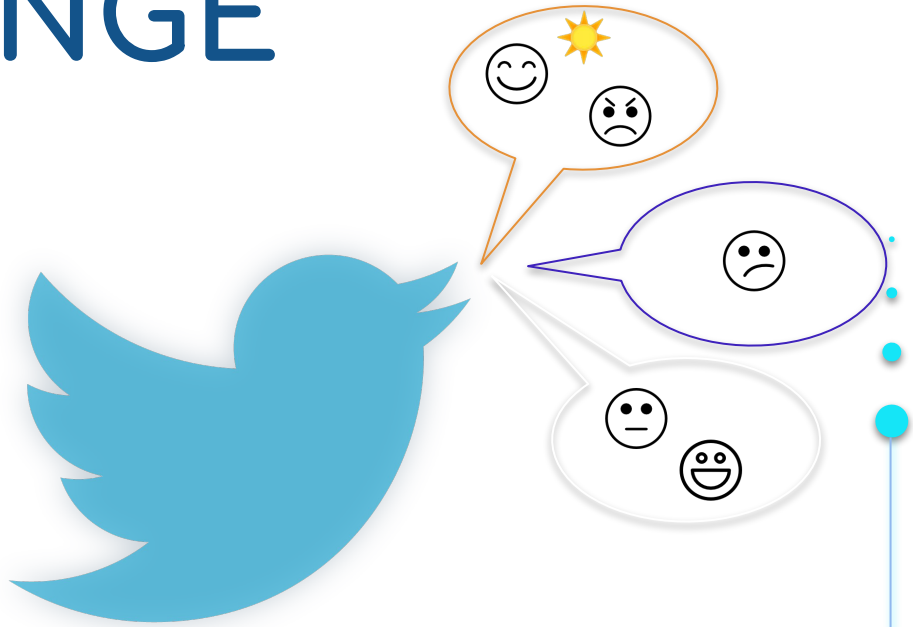
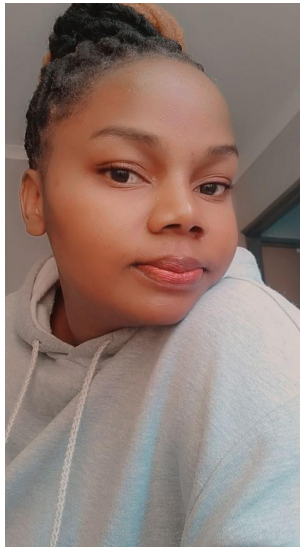
CLIMATE CHANGE SENTIMENT ANALYSIS



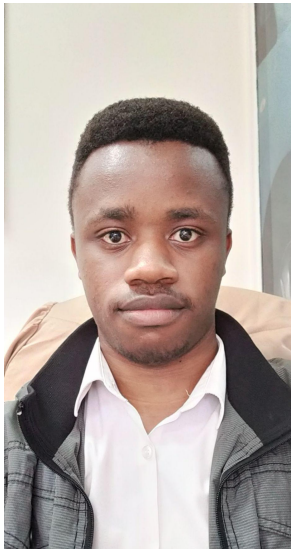
JHUST INC.

