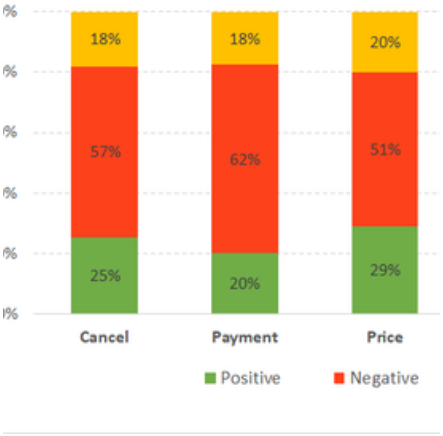

PROJECT REPORT

CSGS HACKATHON
PROJECT M2:

PREDICT GLOBAL TRENDS FROM SOCIAL MEDIA

PREPARED BY:
TEAM NP

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IDEA

UNVEILING SENTIMENT DYNAMICS:

TOPIC MODELING AND SENTIMENT TRENDS ANALYSIS IN SOCIAL MEDIA DISCOURSE BETWEEN OPPOSING FORCES

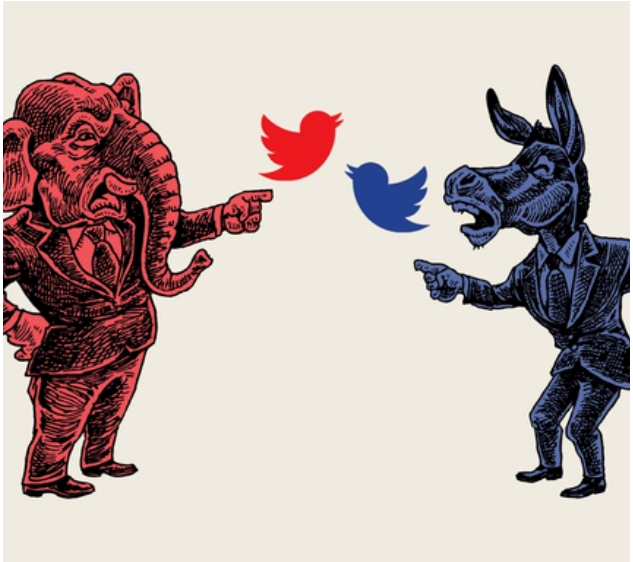
In this hackathon project, we're uncovering the stories behind social media debates between opposing groups. By analyzing shared topics and tracking how sentiments change over time, we'll explore how people on different sides react and evolve their views on key issues. With topic modeling and sentiment analysis, we're not just crunching data—we're getting a glimpse into the real emotions and perspectives that drive these online conversations, helping us understand what shapes and shifts public opinion.

WHERE CAN THIS IDEA BE USED?

- **Political Showdowns:** Watch how supporters of rival parties react to hot issues and see how their moods swing during debates or big speeches.
- **Brand Battles:** Think Apple vs. Samsung! Track how fans talk about new releases, loyalty, and frustrations, revealing customer trends.
- **Team Rivalries:** Dive into sports fandom! See how rival fans' emotions shift around game time or player trades.
- **Green vs. Industry:** Explore how environmental advocates and industry supporters clash on climate issues, showing where opinions align or collide.
- **Health Debates:** In pro-vaccine vs. anti-vaccine talks, discover how sentiment shifts with new research or policy changes.

WHAT WE USED THIS IDEA FOR

We jumped into the Twitter battlefield between Republicans and Democrats! By collecting their tweets, we identified the 5 hottest topics they couldn't stop talking about. Then, we looked at how each group felt about each topic—were they loving it, hating it, or somewhere in between? This helped us see not only what each side cared about but how they felt about it, giving us a fun peek into the emotional rollercoaster of political debates on social media!



WHY IS THIS EVEN USEFUL?

This project goes beyond just finding out what people are talking about—it reveals how they feel about the key issues. By understanding the sentiment trends of Republicans and Democrats on popular topics, we can:

Spot Common Grounds

Are there topics where both sides actually feel positive? This can help bridge divides and focus on shared values.

Track Shifts Over Time

See how big events, policies, or news impact each side's mood on certain issues, showing real-time public reaction.

