HATE SPEECH DETECTION

MACHINE LEARNING PROJECT

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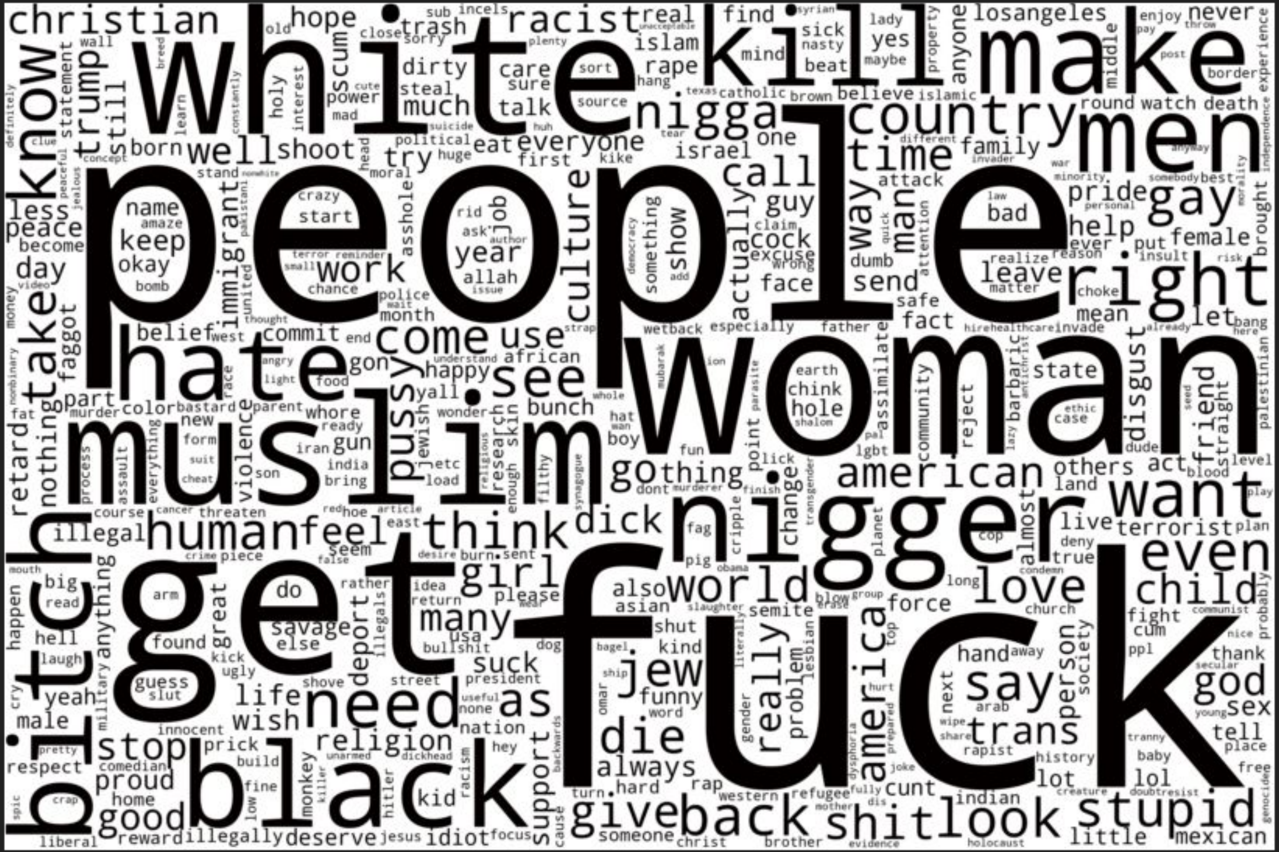
The problem: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INTRODUCTION

- Hate speech is a speech that attacks a person or group on the basis of attributes such as race, religion, ethnic origin, national origin, gender, disability, sexual orientation.

