

## Social Media Misinformation Analysis – Project Report

### 1. Project Objective

The goal of this project was to analyze a dataset of 500 social media posts from multiple platforms to understand patterns of misinformation, engagement behavior, user characteristics, geographic and time-based insights, and source reliability.

### 2. Dataset Overview

- 500 posts
- 31 features including timestamp, platform, sentiment, reliability score, factual rating, engagement metrics, etc.
- Target variable: is\_misinformation (1 = misinformation, 0 = genuine)

### 3. Key Findings

#### A. Platform Analysis

- Twitter had the highest misinformation rate.
- Reddit and Telegram misinformation posts received the highest engagement.

#### B. User Behavior

- Verified accounts shared misinformation at similar rates to non-verified accounts.
- Accounts with higher follower counts were slightly more likely to share misinformation.
- Higher bot-likeness scores were strongly associated with misinformation posts.

#### C. Content Characteristics

- No strong link between readability, number of hashtags, URLs, mentions, or toxicity and misinformation likelihood.

#### D. Time & Trend Insights

- No seasonal pattern, small fluctuations based on hour of the day.

#### E. Geographic Insights

- Brazil, UK, and Germany had the highest misinformation ratios.
- Brazil had the highest overall engagement.

#### F. Fact-Checking & Source Reliability

- Fact-checked posts saw reduced engagement.
- High-reliability sources had lower misinformation prevalence.

### 4. Business Recommendations

- Prioritize early detection on Twitter and Telegram.
- Use bot-likeness and synthetic signals for early detection.
- Promote fact-checking visibility to reduce spread.
- Focus content moderation efforts in high-risk geographies.
- Verification status should not be treated as a safety indicator.

### 5. Conclusion

Misinformation is not limited to low-quality users or toxic content. It depends heavily on platform and geography and can be detected using behavioral patterns and machine-generated reliability scores.