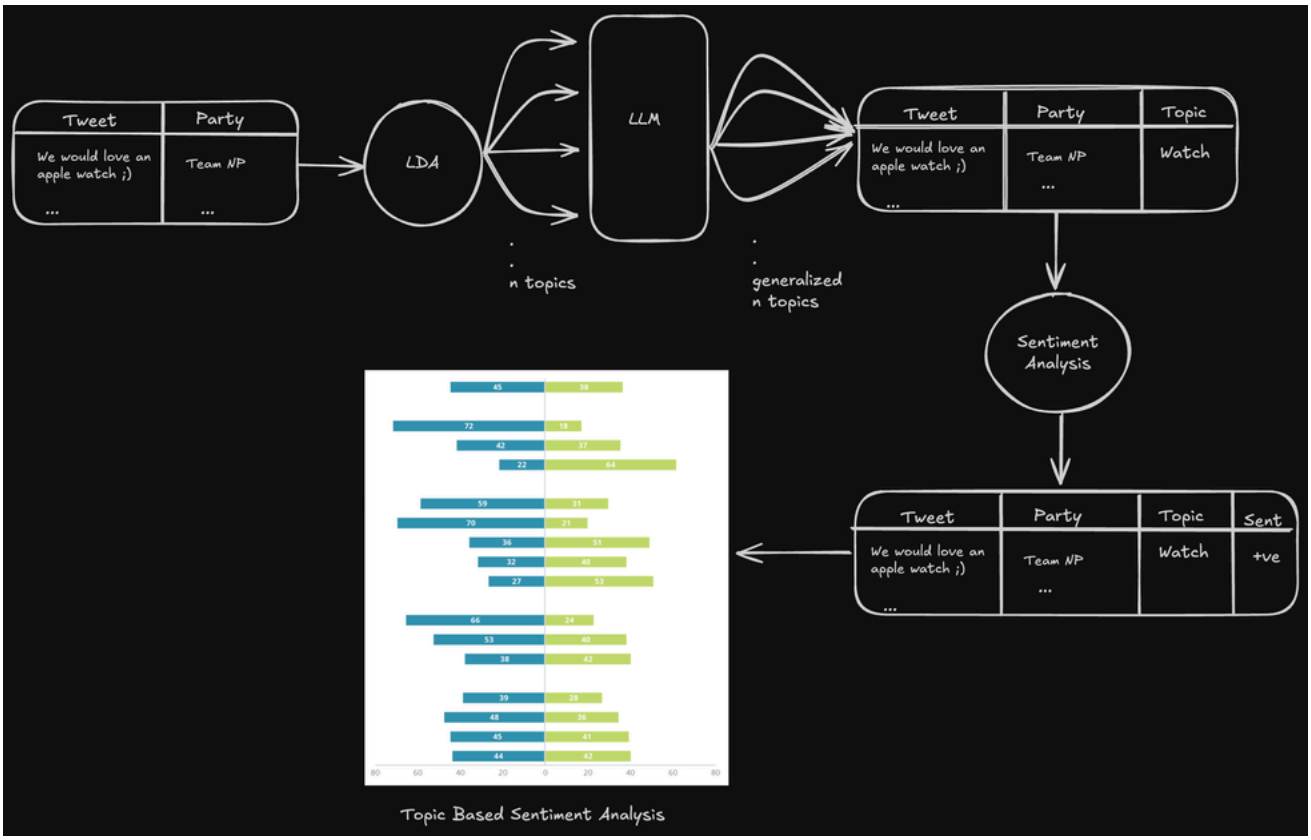
Guide Better Communication

For media, politicians, and organizations, knowing how each side feels about issues can help craft messages that resonate with people.

Predict Trends

By watching how sentiments evolve, we might even predict which topics will become more polarized or find areas where opinions could soften.

OUR APPROACH

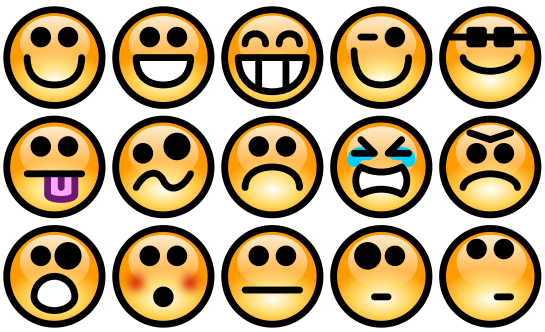


Detailed Diagram

Our approach begins with tweet data, including the tweets of people and their party affiliation (source). This data is then processed through Latent Dirichlet Allocation (LDA) to identify topics. The topics are then fed into a Large Language Model (LLM), which generalizes these topics. The output includes the original tweet data along with the identified topic. This enhanced data then undergoes sentiment analysis, resulting in a final output that includes the tweet, party affiliation, topic, and sentiment score. The process aims to provide a comprehensive analysis of tweet sentiments across various topics and political affiliations, as visualized in the accompanying bar chart showing topic-based sentiment distributions.

FUTURE ENHANCEMENTS

Because well, the time was limited in this hackathon ;)



1. Predictive Political Trend Analysis: Implement a forecasting model that uses the sentiment and topic data to predict future political trends or election outcomes. This could involve time series analysis and machine learning algorithms to identify patterns in sentiment shifts and topic popularity, potentially forecasting how these might influence voting behavior or policy support.
2. Cross-Platform Opinion Mining and Influence Tracking: Expand the analysis beyond Twitter to include other social media platforms and news sources. Develop a system to track how opinions and sentiments on specific topics originate and spread across different platforms. This could help in identifying key influencers and understanding the lifecycle of political narratives.
3. Real-time Policy Impact Assessment: Create a module that can quickly assess the public sentiment towards new policy announcements or political events. This could involve setting up alerts for sudden changes in sentiment or topic prevalence, and providing rapid analysis of how different demographic groups are responding to political developments. This real-time feedback could be invaluable for policymakers and political strategists in understanding immediate public reaction and adjusting their communication strategies accordingly.