MEET OUR TEAM

JESSICA NJUGUNA
Team Leader

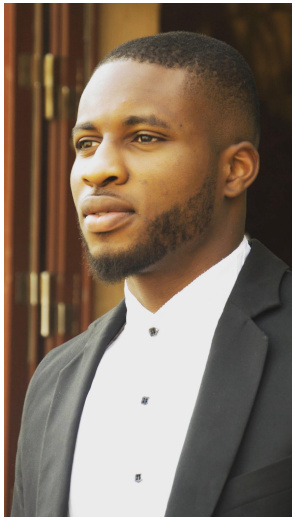


HUNADI MAWELA
Team Member



TEDDY WAWERU
Team Member

UCHENNA UNIGWE
Team Member



STANLEY AGBO
Team Member

PRESENTATION OUTLINE

01 Introduction

Climate change and carbon footprint

02 Problem Statement

We define our objective and agenda

03 Exploratory Analysis

Data overview and insights

04 Feature Engineering

Data preparation

05 Models and Deployment

Machine Learning models and demo of the website

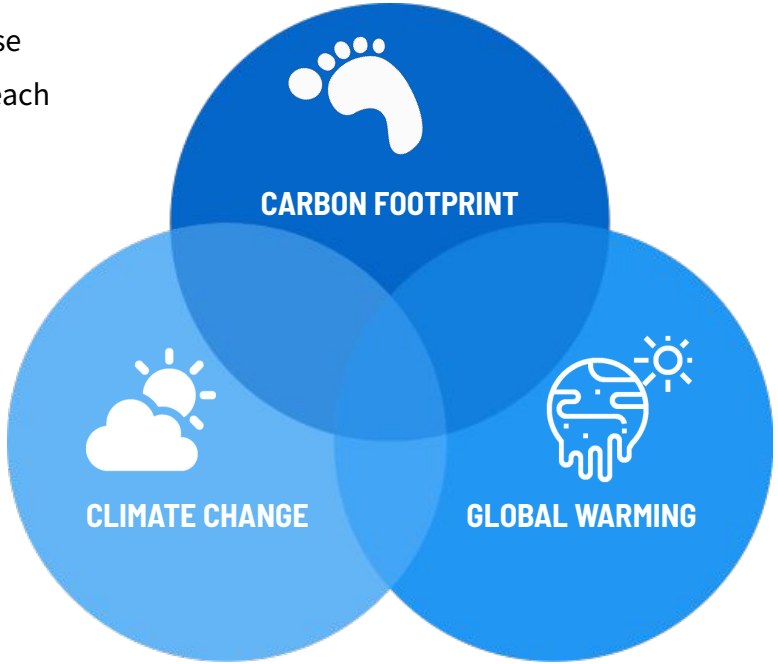
06 Conclusion

Recommendations and summary

INTRODUCTION

CARBON FOOTPRINT

Refers to the amount of greenhouse gases generated by the actions of each individual



GLOBAL WARMING

Increase of greenhouse gases warms the earth

CLIMATE CHANGE

High temperatures change weather patterns, making dry areas wet and wet areas dry

PROBLEM STATEMENT

Climate Action

Climate change is an urgent issue and companies are rising to action.

Green Products

Companies building products and services that are environment friendly.

Clients Sentiment

They want to know how people on twitter feel about climate change.

Automating Analysis

Our task is to build a Machine Learning model that predicts a climate change sentiment

DATA OVERVIEW

15,819

Number of observations

TWEET ID

Unique Twitter Id
Numerical

MESSAGE

Tweet body
Text
Tweet length range: 14 - 211

SENTIMENT

Sentiment of the tweet
Numerical
Values: Pro, Anti, Factual, Neutral

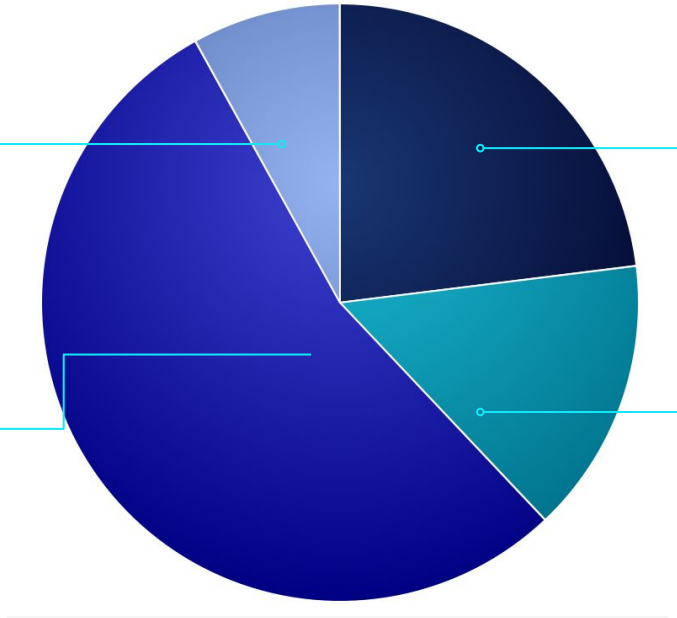
SENTIMENT DISTRIBUTION

10%

Anti - Tweets does not believe in man made Climate Change.

53%

Pro - Tweets supports the belief of man made Climate Change.



