NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
College of Engineering

Opinion based Intelligent Recommender System

Objective

1. Develop a Web Application (**Twitter Sentiment Visualizer**) to extract public sentiment data toward a brand name
2. Integrate sentiment data into recommendation algorithm (**Sentiment-enhanced Collaborative Filtering**)

Twitter Sentiment Visualizer

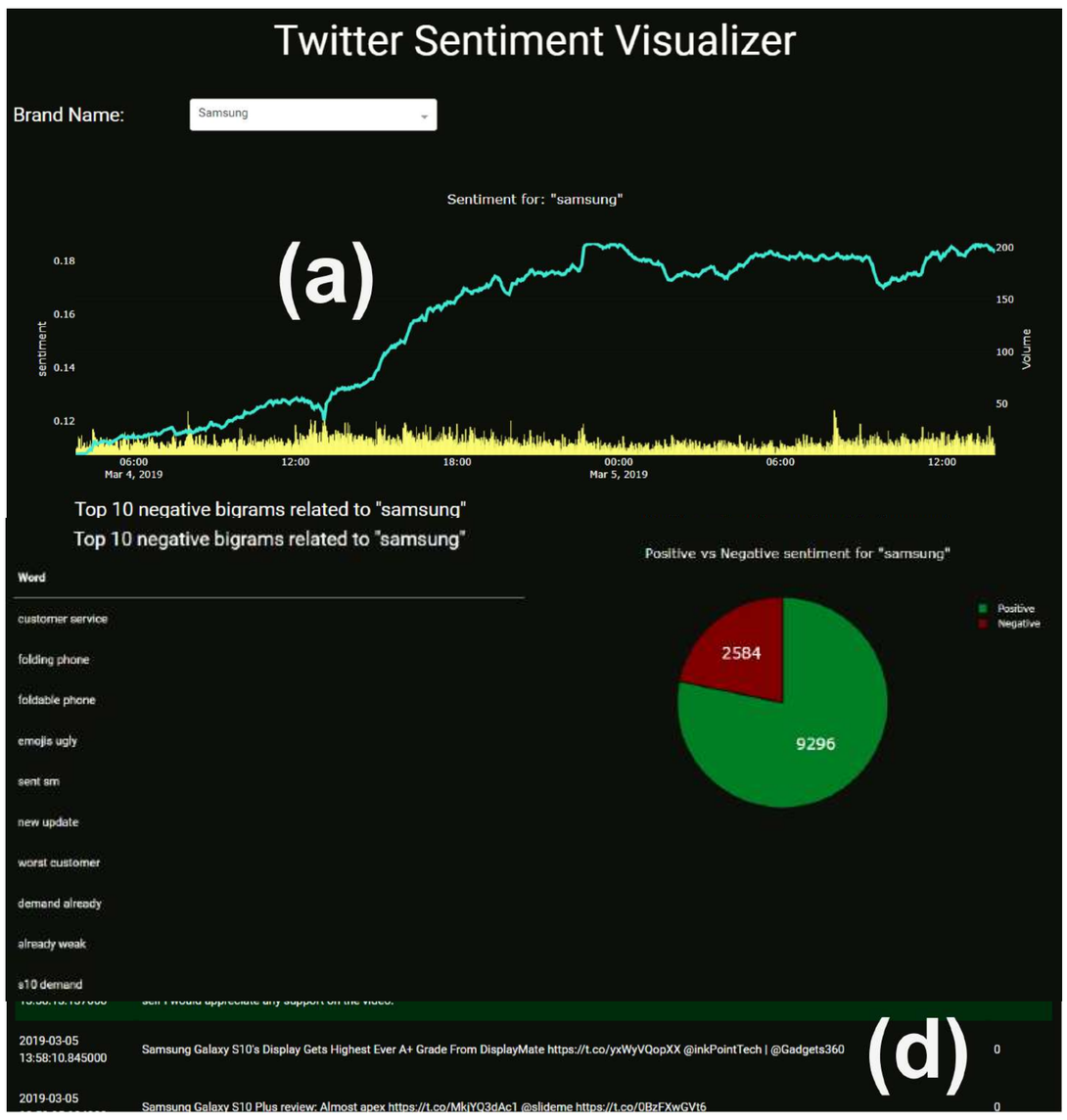
Technology:

- Python 3.5, VADER Sentiment, SQLite 3
- Dash by Plotly.js

Features:

(a) Sentiment Scatter Plot **(b)** Sentiment Pie Chart **(c)** Top 10 Representative Bigrams and **(d)** Recent Tweets Table

Web page UI (with brand 'Samsung'):



Sentiment-enhanced Collaborative Filtering

Dataset: Amazon 5-core (ratings & reviews)

Algorithms:

- Singular Value Decomposition (SVD)
- SVD++
- Non-negative Matrix Factorization (NMF)

Performance Metrics:

- Root Mean Square Error (RMSE)
- Mean Absolute Error (MAE)

Technology:

- Python 3.5, VADER Sentiment, Surprise

Result:

MAE	SVD	SVDpp	NMF
with sentiment	0.6925	**0.6873**	0.8358
without sentiment	0.8937	0.8866	1.0377

RMSE	SVD	SVDpp	NMF
with sentiment	0.9024	**0.9005**	1.0658
without sentiment	1.1563	1.1587	1.3424

Conclusion:

1. Social media (Twitter) data can be extracted and processed to help user understand public opinion toward particular brand name
2. Integrating sentiment data improved the performance of a recommender system

Student: Sentosa Adjikusuma
Supervisor: Dr Li Fang