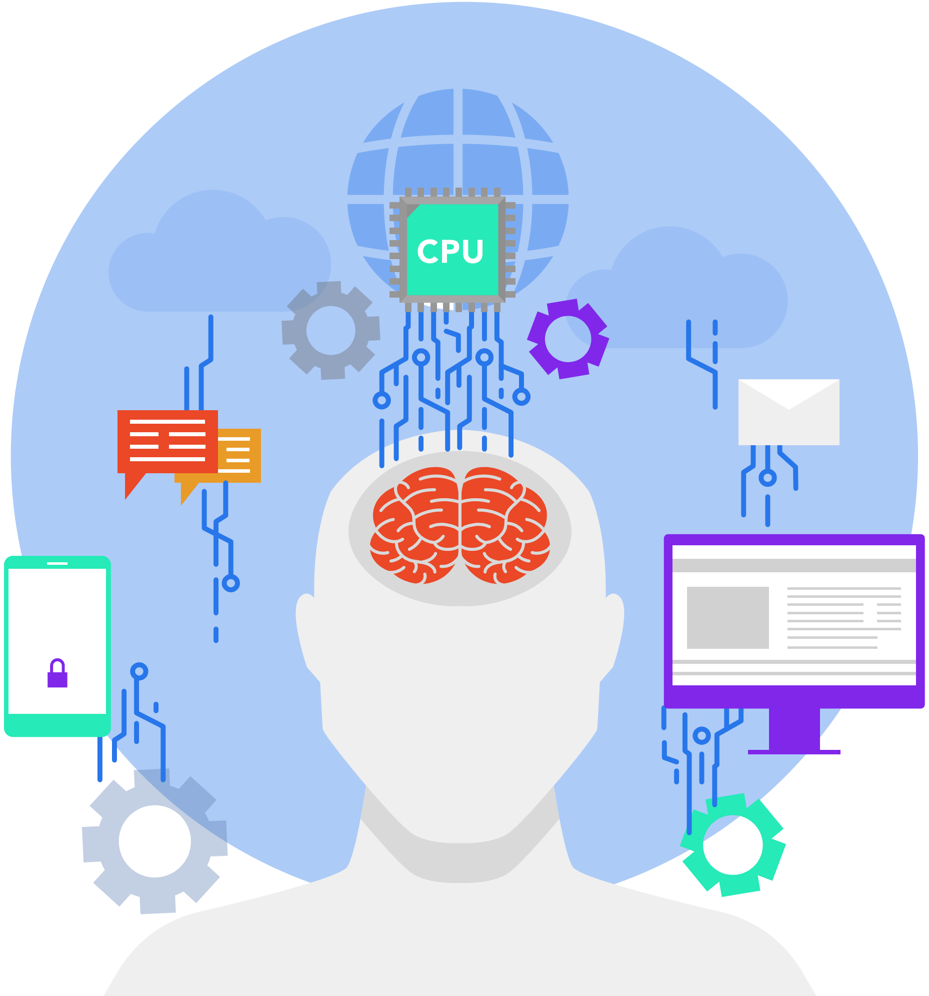
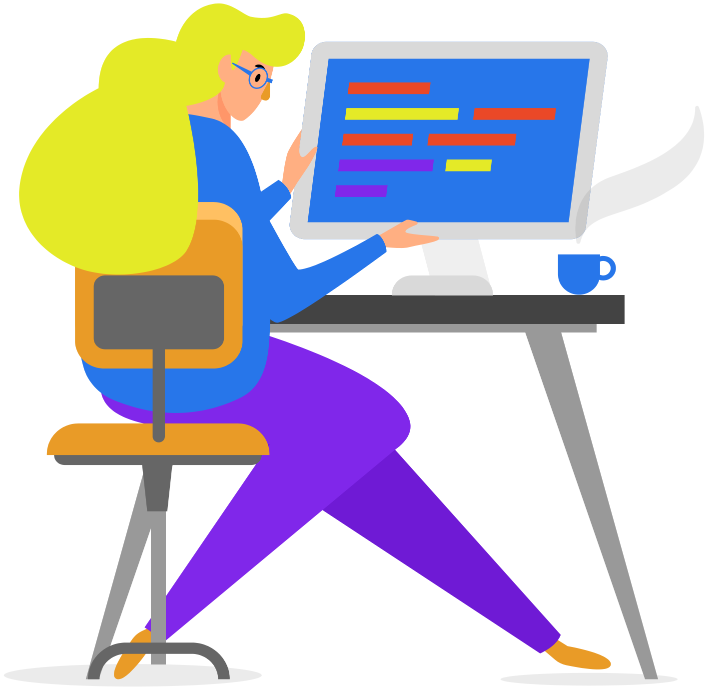


Machine Learning (NLP)

