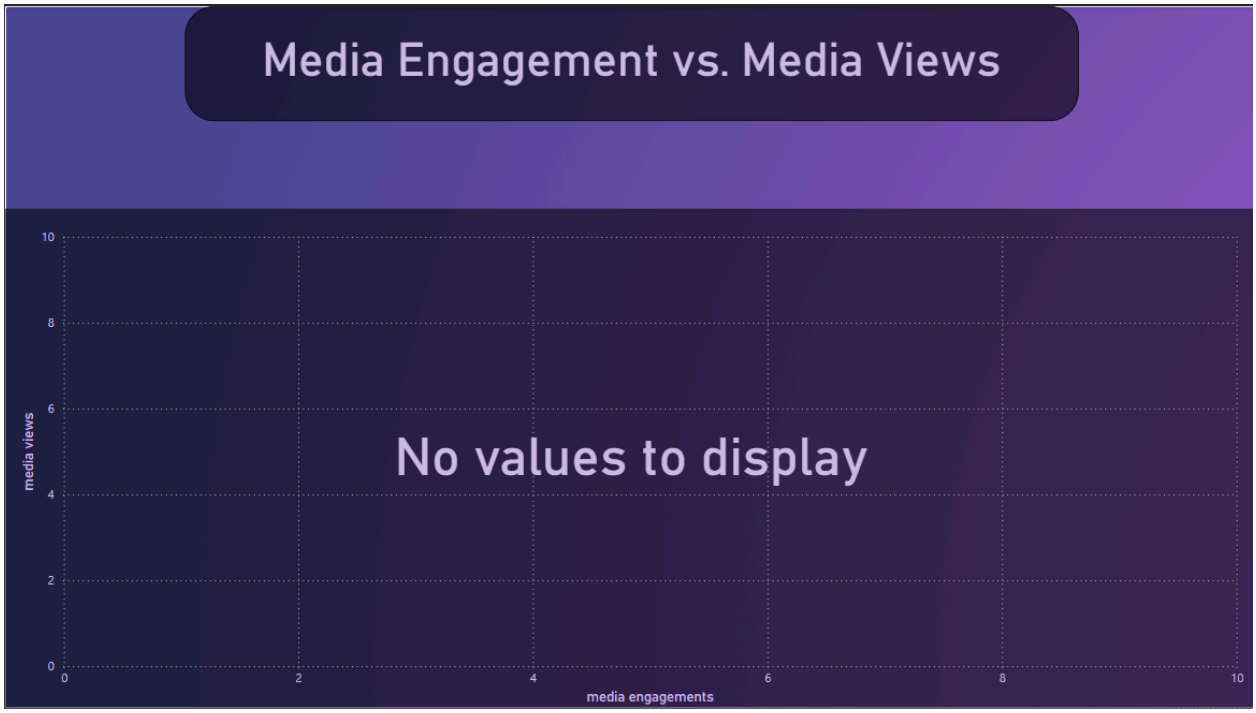
- Data imported and processed using Power Query.
- Filters applied to extract tweets meeting the engagement and time criteria.
- A bar chart visualizing top tweets by engagement rate.



Task 2: Analyzing Media Engagements vs. Media Views

Filters Applied: Tweets with over 10 replies, engagement rate above 5%, odd-numbered dates, and word count above 50.
Time Restriction: 6 PM - 11 PM IST.
Implementation:

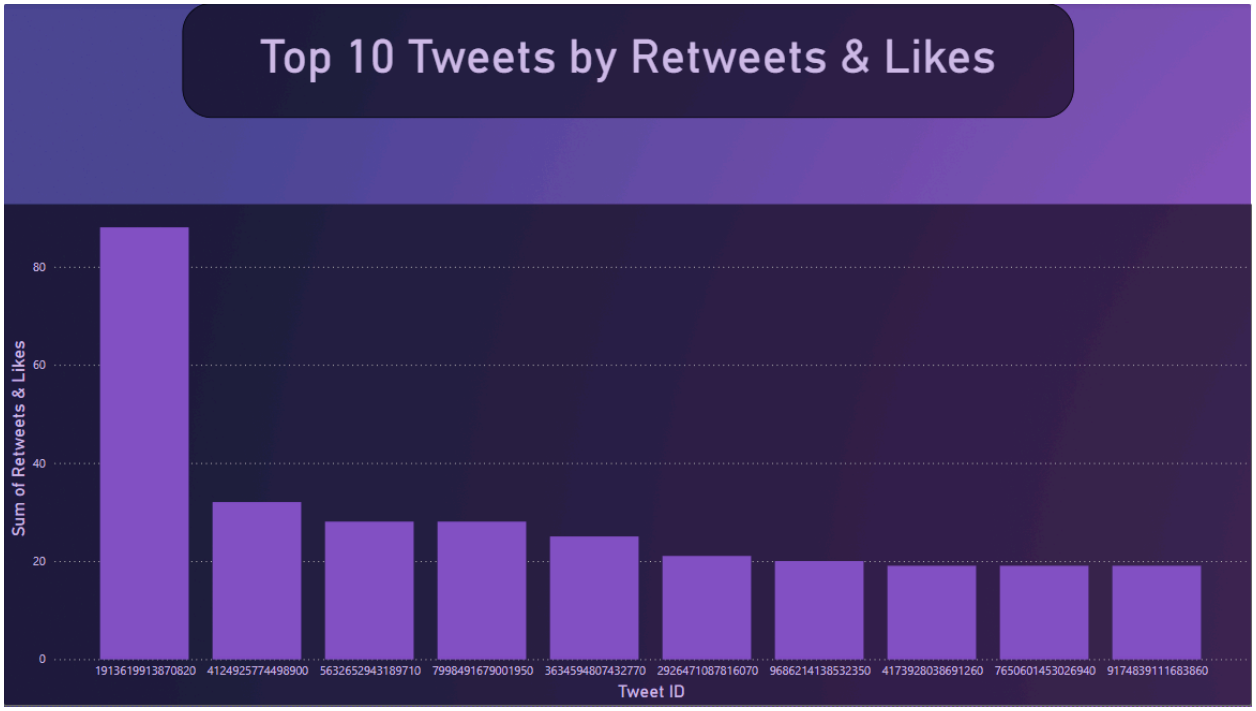
- A scatter plot created to analyze the relationship between media engagements and views.
- Conditional formatting applied to highlight tweets with high engagement rates.



Task 3: Identifying Top 10 Tweets by Retweets and Likes

Filters Applied: Tweets posted on weekdays, with even-numbered impressions, odd-numbered dates, and a character count below 30.
Time Restriction: 3 PM - 5 PM IST.
Implementation:

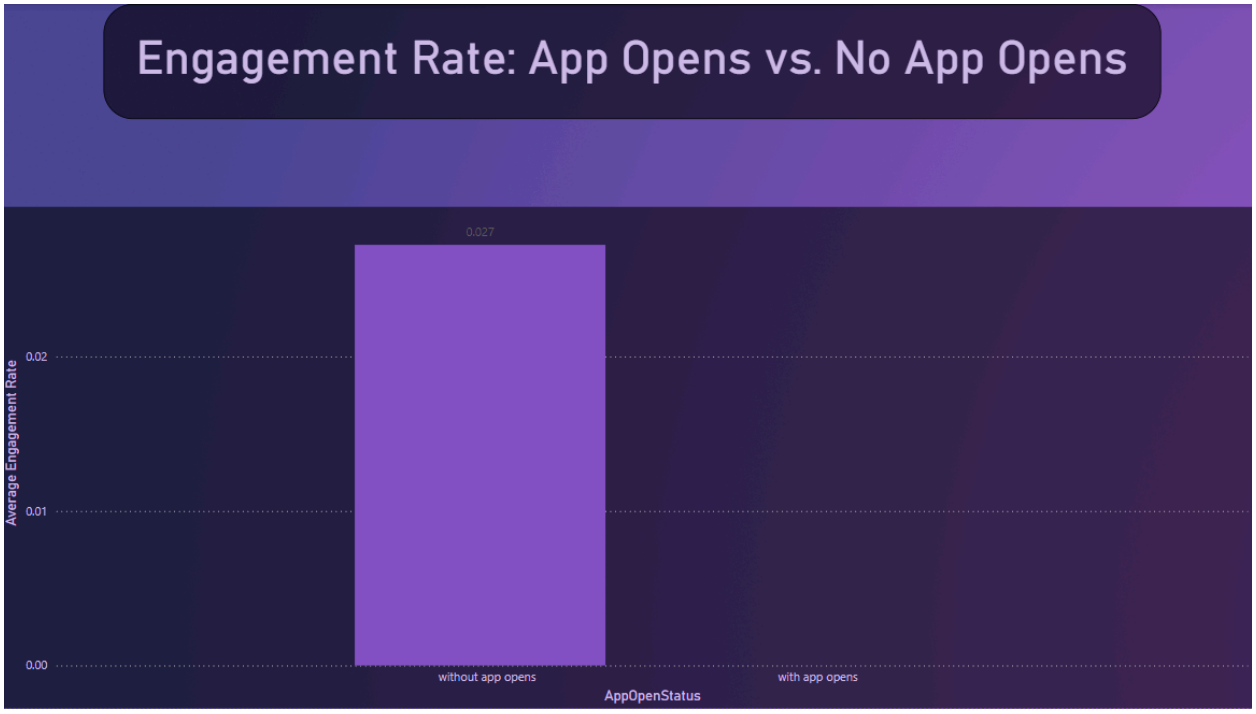
- Created a ranking measure using DAX to identify the top 10 tweets.
- Displayed user profiles alongside tweet performance.



Task 4: Engagement Rate Comparison for Tweets with App Opens

Filters Applied: Tweets posted between 9 AM - 5 PM on weekdays, impressions being even, odd-numbered dates, and character count above 30. Words containing the letter ‘D’ were excluded.
Time Restriction: 12 PM - 6 PM IST and 7 AM - 11 AM IST.
Implementation:

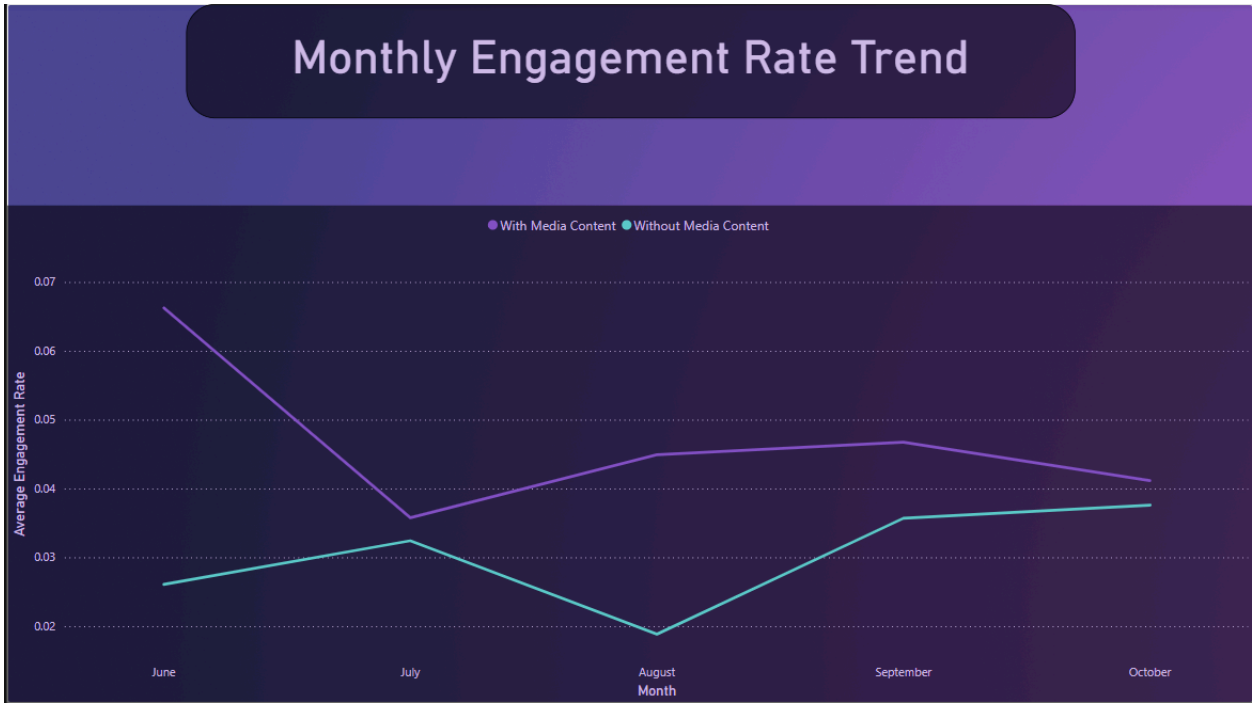
- A bar chart comparing engagement rates for tweets with and without app opens.
- Separate table relationships created for filtering tweets based on app opens.



