Manajemen Data dan Informasi

Indonesian Hate Speech Analysis on Twitter/X After the Second Presidential Debate in 2024

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PART ONE

01

INTRODUCTION

"Hate speech spreading is a very dangerous action which can have some negative effects such as discrimination, social conflict, and even human genocide" (Komnas HAM, 2015)

01

INTRODUCTION

INDONESIA SECOND PRESIDENTIAL DEBATE IN 2024

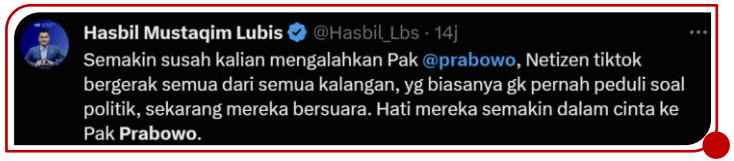
The 2024 presidential candidate debate, held on Sunday (7/1/2024) at Istora Senayan, Jakarta, became intense as the three candidates passionately exchanged ideas on protection, security, international relations, and geopolitics.

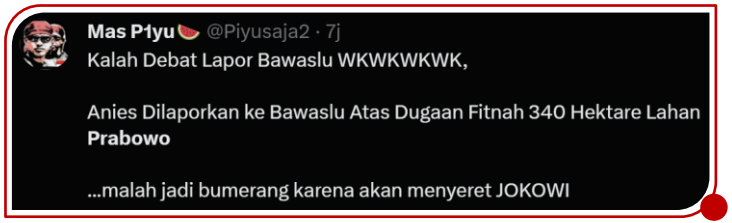
Concurrently, Bawaslu's release of findings on cyberspace violations during the 2024 election campaign highlighted hate speech as the most common infringement on the internet.

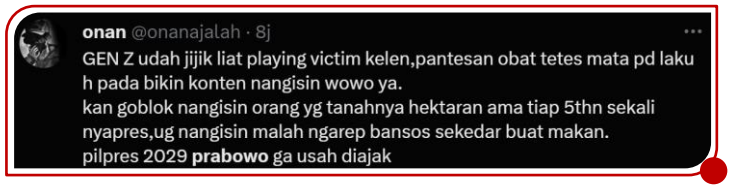
Source: cnnindonesia.com, kilat.com

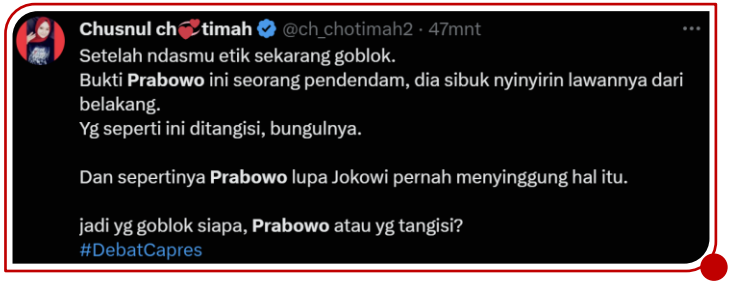
01 INTRODUCTION

Twitter (Now X), a significant social media platform in Indonesia, frequently becomes a conduit for spreading hate speech (Alfina et al., 2017, 2018; Putri, 2018)









01 INTRODUCTION

BACKGROUND

This analysis investigates the prevalence of hate speech in popular tweets following the second Indonesian Presidential Debate in 2024 on Twitter/X. Using machine learning models, including K-Nearest Neighbors, Logistic Regression, SVM, Naive Bayes, Decision Tree, and Random Forest, the study aims to determine whether trending tweets lean towards hate, offering insights into fostering more constructive and responsible online conversations around political events on Twitter/X.

