

MATH513 Practical Presentation

Strategic Twitter Analysis: Samsung and Apple

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Introduction

- Samsung and Apple
- Flagship phones chosen
 - ▶ S20FE
 - ▶ iPhone12
 - ▶ S20

Tools Utilised

- Rstudio
- RTweet
- Twitter API
- GitHub



Choosing Twitter for Analysis

- Open API Access compared to others
- Almost all data is public
- Advanced filtering and queries
- Generous Rate limiting

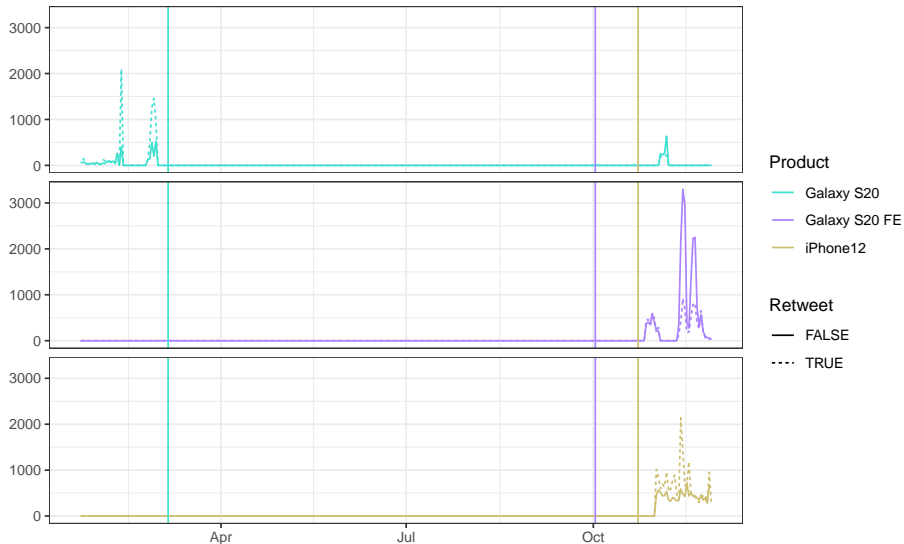
Determining Hashtags

- @SamsungMobile
 - ▶ #GalaxyS20FE and #GalaxyS20
- @apple
 - ▶ No information
- @tim_cook
 - ▶ #iPhone12

Time Periods for Data Collection

Frequency of Twitter Statuses

Twitter status counts aggregated using 1-day intervals



Source: Data collected from Twitter's REST API via rtweet

Data Cleaning

- Duplicate tweet and user observations were removed
- Tweet text and user bios were cleaned
 - ▶ Removed links, hash-tags, emojis, and user mentions

Feature Engineering

- Users were marked as potential bots
- User country was extracted from the location of their profile
- Tweets were marked as potential spam
- Hash-tags were extracted from the tweet text
- Product features were extracted from the tweet text
 - ▶ Display, Battery, Camera, Price, and 5G Capability

Summary of Data

Total Tweets: 73690 after data cleaning

Total Features: 5 (Display, Battery, Camera, Price, and 5G)

Table 1: Summary of Tweet Data

Product	Number of Tweets	% Spam Tweets	% Feature Tweets
Galaxy S20	13147	3%	20%
Galaxy S20 FE	28923	19%	19%
iPhone12	31620	13%	7%

