An Initiative by "The Last Centre"

ECHELON

TRANSFORMING THE ENGINEERING EDUCATION

Echelon Institute of Technology

Sentiment Analysis

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Introduction

Depression (major depressive disorder) is a common and serious medical illness that negatively affects how you feel, the way you think and how you act. Fortunately, it is also treatable. Depression causes feelings of sadness and/or a loss of interest in activities you once enjoyed. It can lead to a variety of emotional and physical problems and can decrease your ability to function at work and at home.

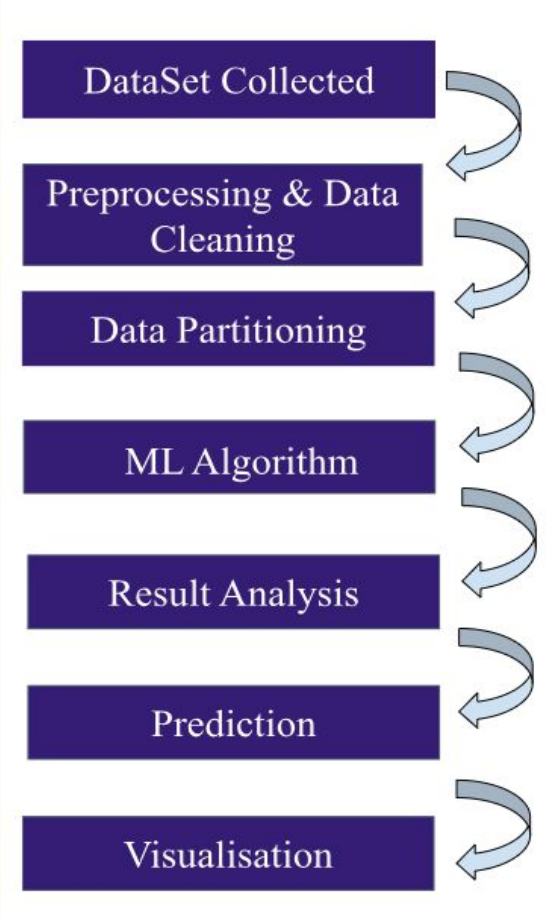
Statement About the Problem

Depression, a prevalent mental health disorder affecting millions globally, demands early detection and intervention for effective treatment. This research aims to harness the power of machine learning (ML) algorithms, including KNN, SVM, Decision Trees, Naive Bayes, and Logistic Regression, to detect depression in individuals. By leveraging a dataset specifically curated for depression detection, we intend to explore the accuracy and efficacy of these ML techniques in identifying individuals at risk.

Objective and Scope of the Project

To develop a computer-based algorithm capable of accurately detecting depression in its early stages, facilitating timely intervention and treatment by healthcare professionals.