- The law of some countries describes hate speech as speech, gesture or conduct, writing, or display that incites violence or prejudicial action against a protected group or individual on the basis of their membership of the group.

- Social media platforms like Facebook and Twitter has raised concerns about emerging dubious activity such as the intensity of hate, abusive and offensive behavior among us.

Motivation

Potential of social media for spreading hate speech

- 30% internet penetration in India (World Bank, 2016)
- 241 million users of Facebook alone (*The Next Web Report*, 2017)
- 136 million Indians are active social media users (*Yral Report*, 2016)
- 200 million whatsapp users in India (Mashable, 2017)

OBJECTIVE

- The main objective of this work is to develop an automated machine learning based approach for detecting hate speech and offensive language.

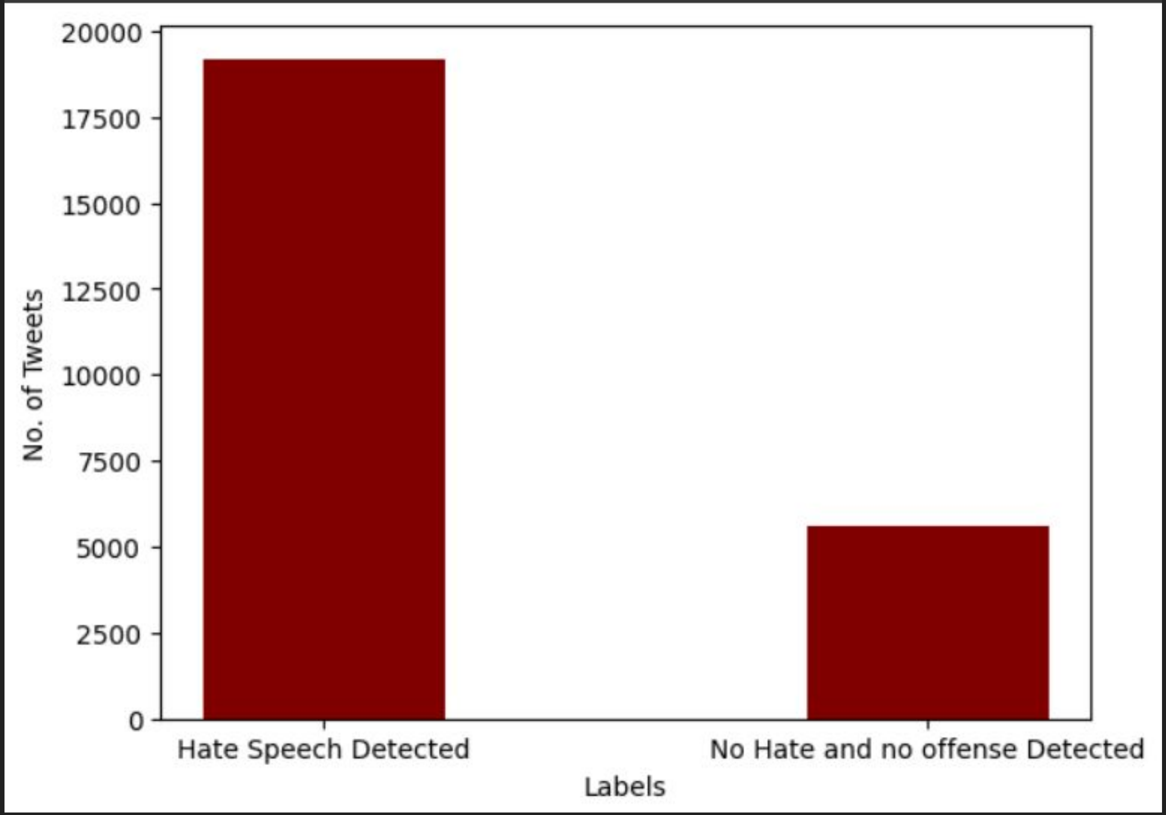
- Automated detection corresponds to automated learning using supervised machine learning technique.