Final Project Presentation

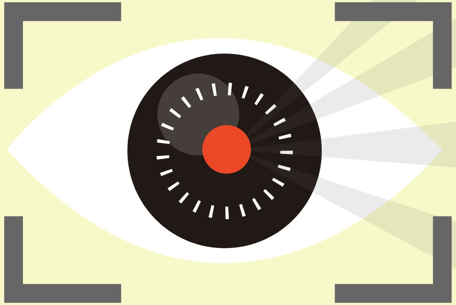


Idea

Social Media Monitoring for Disaster Alert and Location Detection

Group- B3

Presented By



Jamal	Jamal Uddin Tanvin
Rifat	Muhammad Rifat Islam
Tausif	MD Tausiful Haque
Nurshat	Nurshat Fateh Ali

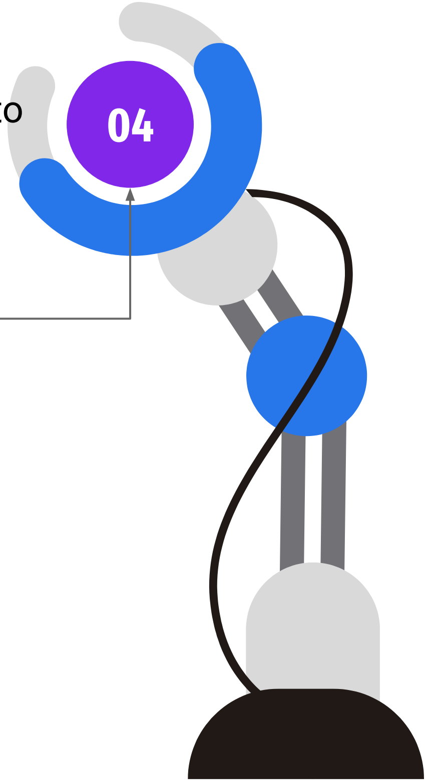
Motivation

04 We can monitor social media to detect disaster

03 Smartphones enabled people to share an emergency they see in real-time.

02 Facebook is one of the most used

01 In recent years, social media usage has skyrocketed.



Features

ANALYZE SOCIAL MEDIA POSTS TO DETERMINE WHETHER THERE IS A REAL DISASTER

Vs

DETECT THE LOCATION OF THE DISASTER FROM THE SOCIAL MEDIA POST

Dataset Overview

01 ID (Feature Column)

A unique identifier for each tweet
{Null Value: 0}

02 Keyword (Feature Column)

A particular keyword from the tweet. keywords->disasters.
{Null Value: 0, Unique Value: 219
Most Common: “thunderstorm” (1%)}

03 Location (Feature Column)

The location the tweet was sent from.
{Null Value: 3418 (30%)}

04 Text (Feature Column)

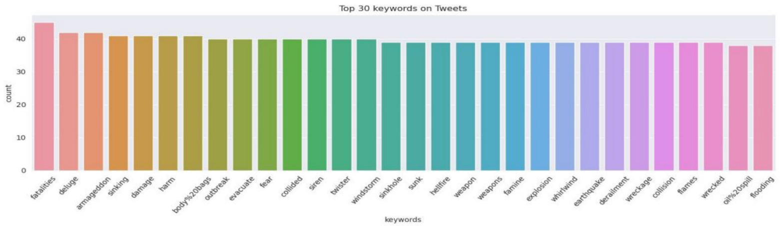
The text of the tweet { Null Value: 0}

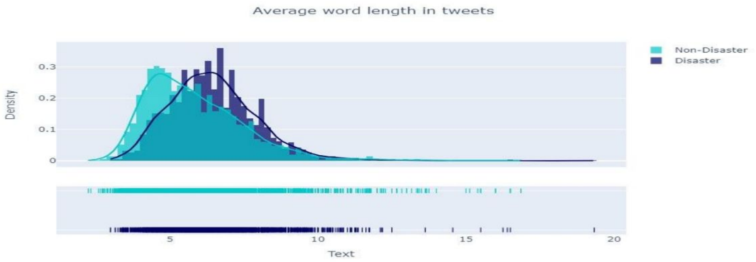
05 Target (Target Column)

Denotes whether a tweet is about a real disaster (1) or not (0)
{Null Value: 0, 0 (Not Disaster): 9256, 1 (Disaster): 2114 }

Disaster tweet | Keggle

Size : 11.4k



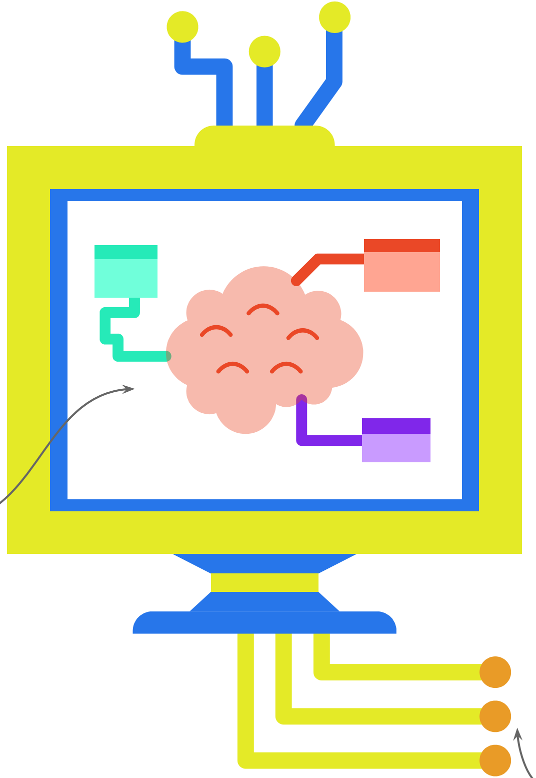


Model Comparison

BERT

Transformer

- Massive dataset of text and code
- learn long-range dependencies
- deep understanding of the meaning of a text