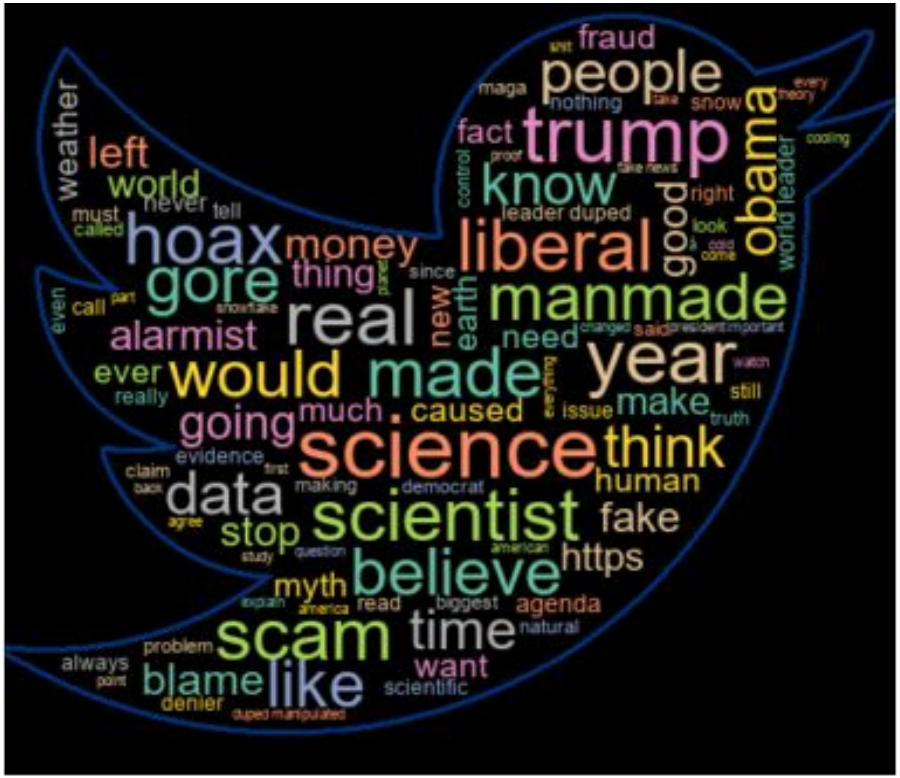
23%

Factual - Tweets links to factual news about Climate Change.

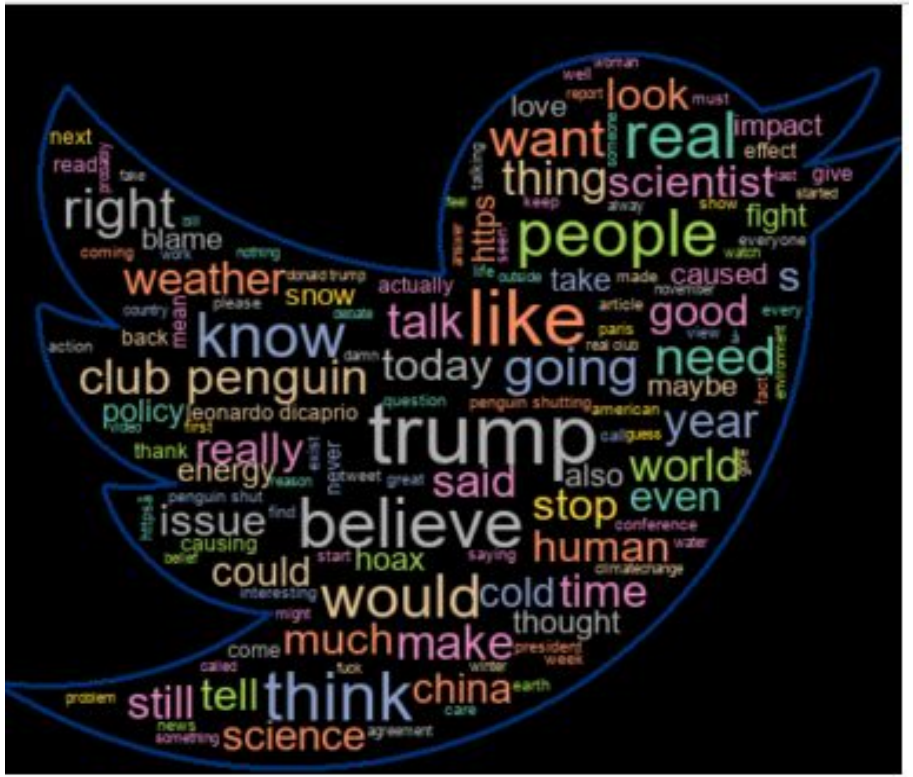
14%

Neutral - Tweets neither supports or refute the belief of man made Climate Change.