- Classify tweets into Hate speech and No Hate speech no offensive language detection based on number of times tweets contents the word that hurt public sentiments.

The Data:

TWEETS	LABELS
GEEZ..... I think #NorthKorea may be right. #BarackObama is a monkey! Surely acts like one.	1
I, a Catholic and a Jesuit, am grateful for this Muslim holy season for challenging me to be a more dedicated child of God.	1
Saudi can suck a dick tbh, fucking bastards	1
Yes, in barbaric, authoritarian cultures that have since been condemned. Interesting that Christians desire to perpetuate the same idea.	0
Holy shit i am just getting dunked on by a cripple this is unreal.	1
Only cops should have guns!! But... aren't all cops racist and only promote white supremacy and kill blacks on sight? Oh shit, dilemma!!	0

The Data:



- This is a public release of the dataset on kaggle.

- Sourced from Twitter for 24782 combined rows

- The primary outcome variable is the hate speech score
  0 => No hate and no offense speech detected
  1 => hate speech detected

Solution

Create a model that can detect instances of hate speech

Model Types

Decision Tree

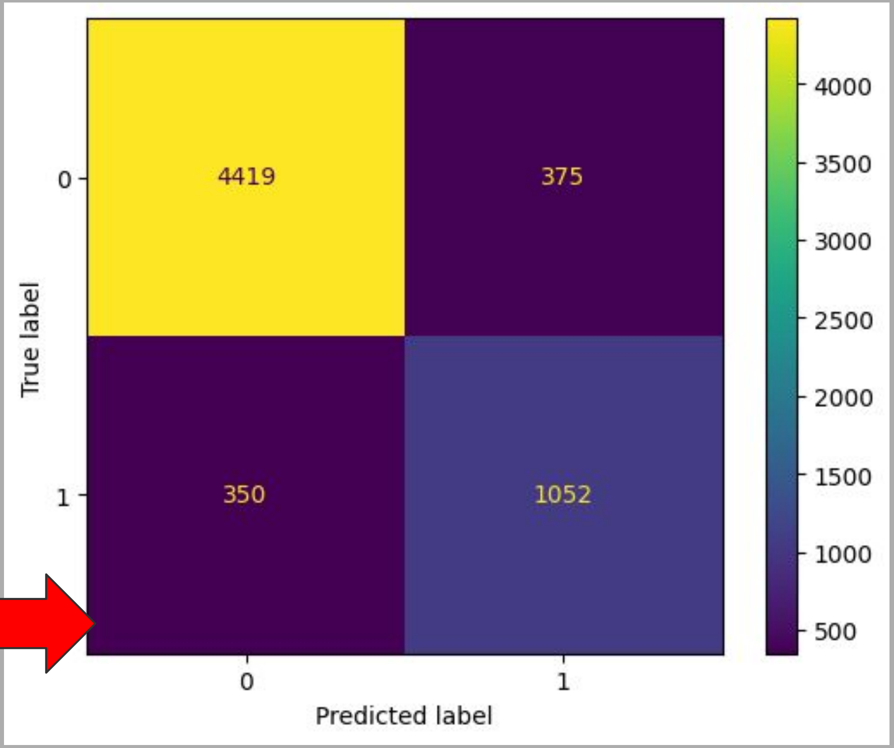
Naive Bayes Classifier

Knn Classifier

Logistic Regression

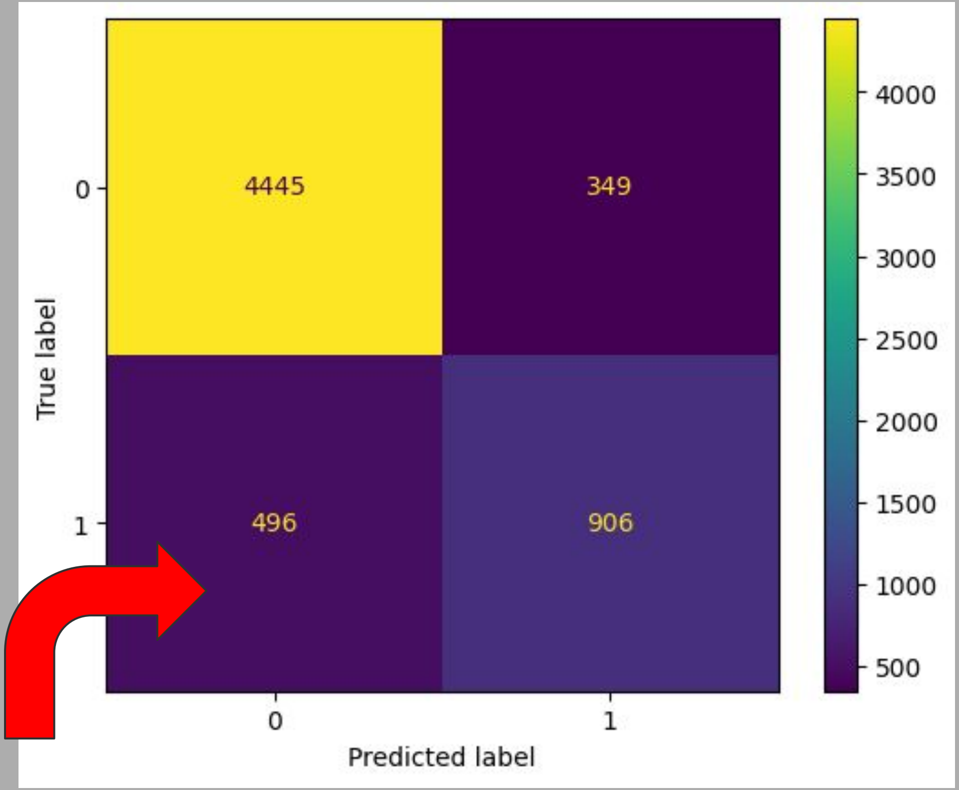
Linear SVM

Implementation DECISION TREE



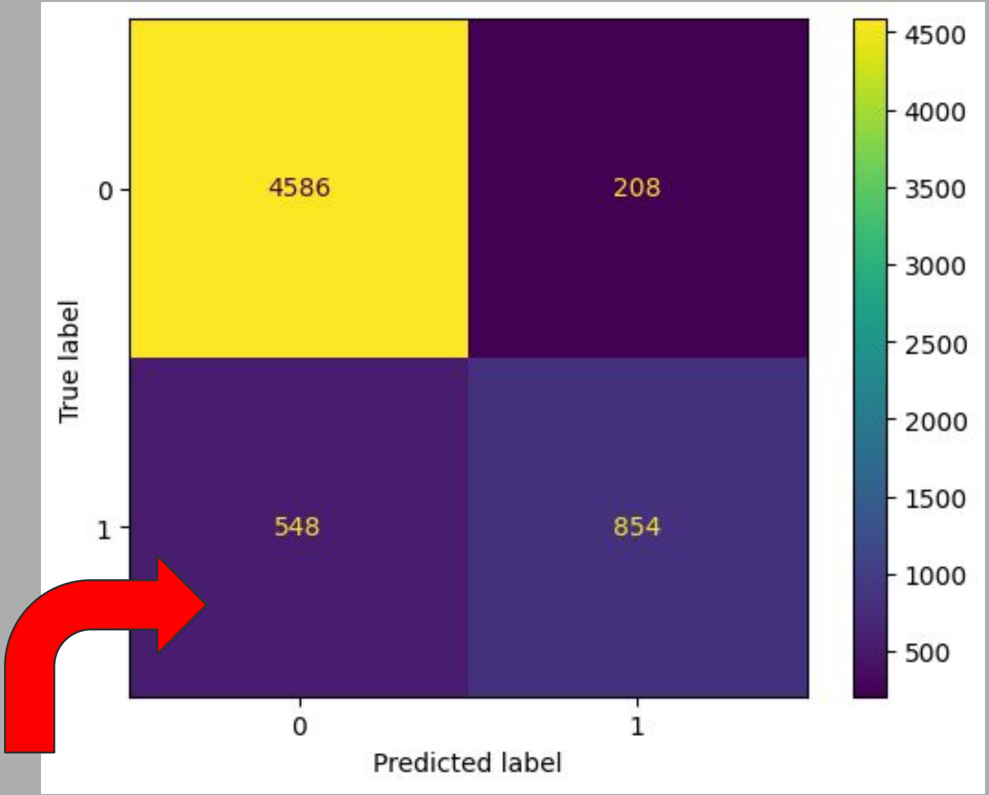
Accuracy	Precision	Recall	F1
0.8826	0.84	0.84	0.84

