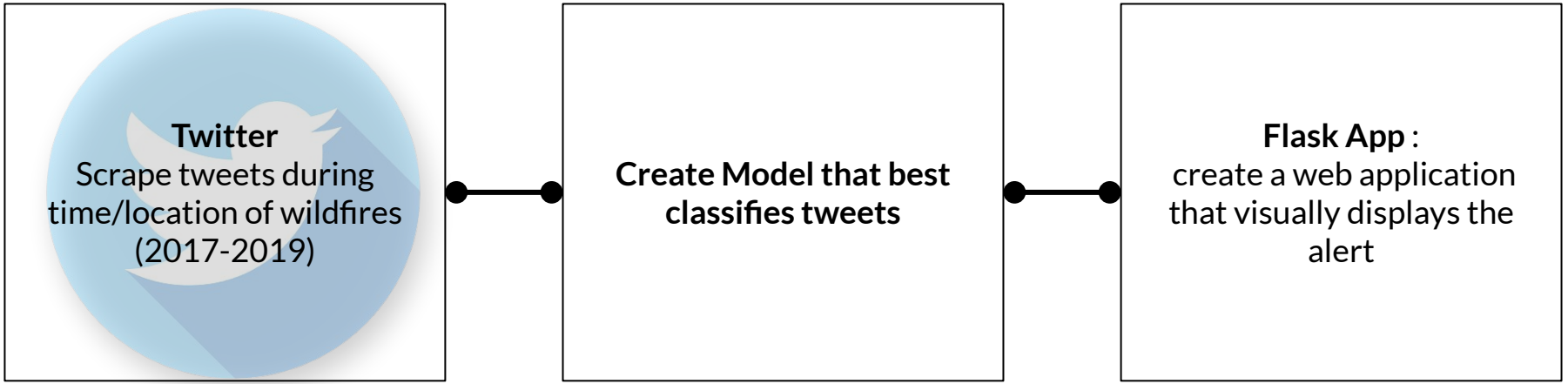
Brianna Lytle - De'Varus May - Sibel Tanoglu

DSI-CC9-LA

Problem/Task:

- Create an alert system that utilizes social media activity to identify when an emergency first occurs

Focus: California wildfires

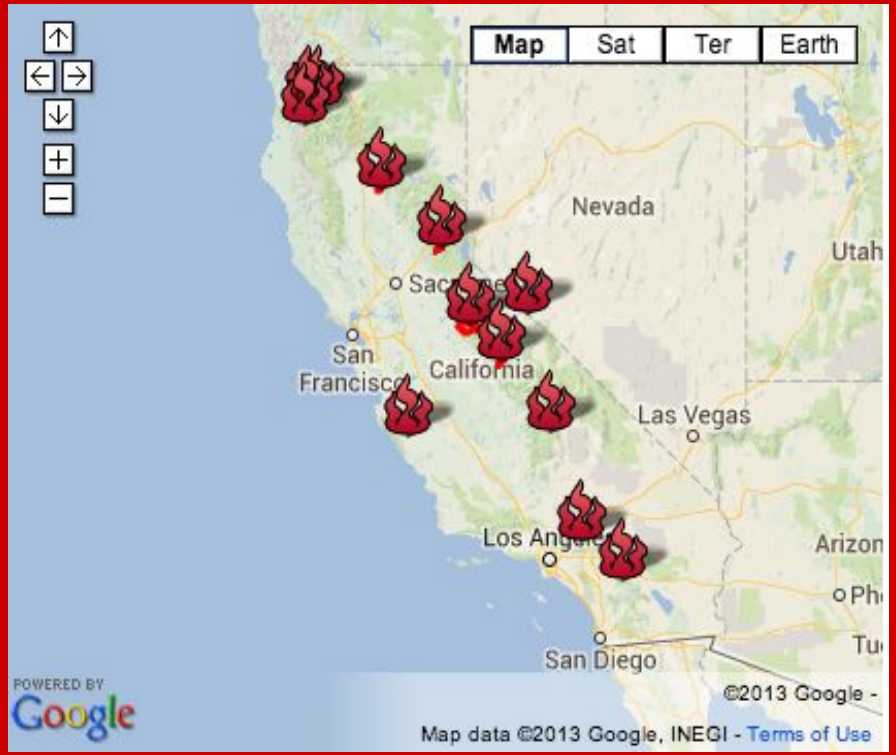


Data:

- Data were collected based on date an geotag
  - Tweepy (API)
  - GetOldTweets3 (web scraper)
- Pre-fire tweets (2019 September)
- Post-fire tweets (2019 October)
  - Specific Fire : Saddleridge, Tick, Kincade, Getty, Maria