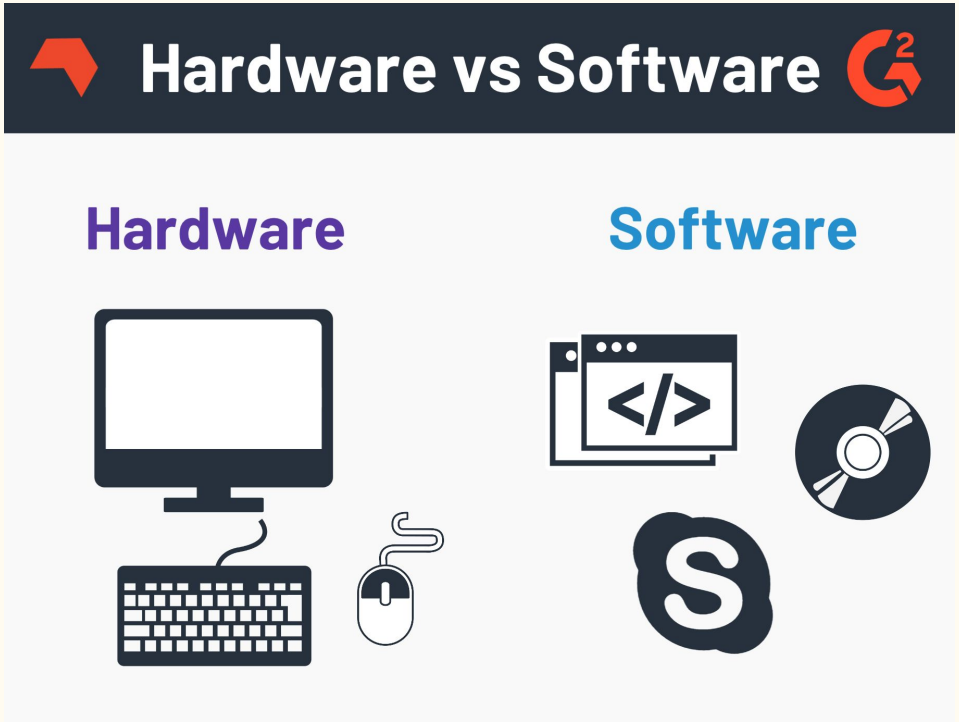
Methodology



Technology Used

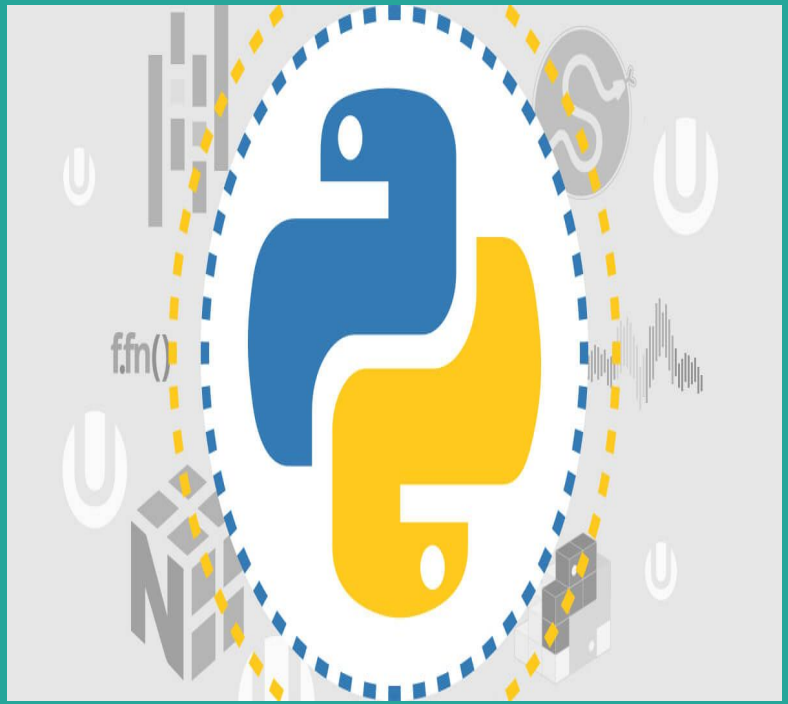
Hardware and Software Requirements

- At least Windows 10
- 64-bit operating system
- Jupyter
- Internet Connectivity



Python Library

- Pandas
- NLP
- NLTK
- Multinomial Naive Bayes
- Gaussian Naive Bayes
- Numpy



Benefits

- Identifying a mental health disorder early can slow its progress
- Addressing depression can improve a person’s physical health
- By acknowledging the problem, helpful treatments can begin
- Anyone can experience depression at any point in life
- Social stigma surrounding mental illnesses discourages people from getting help
- Mental health conditions like depression can lead to drug and alcohol abuse
- Untreated depression can lead to suicide

Challenges

- Reluctances to seek help or disclose symptoms
- Cultural differences in expressing distress
- Limited access to mental health services
- Stigma surrounding mental illness