PART TWO

02

METHODOLOGY

"In God we trust. All others must bring data"

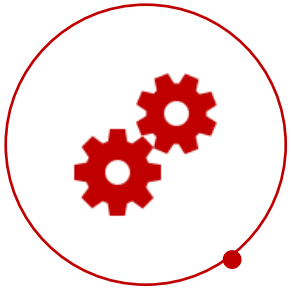
~ Dr. W. Edwards Deming

02

METHODOLOGY

Data Collection

Collecting the dataset needed for analysis



Data Wrangling

Normalization, removing unnecessary characters, and balancing the dataset

EDA

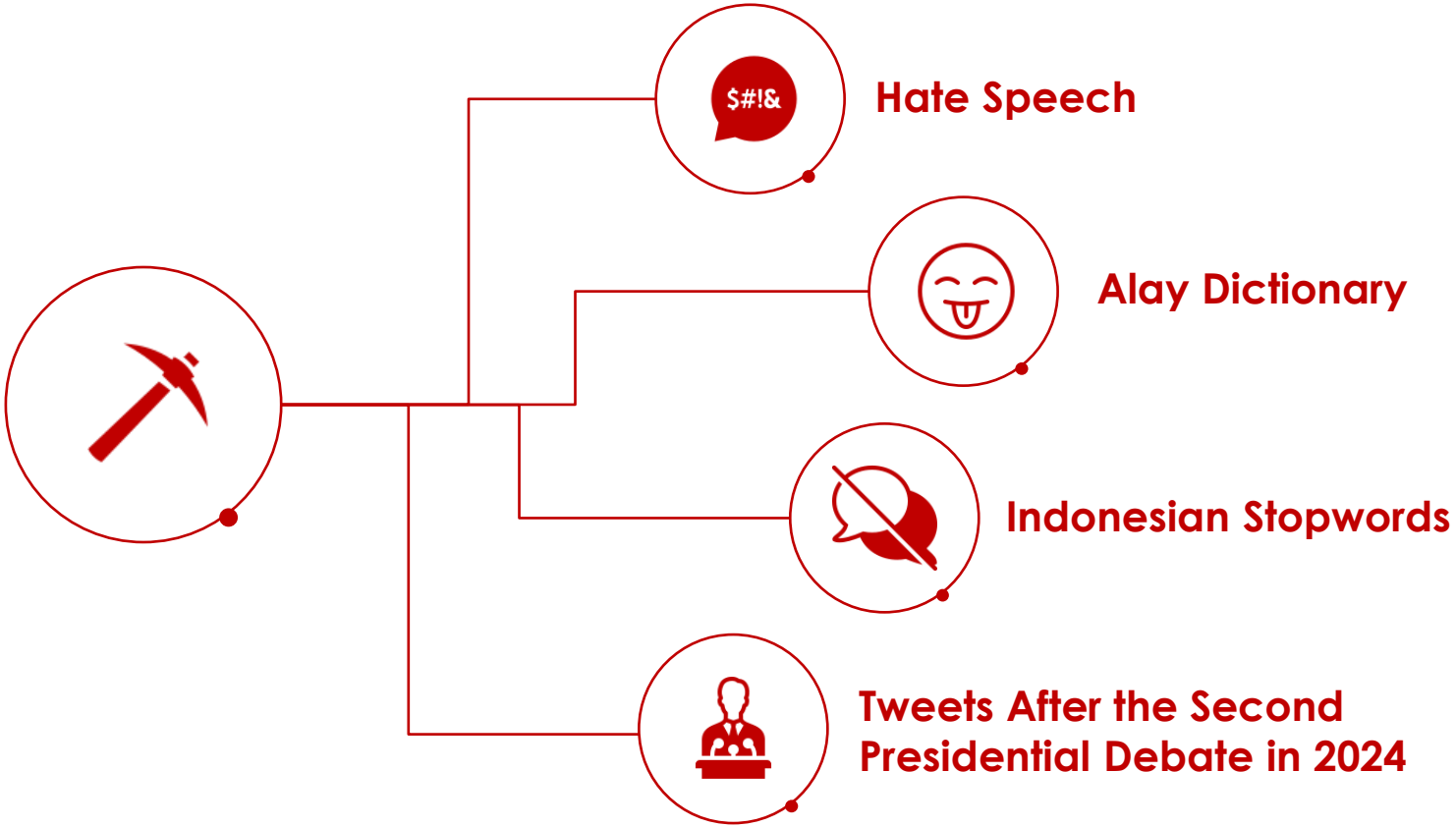
Analysis of datasets to gain insight

Machine Learning

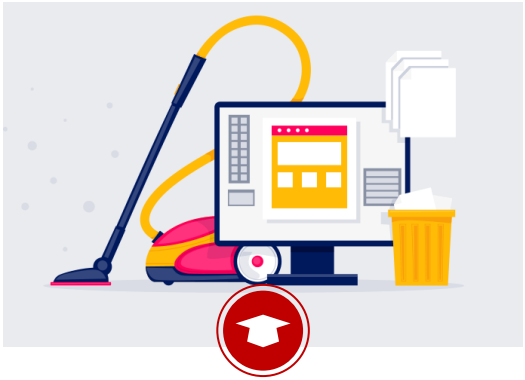
Training a model with a dataset to later be used for predictions

02

DATA COLLECTION



02 DATA WRANGLING



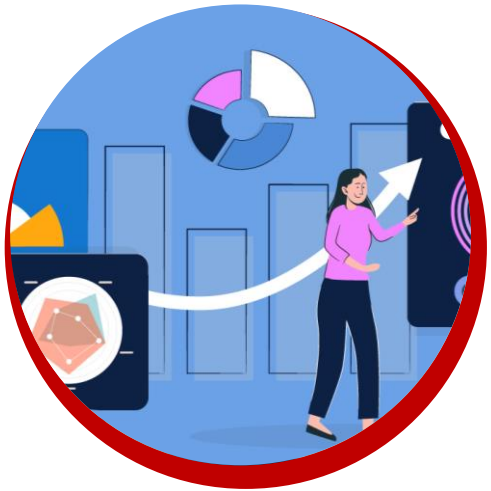
PREPROCESSING DATA

The first and fourth datasets underwent preprocessing to standardize and eliminate extraneous characters that might potentially impact machine learning predictions. This involved utilizing pre-defined text processing functions for the preprocessing tasks.