Total Data: 24,410 Tweets

Related Tweets: 5,691 (23.3%)
Unrelated Tweets: 18,719 (76.6%)

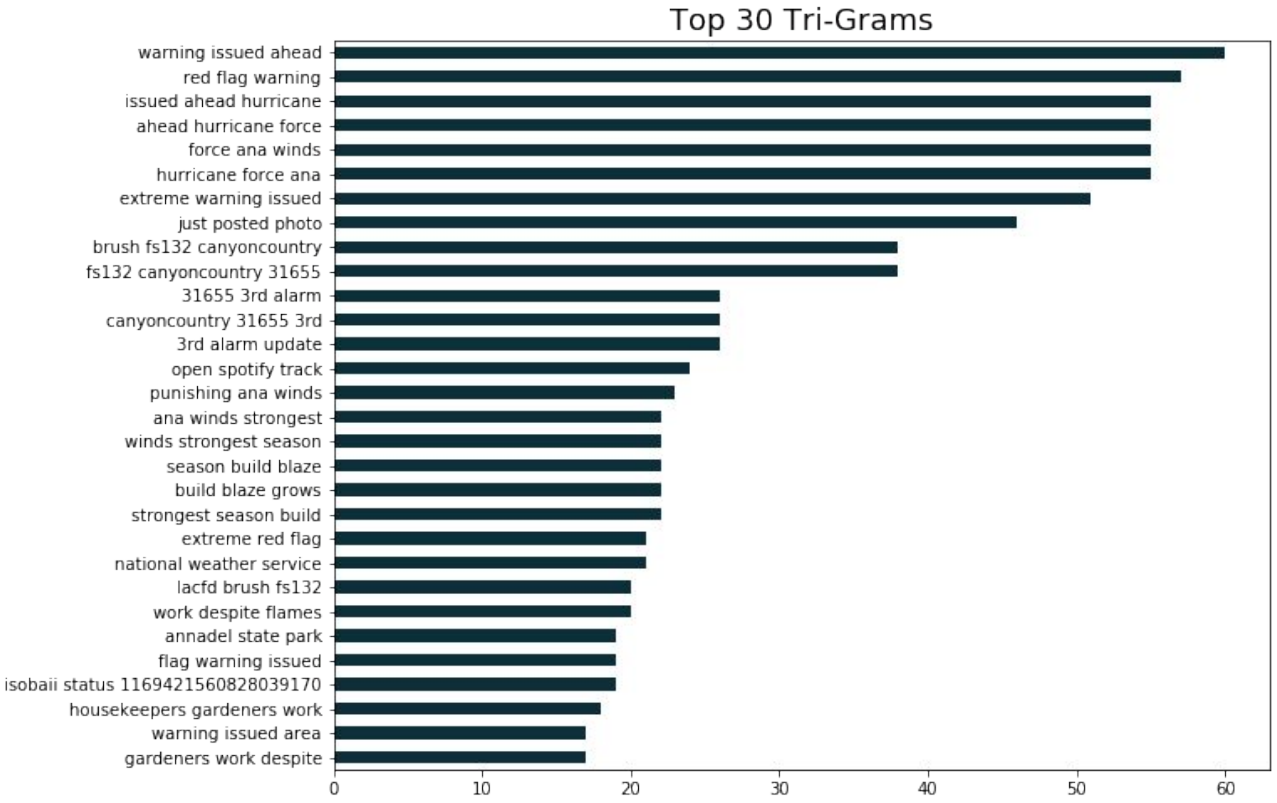


Common Tri-grams

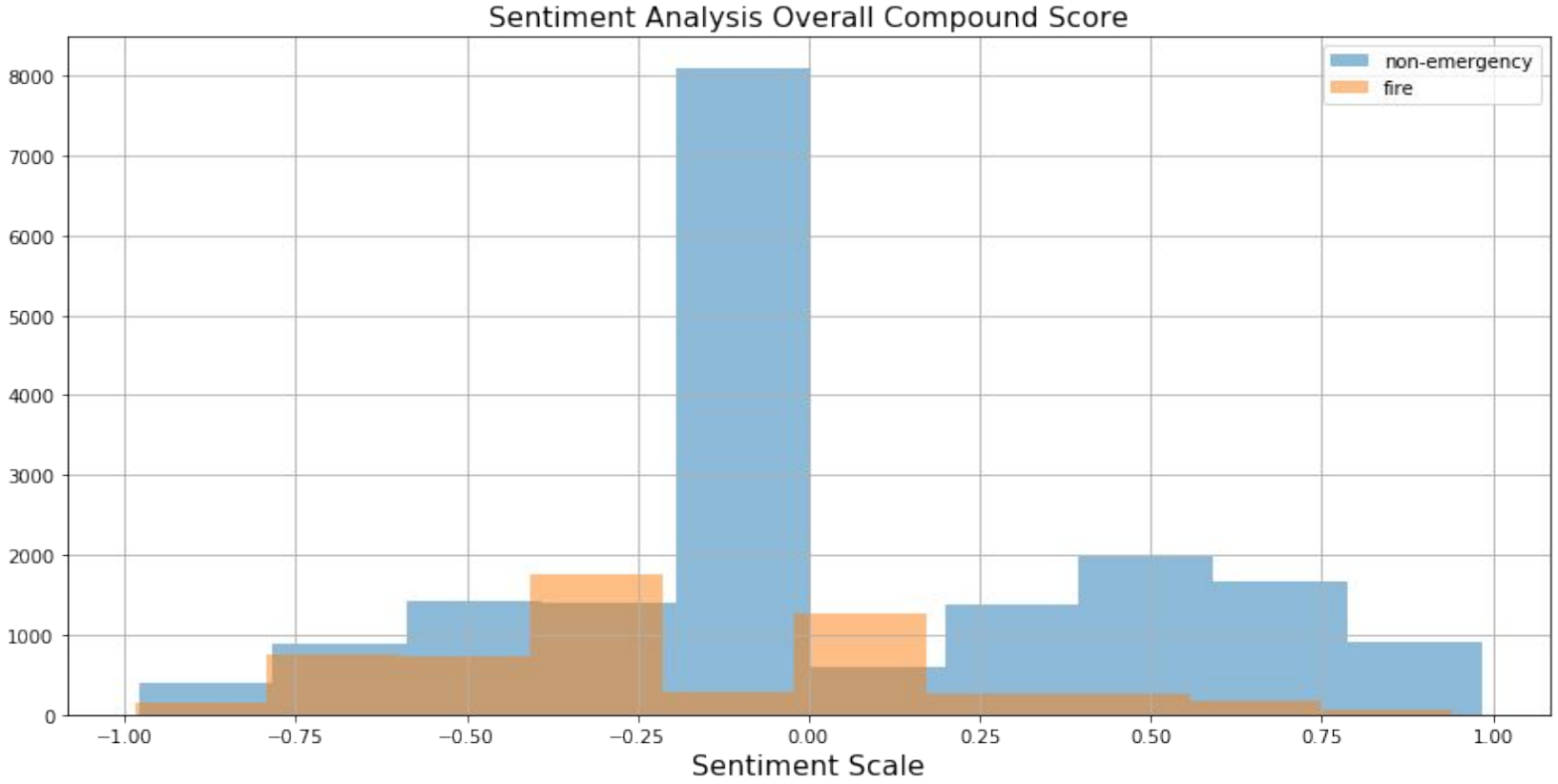
Weather related

“Warnings”