POPULAR WORDS

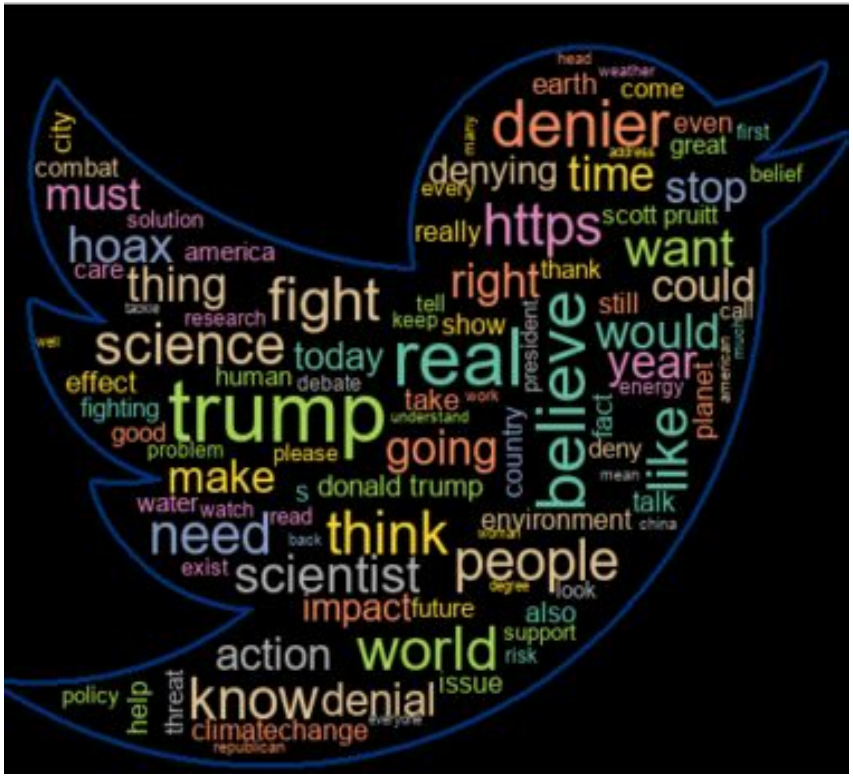


WORD CLOUD FOR ANTI SENTIMENTS

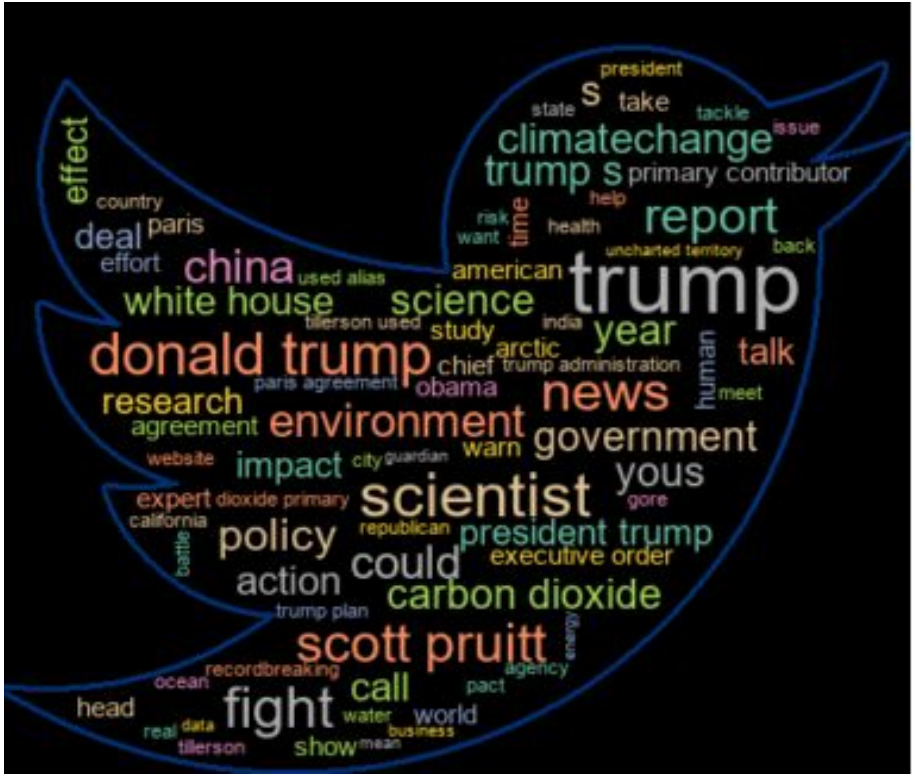


WORD CLOUD FOR NEUTRAL SENTIMENTS

POPULAR WORDS

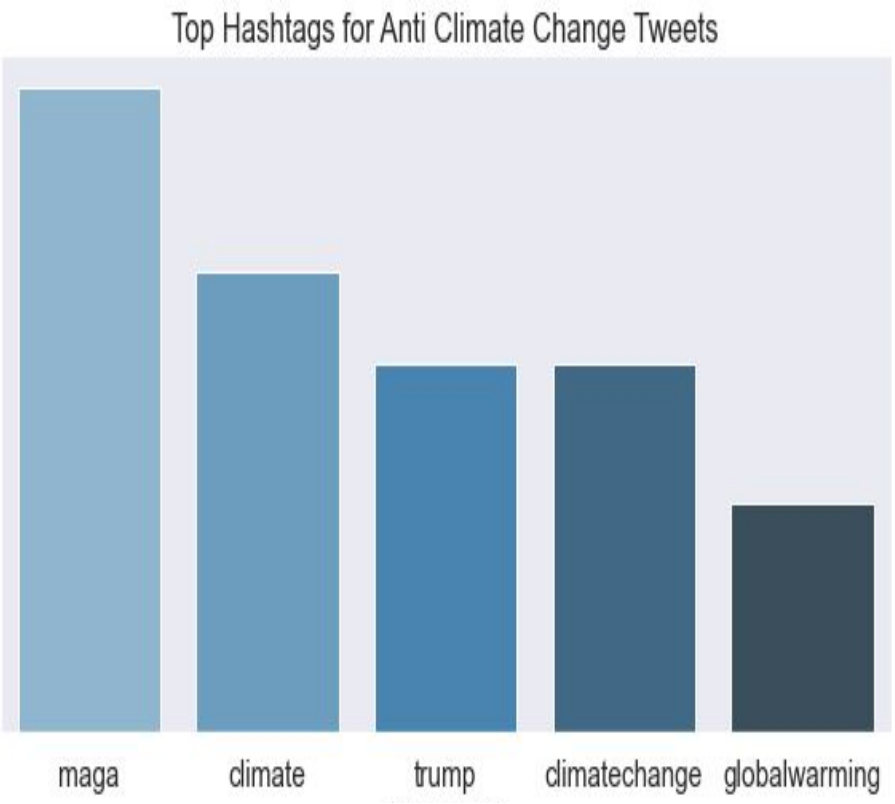


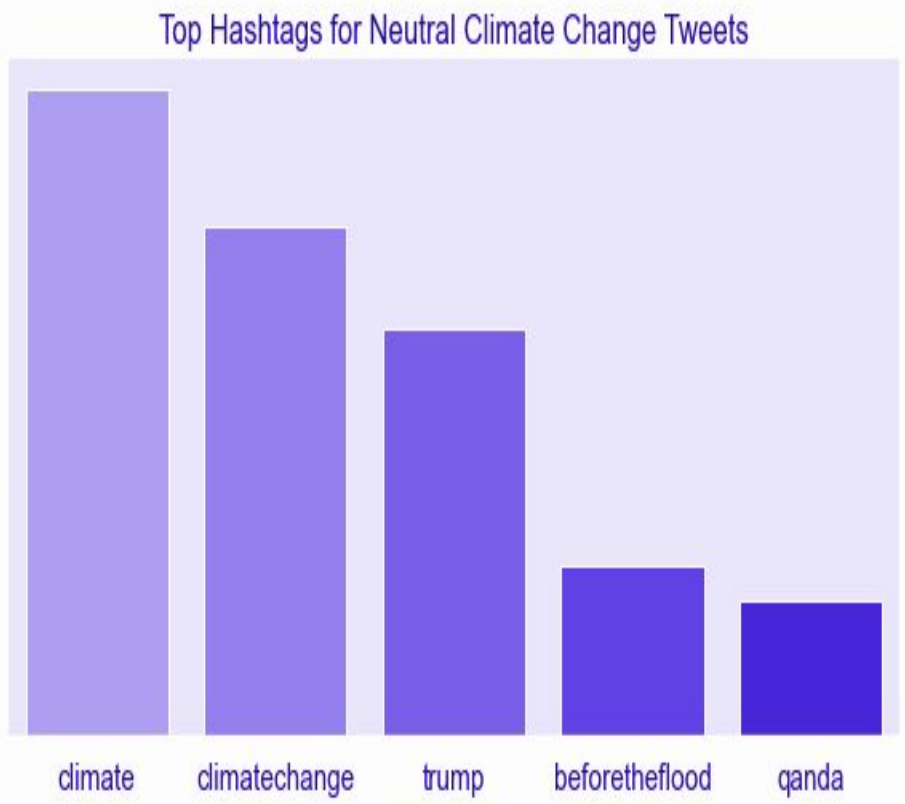