BALANCING DATA

The balancing process is carried out to balance the frequency of hate speech and non-hate speech into a 50:50 ratio. The balancing process begins by looking at the number of datasets that are labeled as hate speech.

02 EDA



EXPLORATORY DATA ANALYSIS AND VISUALIZATION

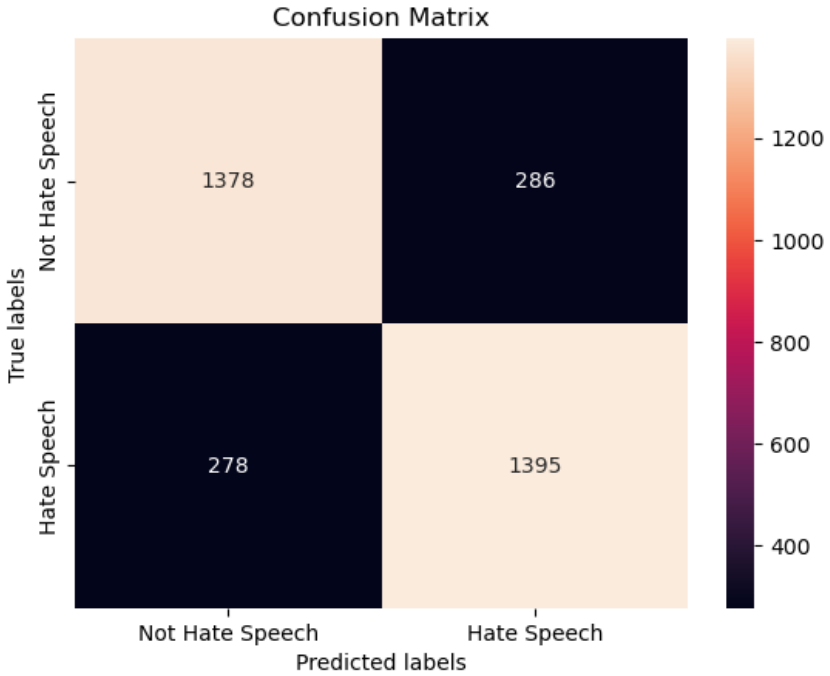
- Comparing the number of hate speech and non-hate speech from the dataset using a pie chart.
- Visualization uses wordcloud to see what words appear most often in tweets that are indicated as hate speech and non-hate speech.
- Visualization uses wordcloud to see what words appear most often in popular tweets after the second presidential debate.