Los Angeles - Santa Ana winds/ Hurricane winds



Overall Sentiment Score of Tweets



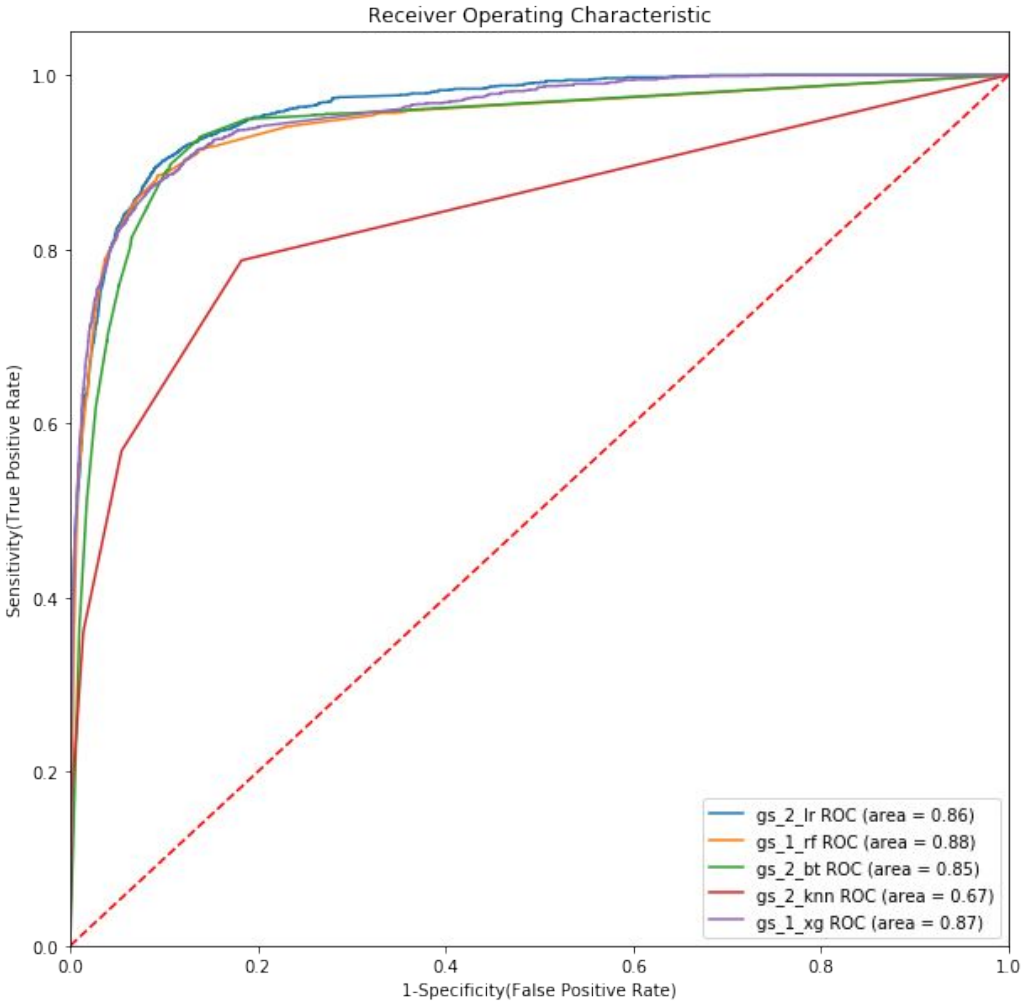
Model Estimators:

Logistic Regression
Random Forest
Bagging
K-nearest neighbors
XGBoost

Best Model:

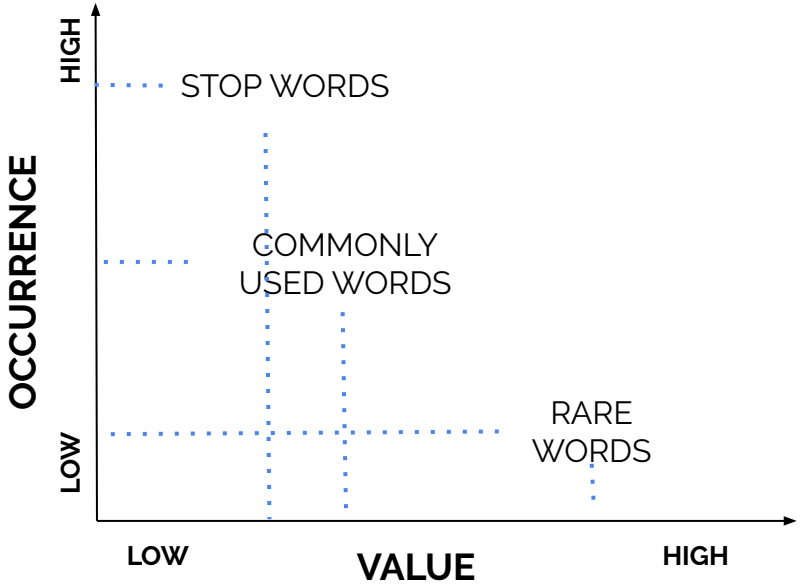
TF-idf + Random Forest

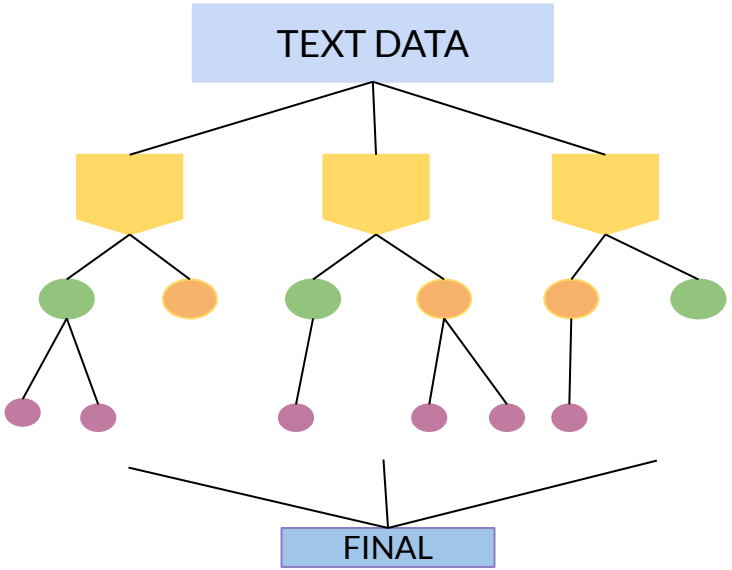
X = text data



Model Transformer: Tf-IDF

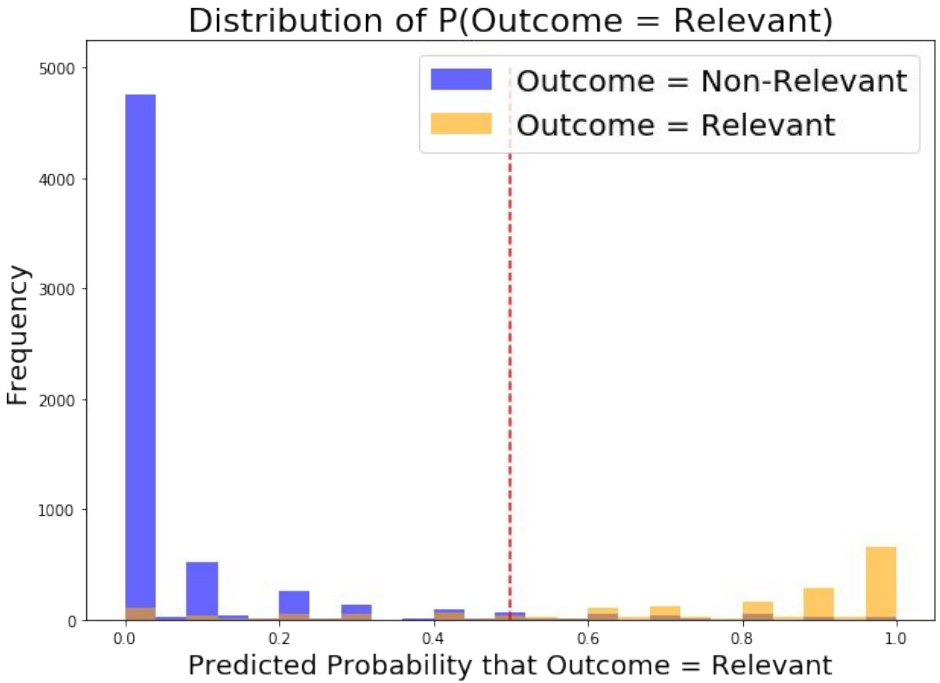
Model Estimator: Random Forest

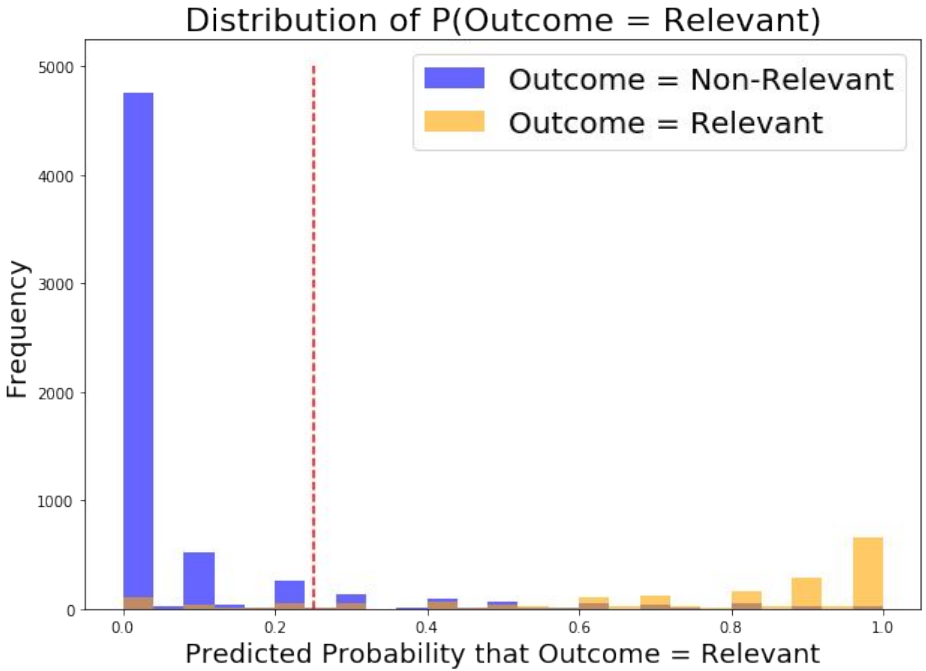


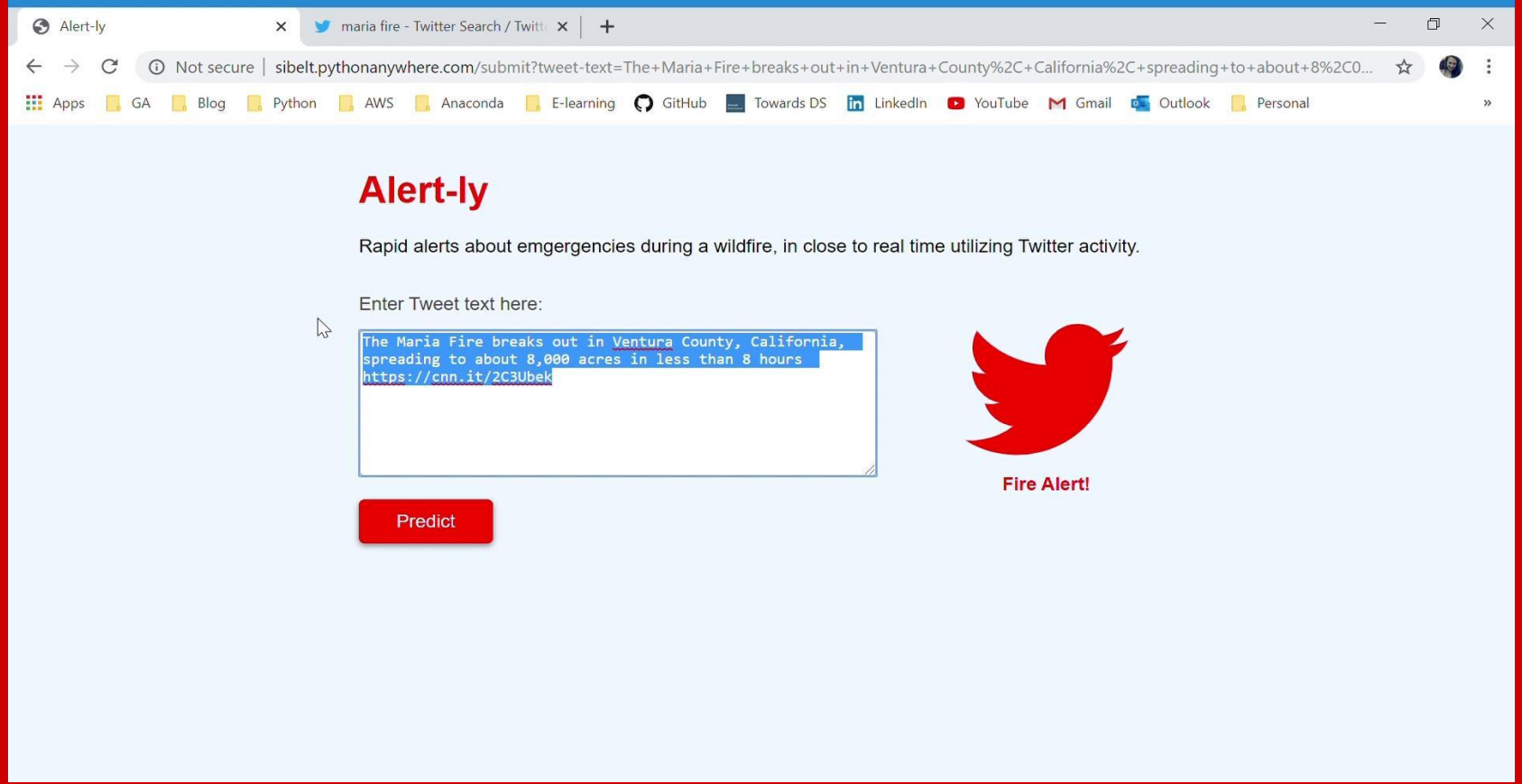


Model Accuracy: .92217