Task 5: Monthly Trend Analysis of Engagement Rate

Filters Applied: Tweets with even-numbered engagements, odd-numbered dates, and character count above 20. Words containing ‘C’ were removed.
Time Restriction: 3 PM - 5 PM IST and 7 AM - 11 AM IST.
Implementation:

- A line chart depicting monthly trends in engagement rate.
- Separate lines displayed for tweets with and without media.



5. Skills and Competencies

During the internship, the following skills were developed:

- **Power BI Dashboard Development:** Building dynamic, interactive reports.
- **Data Transformation:** Cleaning and structuring raw Tweet data using Power Query and Excel.
- **Advanced Filtering Techniques:** Implementing attribute-based and time-based filtering in Power BI.
- **Time-Based Visualization Control:** Restricting dashboard elements dynamically based on real-time conditions.
- **Analytical Thinking:** Applying data-driven strategies to interpret engagement metrics.

6. Challenges and Solutions

Challenge: Cleaning data to remove words with specific letters.
Solution: Used Power Query functions & DAX expressions to filter out unwanted words.

Challenge: Creating dynamic time-based filters for restricting visualization display.
Solution: Used calculated columns with DAX and Power Query to determine active display periods.

Challenge: Removing words containing specific letters dynamically.
Solution: Applied text transformations in Power Query and DAX functions for customized filtering.

Challenge: Filtering tweets based on app opens without affecting other tweet metrics.
Solution: Created separate table relationships to isolate the filter's impact on engagement rate comparison.

Challenge: Implementing a multi-layered filter logic.
Solution: Utilized nested DAX measures and Power Query transformations to ensure correct filtering.

7. Outcomes and Impact

The internship provided valuable insights into real-world data analytics. The interactive Power BI dashboard enabled dynamic filtering and trend analysis, improving understanding of Twitter engagement patterns. Key outcomes include:

- Gained proficiency in Power BI's advanced features.
- Successfully implemented complex filtering logic to refine visualizations.
- Improved analytical skills by working with real-world engagement data.
- Developed a structured approach to handling large datasets efficiently.

8. Conclusion

This internship at NullClass provided a hands-on learning experience in data analytics, visualization, and dashboard development. The project's complexity required logical problem-solving and advanced Power BI techniques, which significantly enhanced my technical expertise. By analyzing Twitter engagement patterns, I gained deeper insights into how businesses can optimize their social media strategies. The skills acquired during this internship will be invaluable for future data-driven roles.

Special Thanks to Mr.Sasank Chintala for his Guidance & Support.