WORD CLOUD FOR PRO SENTIMENTS



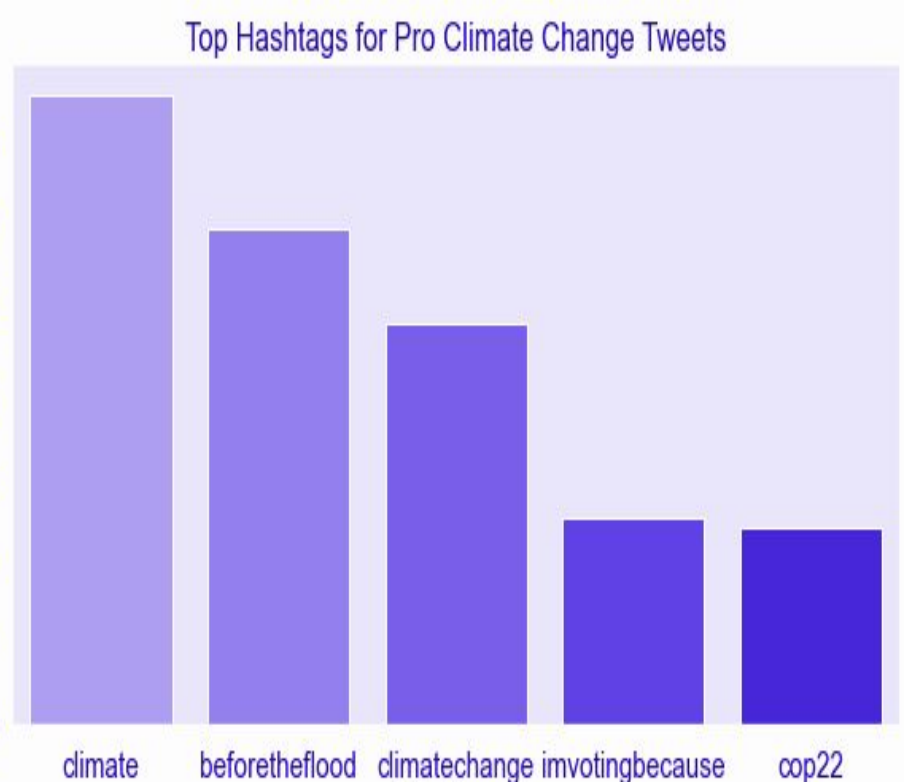
WORD CLOUD FOR FACTUAL SENTIMENTS

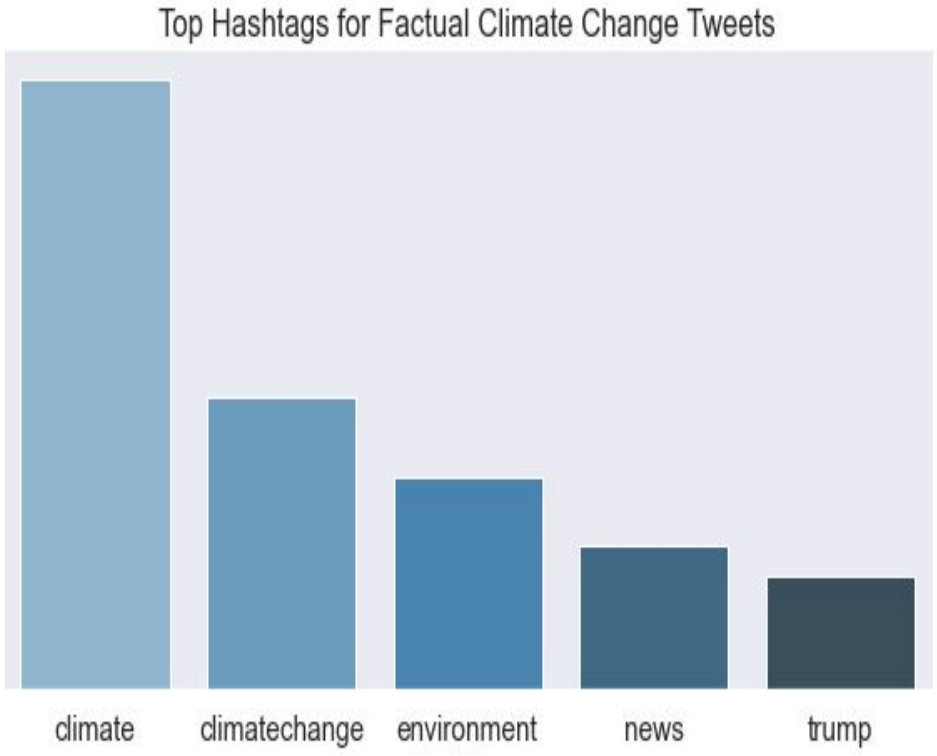
TOP HASHTAGS





TOP HASHTAGS



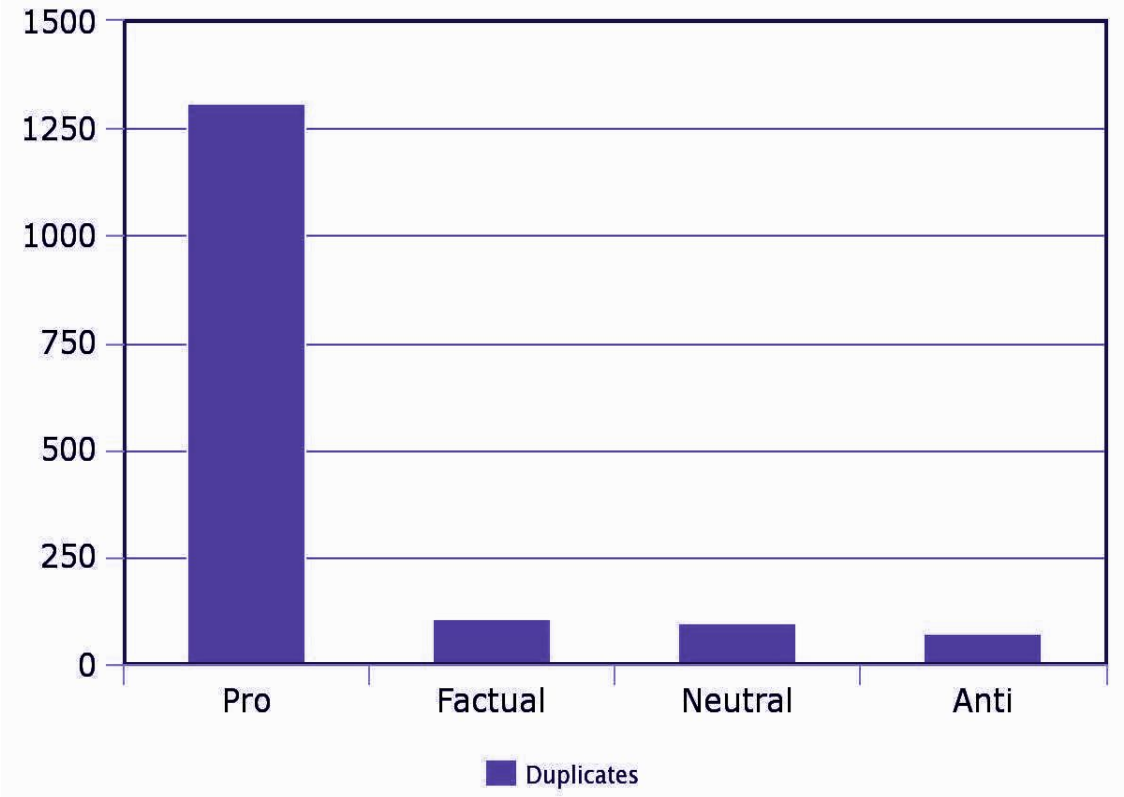


IMBALANCED DATASET