02

MACHINE LEARNING

TRAINING

Using a balanced dataset, training is carried out using the model training function. The training results show that the best model is SVM with an accuracy of 83% with prediction results represented using a confusion matrix.



PART THREE

03

RESULT

"The goal is to turn data into information, and information into insight."

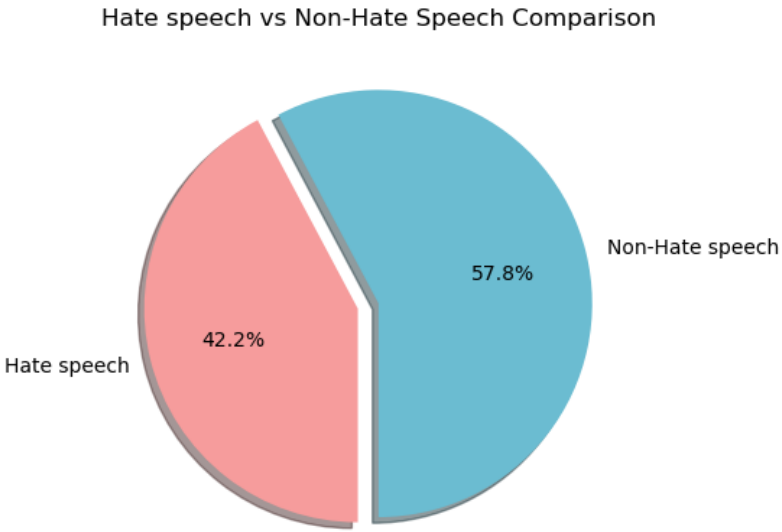
~ Carly Fiorina, former CEO of Hewlett-Packard

03

HATE SPEECH VS NON-HATE SPEECH COMPARISON

INSIGHT

From the visualization provided, most of the data is non-hate speech, around 57.8%, the rest is hate speech.



03

THE MOST FREQUENTLY USED WORDS FOR HATE SPEECH

INSIGHT

From the visualization, the words that appear most often are Jokowi (name of president), cebong, ganti presiden, and so on.

03

THE MOST FREQUENTLY USED WORDS FOR NON-HATE SPEECH

INSIGHT

From the visualization, the words that appear most often are orang, gue, Indonesia, and so on.

03

THE MOST FREQUENTLY USED WORDS FOR TWEETS AFTER THE SECOND PRESIDENTIAL DEBATE IN 2024

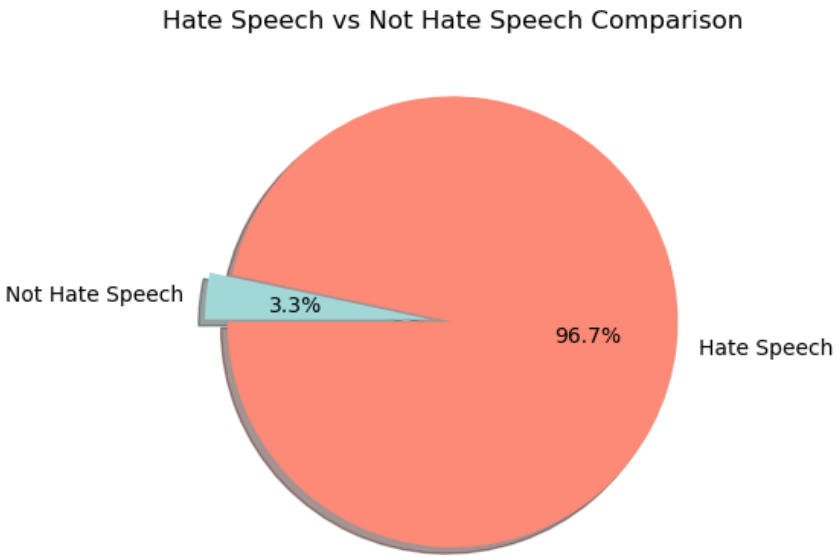
INSIGHT

From the visualization, the words that appear most often are Prabowo and Anies (presidential candidate), Jokowi, and so on.