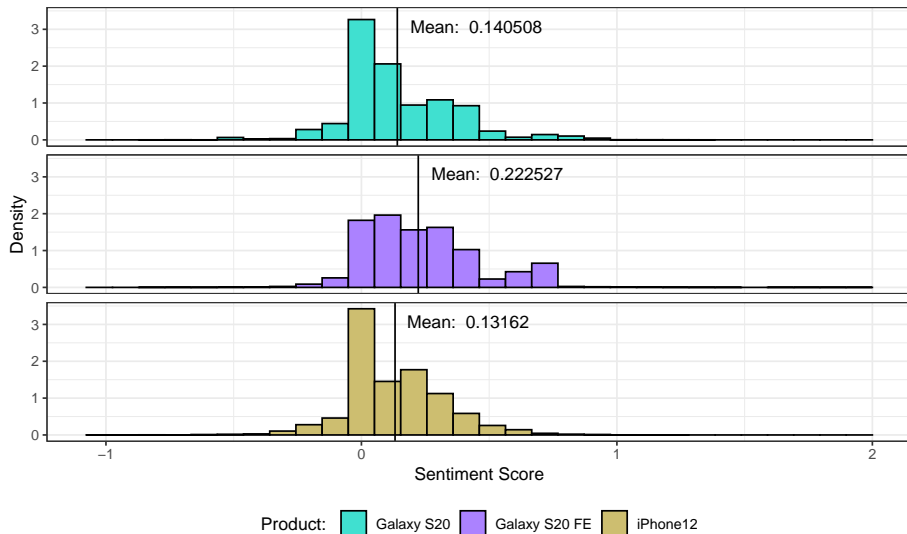
Table 2: Summary of User Data

Number of Users	% Bot Users	Unique Countries
35051	>1%	163

Results - Sentiment Analysis - All Tweets

Distribution of Sentiment Score Across Tweets

Tweets faceted by product

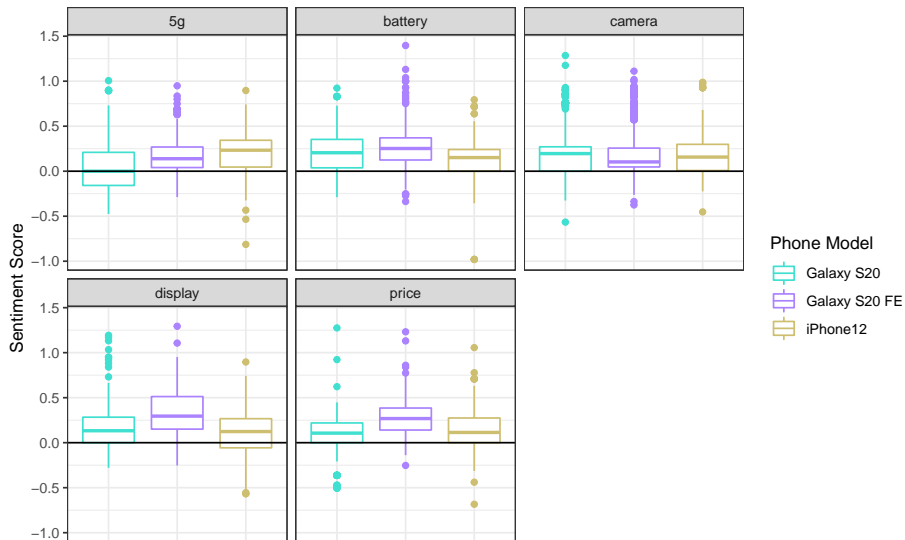


Source: Data collected from Twitter's REST API via rtweet

Results - Sentiment Analysis - Features

Distribution of Sentiment Score Across Tweets

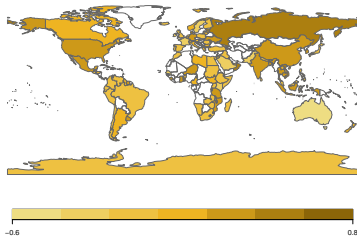
Tweets faceted by mentioned product features



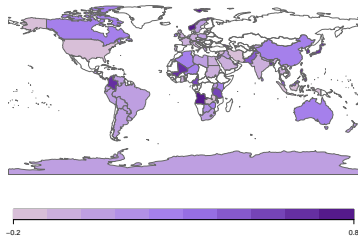
Source: Data collected from Twitter's REST API via rtweet

Results - Global Sentiment By Product

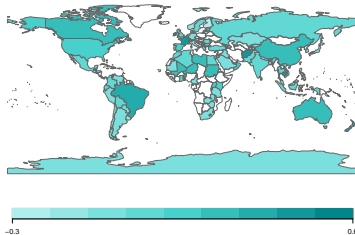
iPhone12 Sentiment by Country



Galaxy S20 FE Sentiment by Country



Galaxy S20 Sentiment by Country

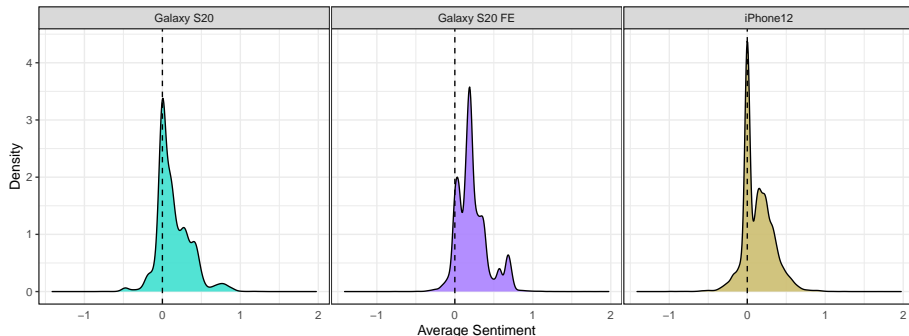


Statistical Test - T-Test

Table 3: Statistical Test Results

test	S20	S20FE	i12
Kolmogorov-Smirnov Test	2.2e-16	2.2e-16	2.2e-16
Anderson-Darling Normality Test	2.2e-16	2.2e-16	2.2e-16

Density Plots for Overall Sentiments of 3 Products



General

- Twitter data useful for sentiment analysis
- Live feedback on product releases

Apple

- Analysing customer responses can improve future product sentiment
- Positive in all features
- Only ahead with 5G connectivity
- Strong positive sentiment in Russian and America
- Negative or low sentiment in Australia, Canada and South America
- Feature R&D and targeted marketing required

Samsung

- Using customer options to guide development was successful
- Battery improvements went almost unnoticed
- Camera change decreased sentiment
- Positive sentiment in South America and Africa
- Negative sentiment in Russia and American
- Examination of areas where Apple is seen more positively

- Google Maps API
- Look at mentions of Apple in Samsung and vice versa
- Examination of average income and sentiment by region
- Increased number of tweets with more targeted dates before and after the release dates
- Sentiment by feature along with the actual cost of the changes

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