Implementation K-NEAREST NEIGHBOR



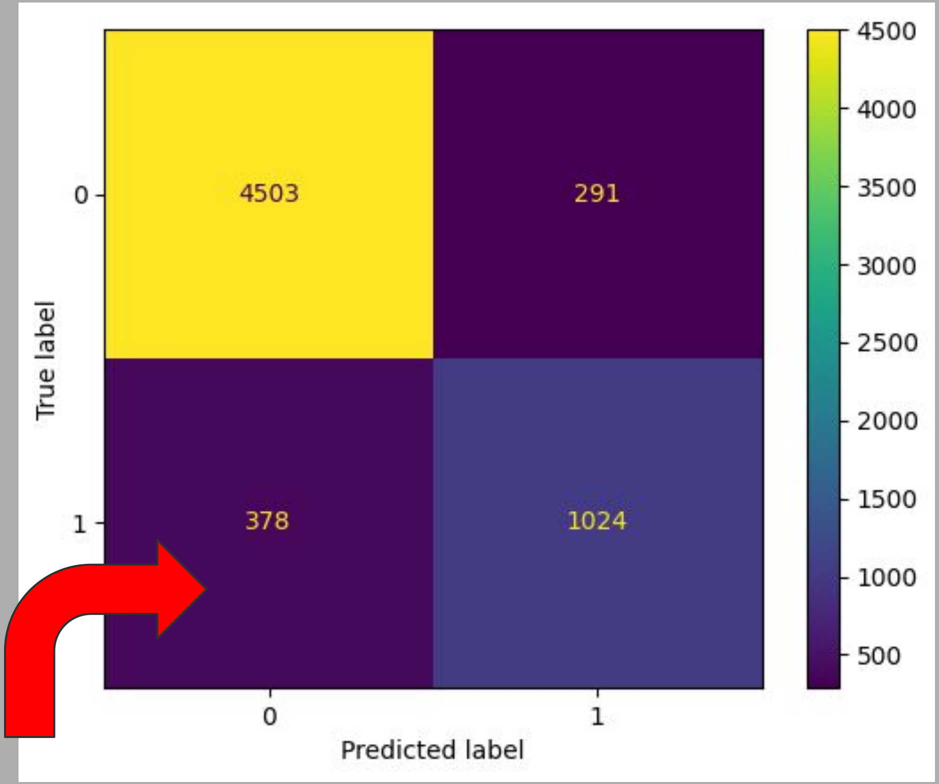
Accuracy	Precision	Recall	F1
0.8636	0.81	0.79	0.795