Threshold : 0.5 —> 0.25
Sensitivity : 0.8728 —> 0.907





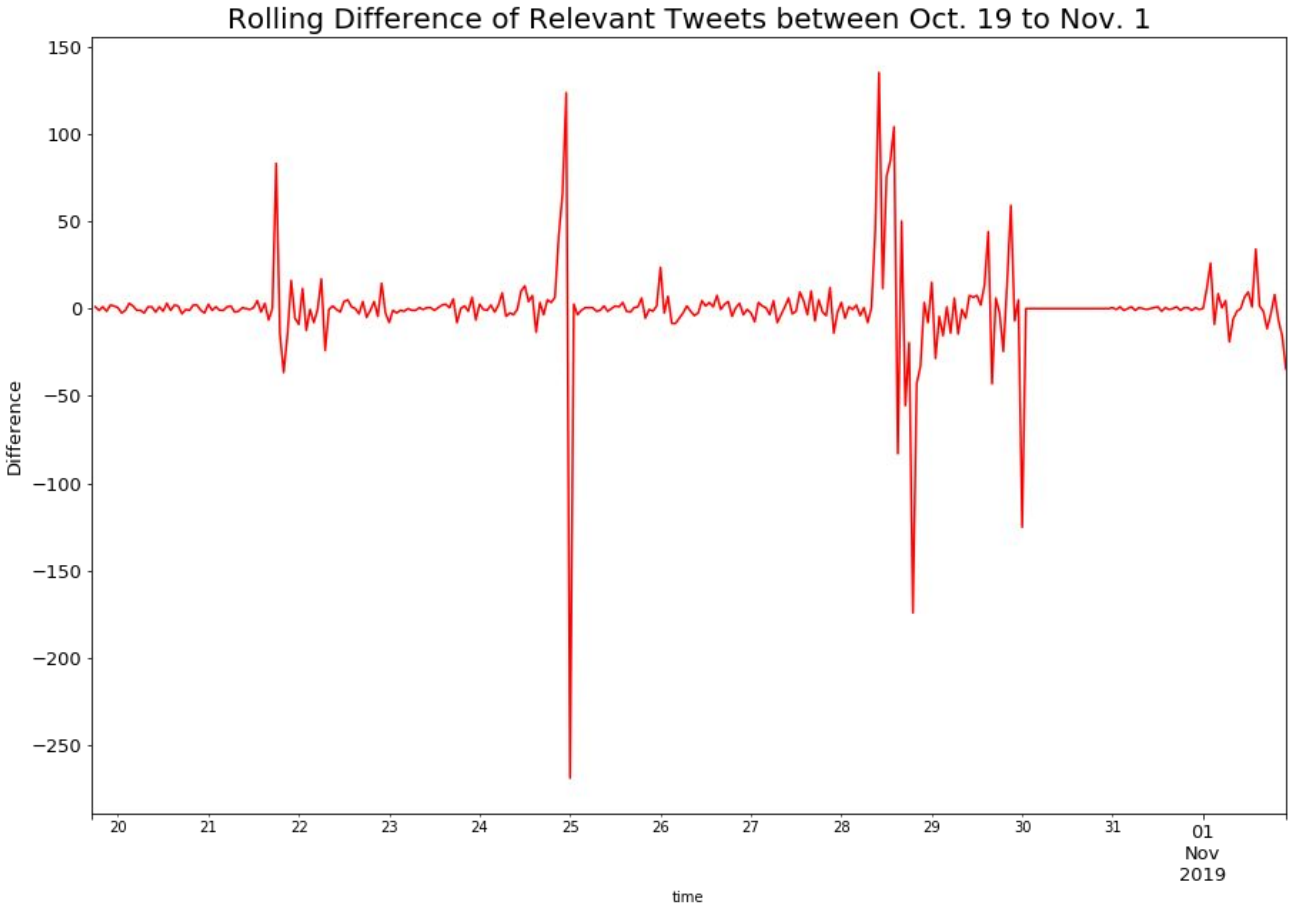


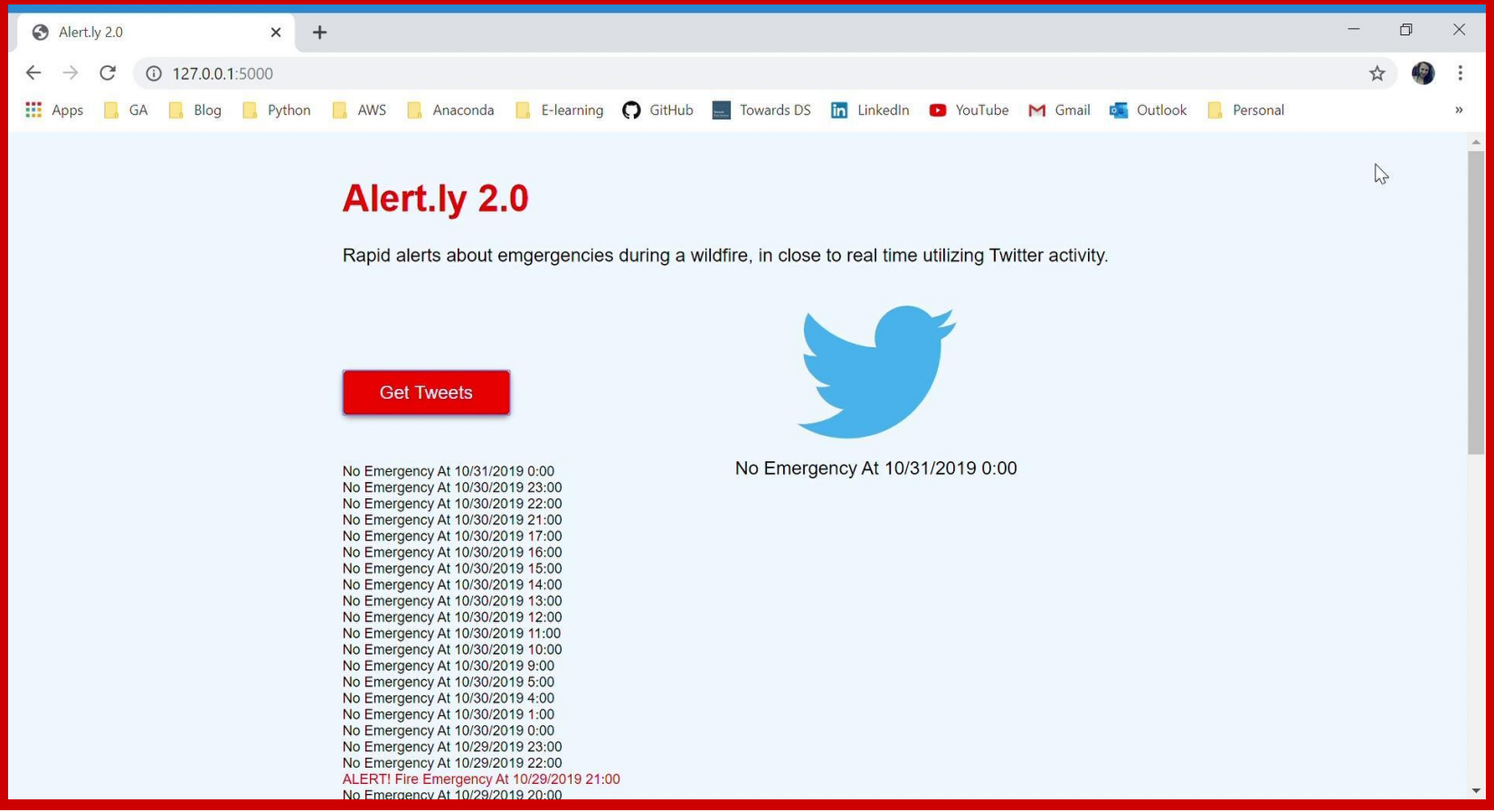
ALERT.LY 1.0 Demo

Model: Pickle | App: Flask | HTML, CSS | Hosting: PythonAnywhere.com

Time Series Analysis

- Difference between **“Relevant Tweets”** vs **“Rolling Avg. of last 2 hours”**