Risk of the model would have little information about one sentimenti

DUPLICATES

Incorrect duplicates, decrease the accuracy of the predictions



DATA PREPROCESSING

DUPLICATES

Removed all duplicates in the data

01

02

TOKENIZATION

Separated each text into individual words

TEXT CLEANING

03

Remove noise: common words and punctuation

04

LEMMATIZATION

Reduce words to its root e.g *changing* -> **change**

05

VECTORIZATION

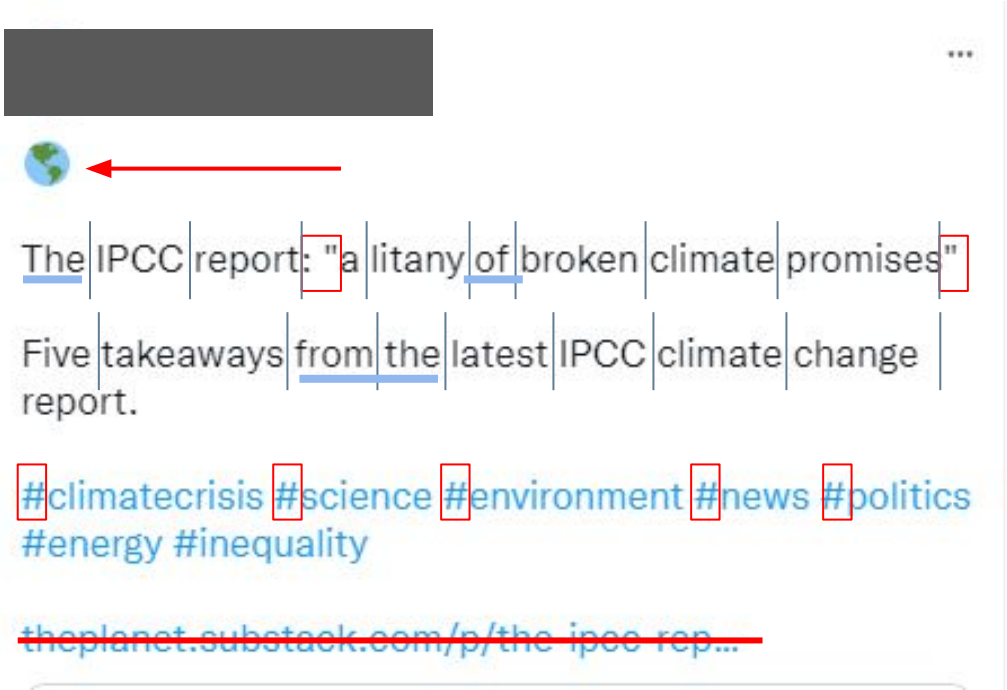
Convert words to features with numerical relevance