Implementation NAIVE BAYES



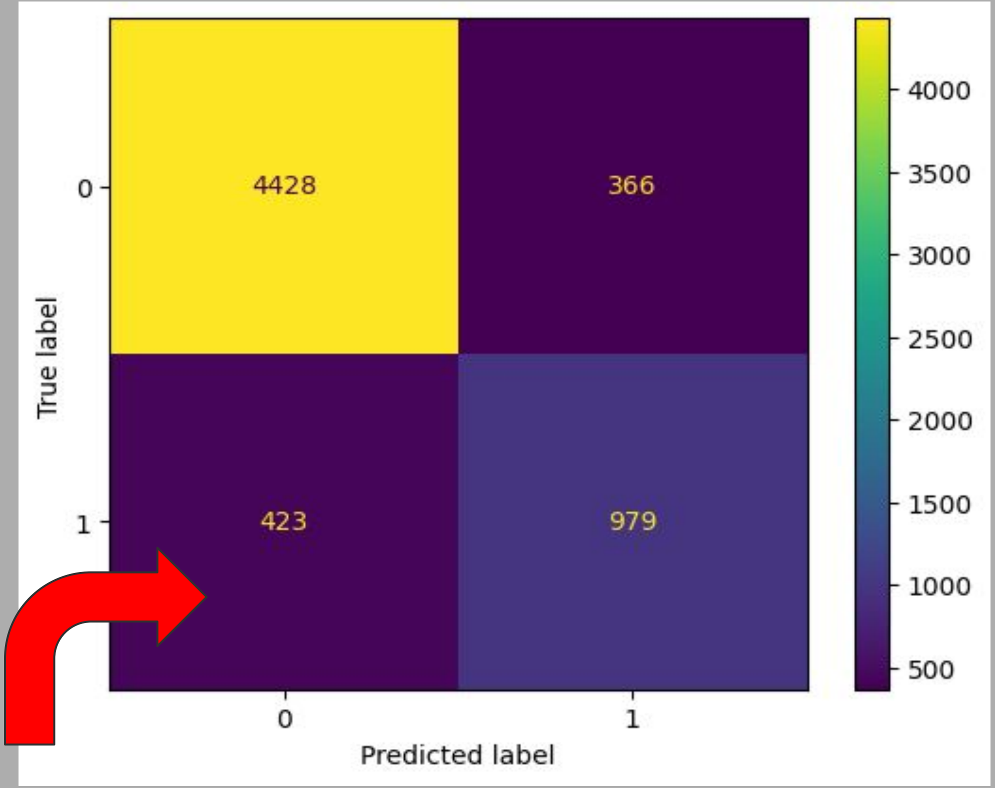
Accuracy	Precision	Recall	F1
0.8779	0.8450	0.7850	0.8050

Implementation LOGISTIC REGRESSION



Accuracy	Precision	Recall	F1
0.8920	0.85	0.8350	0.84

Implementation LINEAR SVM



Accuracy	Precision	Recall	F1
0.8726	0.85	0.8350	0.84

The Predictions:

Tweets (UNSEEN DATA)	Labels	Prediction
My God look at these BARBARIC PPL. And these pigs all watching. They r a very, very sick culture. And Omar and Rashid want this crap here. This is America not the Middle East. Round them up and send them home.	1	1
That's right would have to be at least two more because someone is going to need to shut your whore mouth up while my cock rapes your asshole over and over again while daddy's other friend is in your slutty little cunt.	1	1
Instead of killing americans just kill brown kids instead	1	0
I love that you enjoy being trans.	0	0
Fucking panty waste UK politicians can suck a dick! They sold out their own people for a shit god, preferential rights for moslems. Look at your own policies, calling Trump anything just shows your own dumbmotherfuckery. Stand up UK citizens and take your fucking country back! For nearly 2000 years you've fought off every invader in the world but now your politicians have gone ass up for allah. Some of the greatest kings to ever walk the earth you've decended from, they'd roll over in their graves if they knew	1	1

FUTURE WORK:

- Increasing record size for greater accuracy.
- Create a Chrome extension that can detect hate speech and censor it.
- Create a social media bot i.e instagram/twitter/facebook that can detect and flag hate speech.
- Use text summary generation to replace hate speech text with a censored summary.

THANK YOU