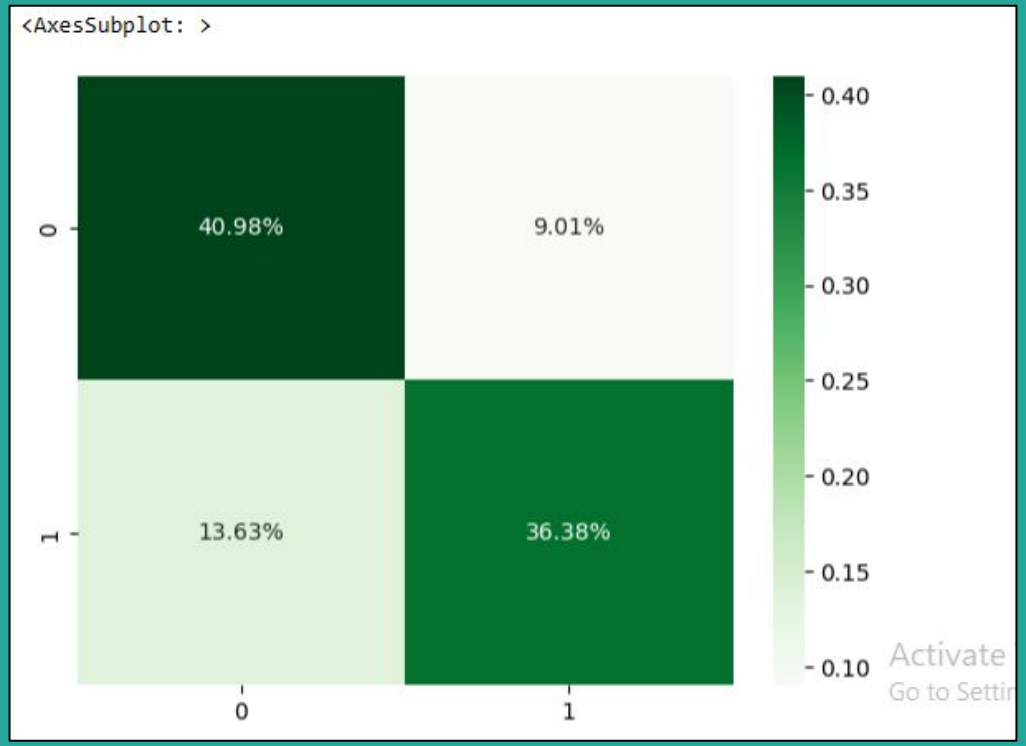
Depression detection in various settings

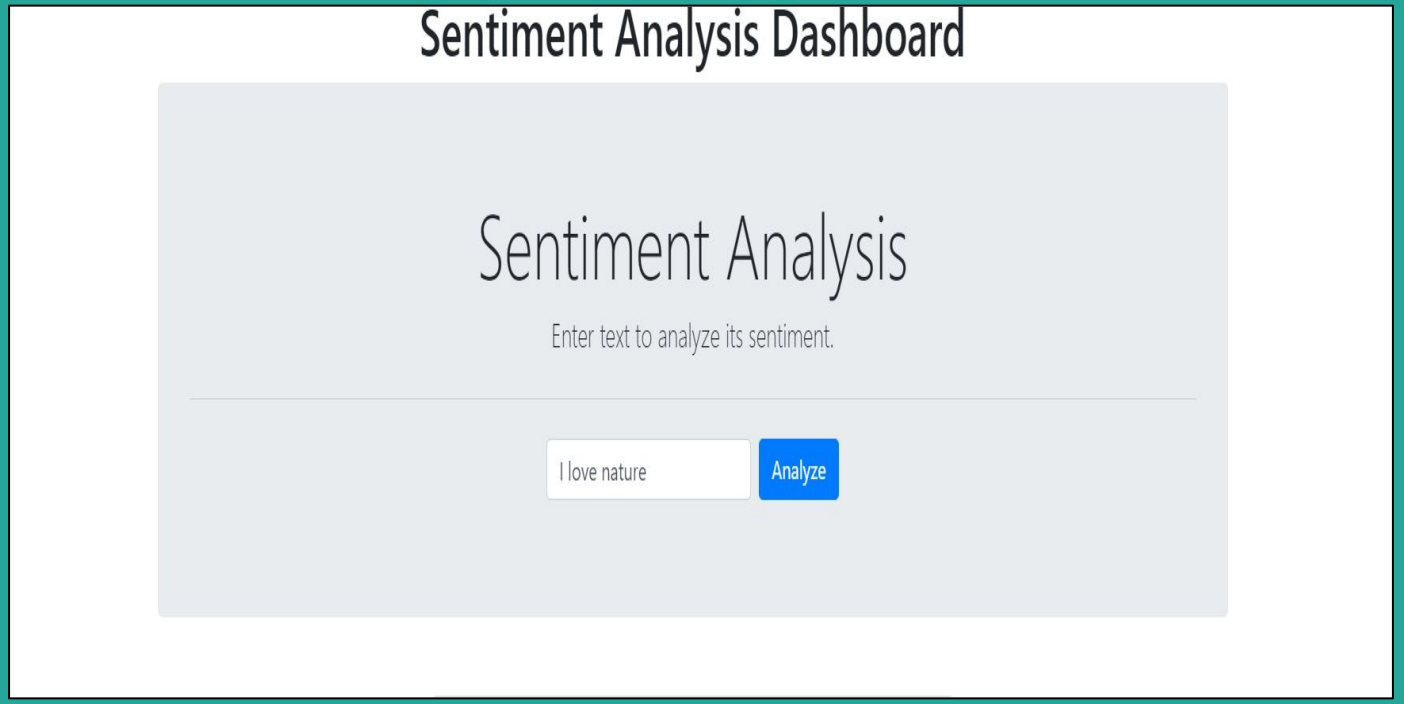
- Primary care clinics
- Schools and Universities
- Workplace environments
- Community outreach program