LSTM

Recurrent Neural Network

- Small dataset of text
- Capture long-range dependencies
- deep understanding of the meaning of a word

Experimental Design

Collect the data

Disaster tweets

Prepare the data

Preprocessing using nltk/spacy

Train in model

Using LSTM & BERT for disaster detection

Detect Disaster

Using test data

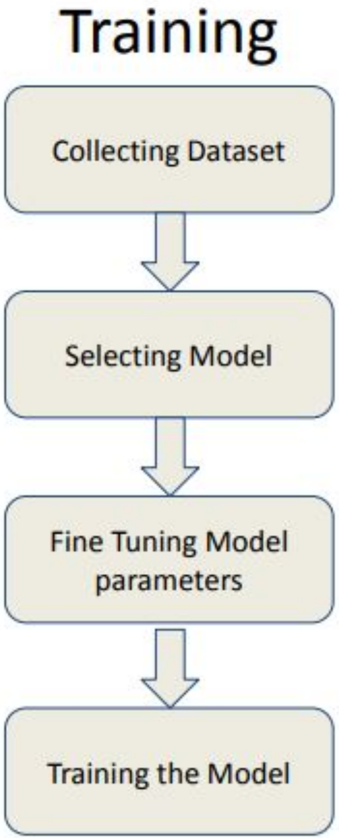
Webscrap

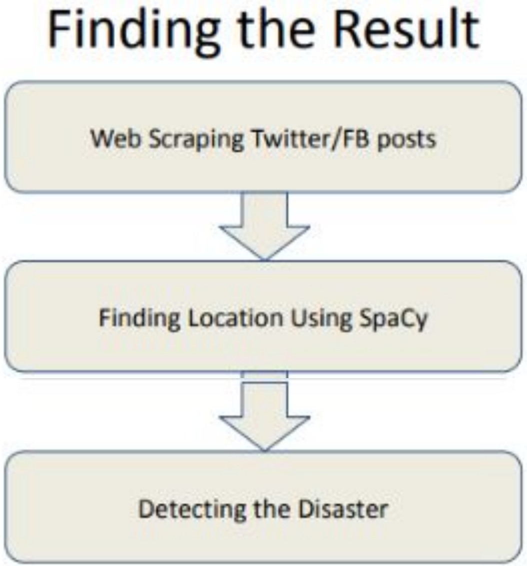
From Facebook

Detect & Alert

Detect disaster and its place (if given)

Flowchart


Training
Collecting Dataset
Selecting Model
Fine Tuning Model parameters
Training the Model


Finding the Result
Web Scraping Twitter/FB posts
Finding Location Using SpaCy
Detecting the Disaster

Code Link

Machine learning

01 BERT

02 LSTM

Discussion

Criteria	BERT	LSTM
Performance	BERT outperforms LSTM due to its transformer architecture which captures the context of words in a sentence in all directions.	LSTM captures the context of words based on their sequence in a sentence which might not be as effective as BERT.
Training Time	BERT requires a significant amount of time and computational resources to train from scratch. However, it is commonly used in a transfer learning setting where the model is pre-trained on a large corpus and fine-tuned on the specific task.	LSTM is less resource-intensive compared to BERT and can be trained from scratch relatively quicker.

Accuracy:

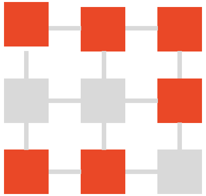
91%
BERT

89%
LSTM

Future Goals

01

02

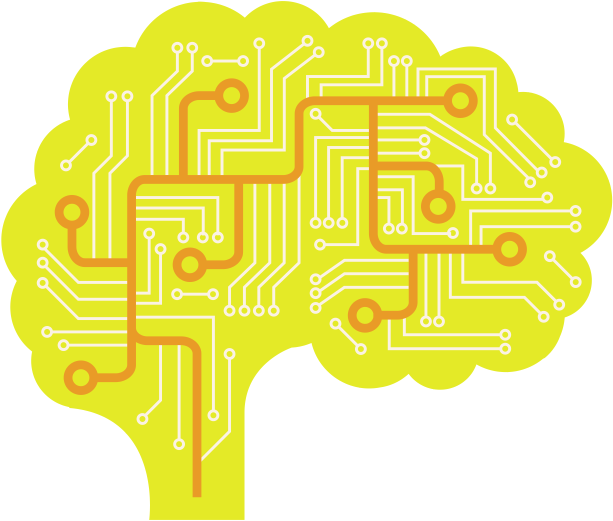


Web App

A web app for disaster alert

More Models

Compare Multiple models for better results



Thank You