03 PREDICTION

INSIGHT

Because the best model is SVM, this model is used to predict tweets after the second presidential debate in 2024. The prediction results show that, of all tweets, 96.7% of tweets are indicated as hate speech.



PART FOUR

04

CONCLUSION

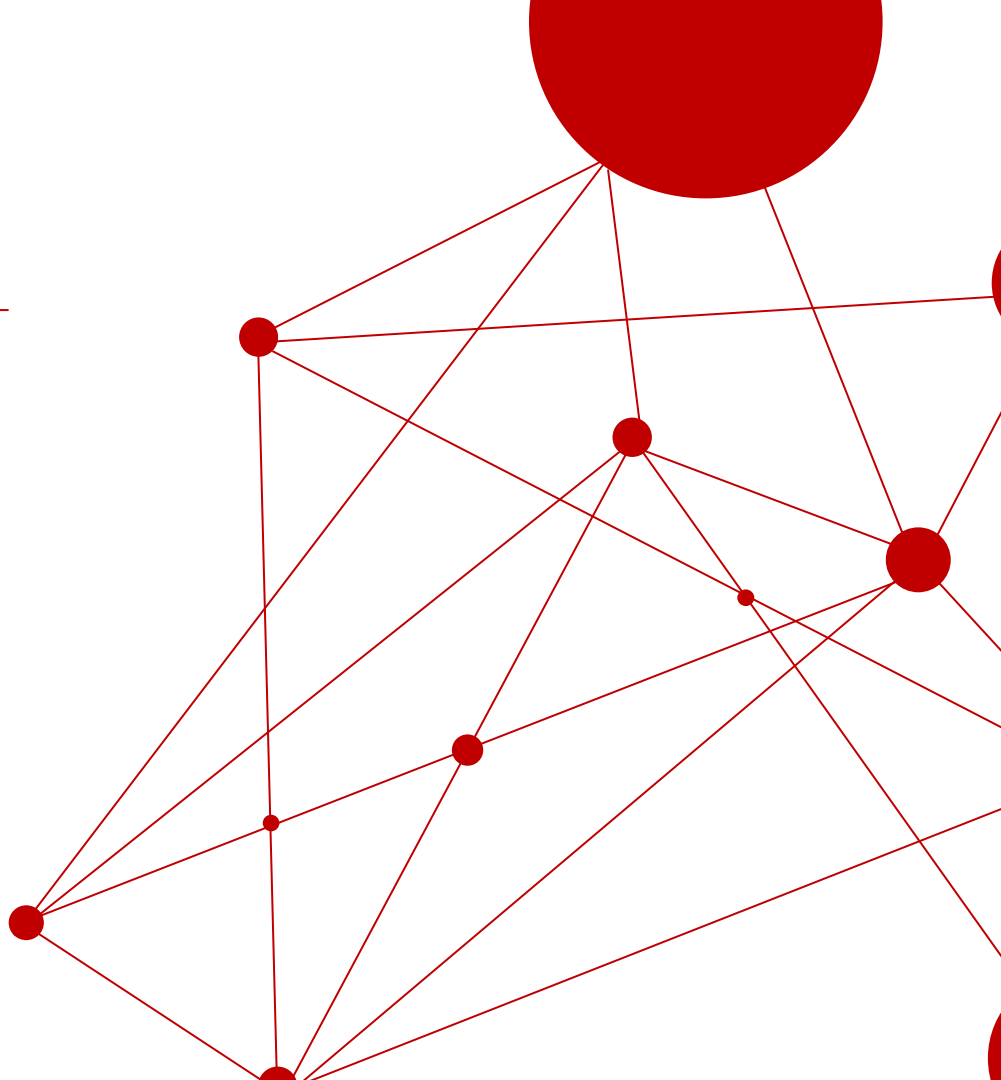
"It is a capital mistake to theorize before one has data."