Public Health Implications of Depression Detection

- Burden of depression on individuals, families, and society
- Economic costs associated with untreated depression, including healthcare utilization and productivity losses
- Potential benefits of early detection and intervention in reducing the overall burden of depression
- Role of public health initiatives in promoting awareness, prevention, and access to screening and treatment services

SNAPSHOTS OF GUI




Sentiment Analysis Dashboard
Sentiment Analysis
Enter text to analyze its sentiment.
I love nature
Analyze

Sentiment Analysis Dashboard

Sentiment Analysis

Enter text to analyze its sentiment.

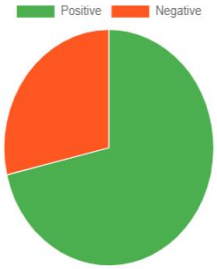
Enter text here

Analyze

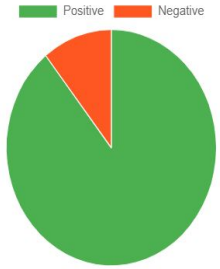
Overall Sentiment

Sentiment Analysis:

Sentiment: Positive Sentiment

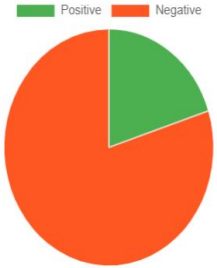


Sentiment: Positive Sentiment



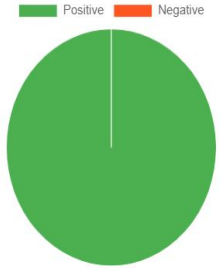
KNN Model Prediction

Sentiment: Negative Sentiment



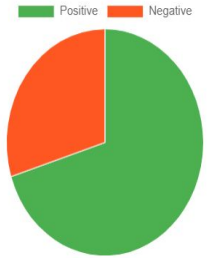
DT Model Prediction

Sentiment: Positive Sentiment



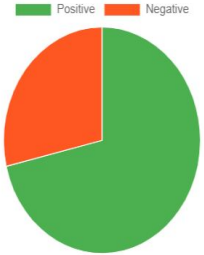
Overall Sentiment

Sentiment Analysis:



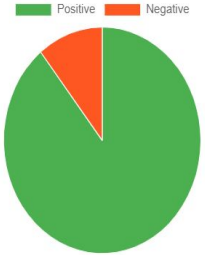
NAIVE_BAYES Model Prediction

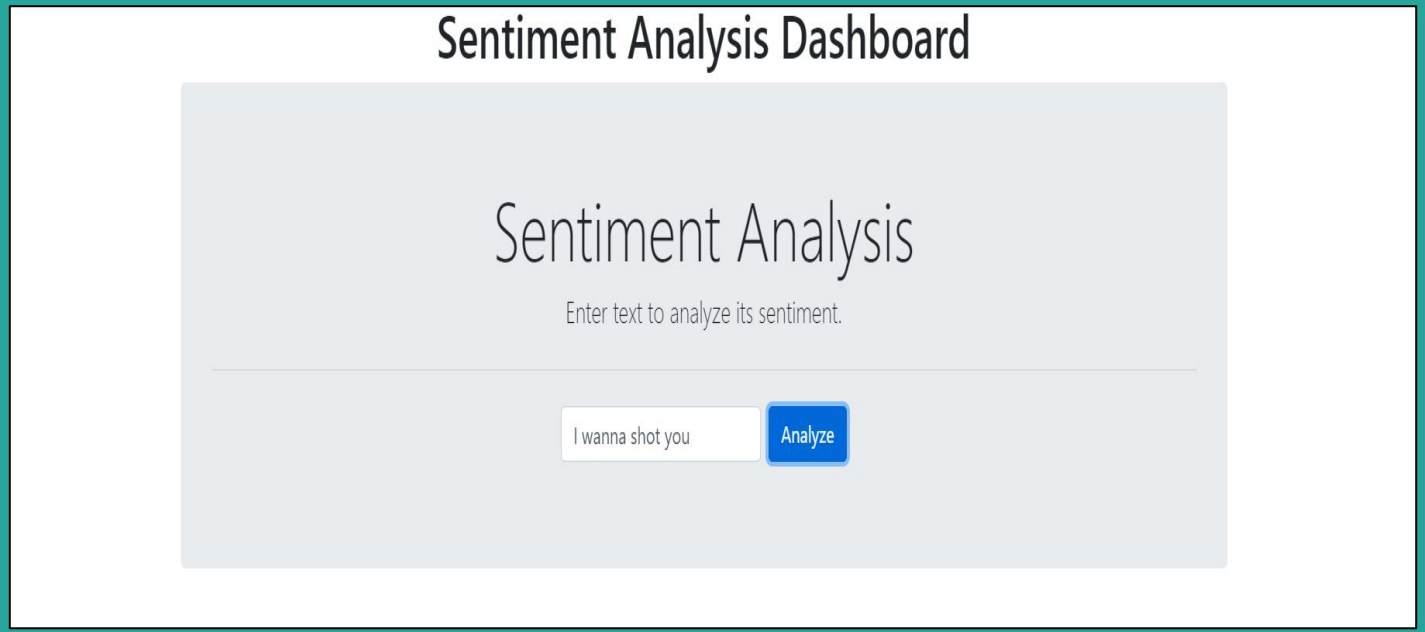
Sentiment: Positive Sentiment



LR Model Prediction

Sentiment: Positive Sentiment




Sentiment Analysis Dashboard
Sentiment Analysis
Enter text to analyze its sentiment.
I wanna shot you
Analyze

Overall Sentiment

Sentiment Analysis:

NAIVE_BAYES Model Prediction

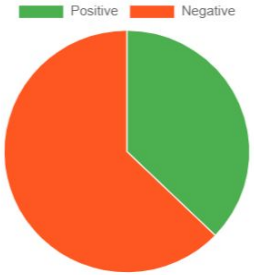
Sentiment: Negative Sentiment

LR Model Prediction

Sentiment: Negative Sentiment

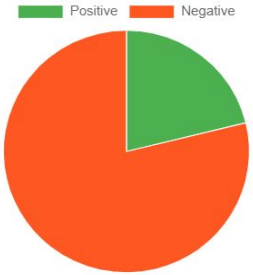
NAIVE_BAYES Model Prediction

Sentiment: Negative Sentiment



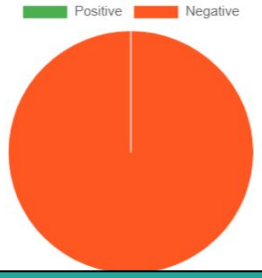
LR Model Prediction

Sentiment: Negative Sentiment



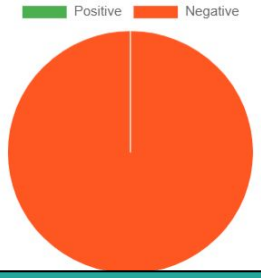
KNN Model Prediction

Sentiment: Negative Sentiment



DT Model Prediction

Sentiment: Negative Sentiment



Conclusion & Future Scope

The objective of this project was to detect Depression using sentiment Analysis.
For this purpose, a dataset was collected from the Kaggle . It was pre-processed and clean to prepare it for further use. Then the dataset was split into 80%-20% partitions for Training and Testing respectively. Further, popular ML algorithms, Naive Bayes . The results obtained after experiments show that the Naive Bayes technique resulted in a classification accuracy of more than 84%.

As a future work in this research, other Machine Learning techniques and Deep Learning techniques can be applied for better prediction accuracy. Moreover, a dataset consisting of many instances can be collected and used for performing experiments.

References

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3. Chiong, R., Budhi, G. S., Dhakal, S., & Chiong, F. (2021). A textual-based featuring approach for depression detection using machine learning classifiers and social media texts. Computers in Biology and Medicine, 135, 104499.

Thank You