- Spikes show significant increase in language related to emergency



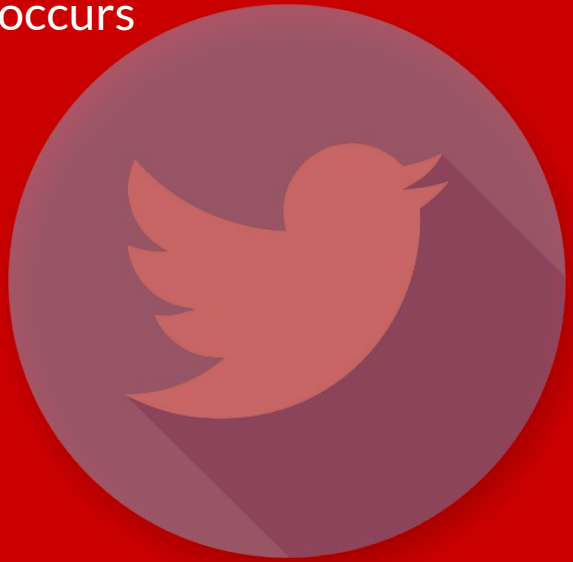


ALERT.LY 2.0 Demo

Data: Time Series Analysis | App: Flask | HTML, CSS, JQuery | Hosting: PythonAnywhere.com

Goal:

- Create an alert system that utilizes social media activity to identify when an alert first occurs



Next Steps:

- Gather more data
- Implement other disasters into our model
- Further improve/optimize our Type II Errors
- Create a model to detect anomalies of emergency related tweets
- Implement a continuous live scrapper to monitor tweets
- Mobile Application for ALERT.LY

ALERT.LY

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