06

DATA BALANCING

Increasing the size of lower observed sentiments to equal the highest observed sentiment

DATA PREPROCESSING IMPACT



ipcc report litany broken **climate** promise five takeaway latest ipcc **climate** **change** report climatecrisis science environment **news** **politics** energy inequality

MODELLING

01

BERNOULLI NAIVE BAYES CLASSIFIER

F1_SCORE: 0.67

02

RANDOM FOREST CLASSIFIER

F1_SCORE: 0.65

03

LOGISTIC REGRESSION CLASSIFIER

F1_SCORE: 0.69

04

SUPPORT VECTOR CLASSIFIER

F1_SCORE: 0.70

FINAL MODEL

Performance Parameters of the models

0.70

F1 SCORE

This is the weighted average of the precision and recall values.

0.72

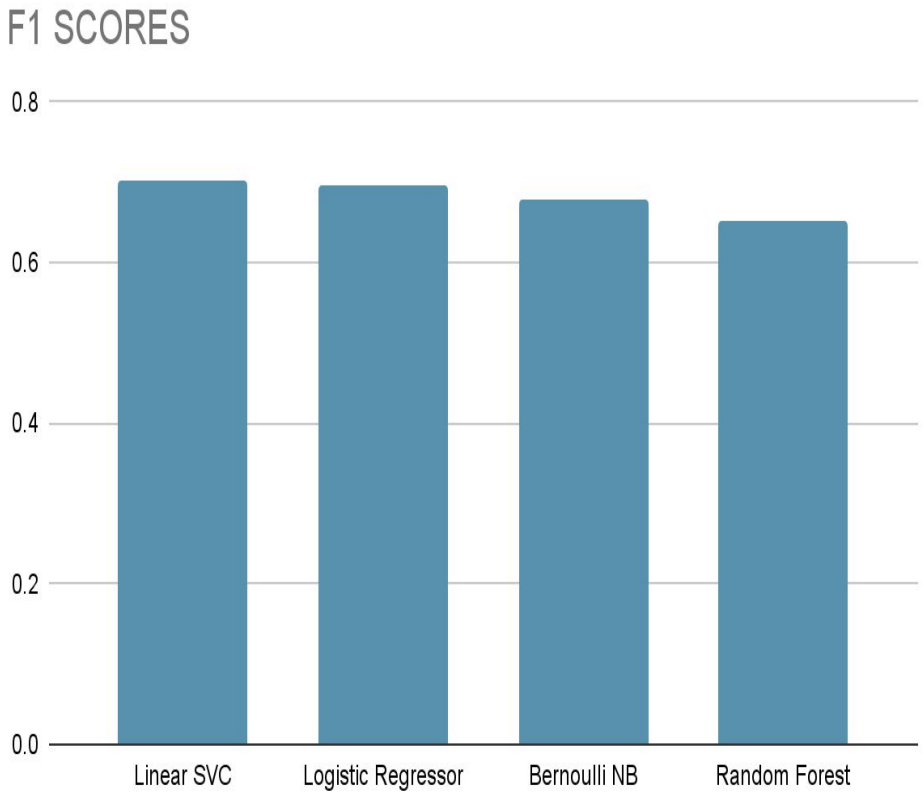
RECALL

This is the measure of our model correctly predicting True Positives. That is identifying relevant data

0.71

PRECISION

Our model correctly predicts the correct sentiment 71% of the time.



APP DEMO

python™

amazon web services™

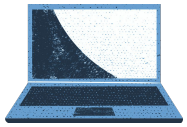
CONCLUSION

Project Agenda

Predict climate change sentiments based on tweets

Project Strategy

Analysing the data and giving relevance to words depending on the sentiment



Results

Green products have market
Best model was Logistic Regression with 70% accuracy.

Strengths

Fast & consistent operation

Weaknesses

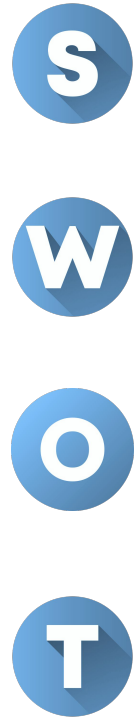
Sentimental bias in the trained model

Opportunities

Security application

Threats

Multiple social platforms



Thank You

Do you have any questions?