~ Arthur Conan Doyle

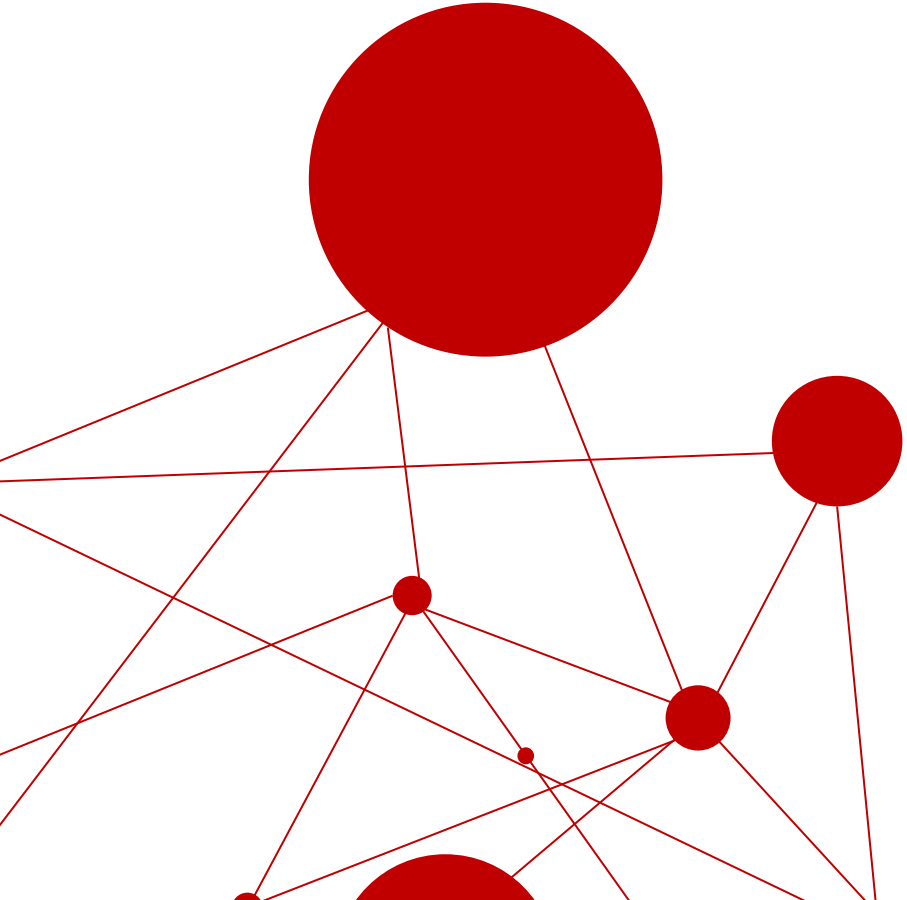
04

CONCLUSION

Based on the analysis of 30 popular tweets post the 2024 second presidential debate, a staggering 96.7% of these tweets were identified as hate speech. The recurrently used words in these tweets included "Prabowo," "Anies," "Jokowi," alongside various abusive terms. Interestingly, these align closely with the frequently occurring terms observed in the training dataset from 2018, featuring "Jokowi" and "Prabowo" along with similar abusive language. This suggests a persistent usage of similar word patterns over the years.



04 CONCLUSION



To enhance future analysis, augmenting the training dataset with data from both the first and second presidential debates could offer new tweet patterns. Additionally, employing an neural-network model such as LSTM instead of a conventional machine learning model might enhance the ability to discern patterns within tweets, potentially elevating prediction accuracy.

APPENDIX

https://bit.ly/mdassets

https://github.com/Angello28/md-project

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THANK YOU !