Depression Detection System

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OUTLINE

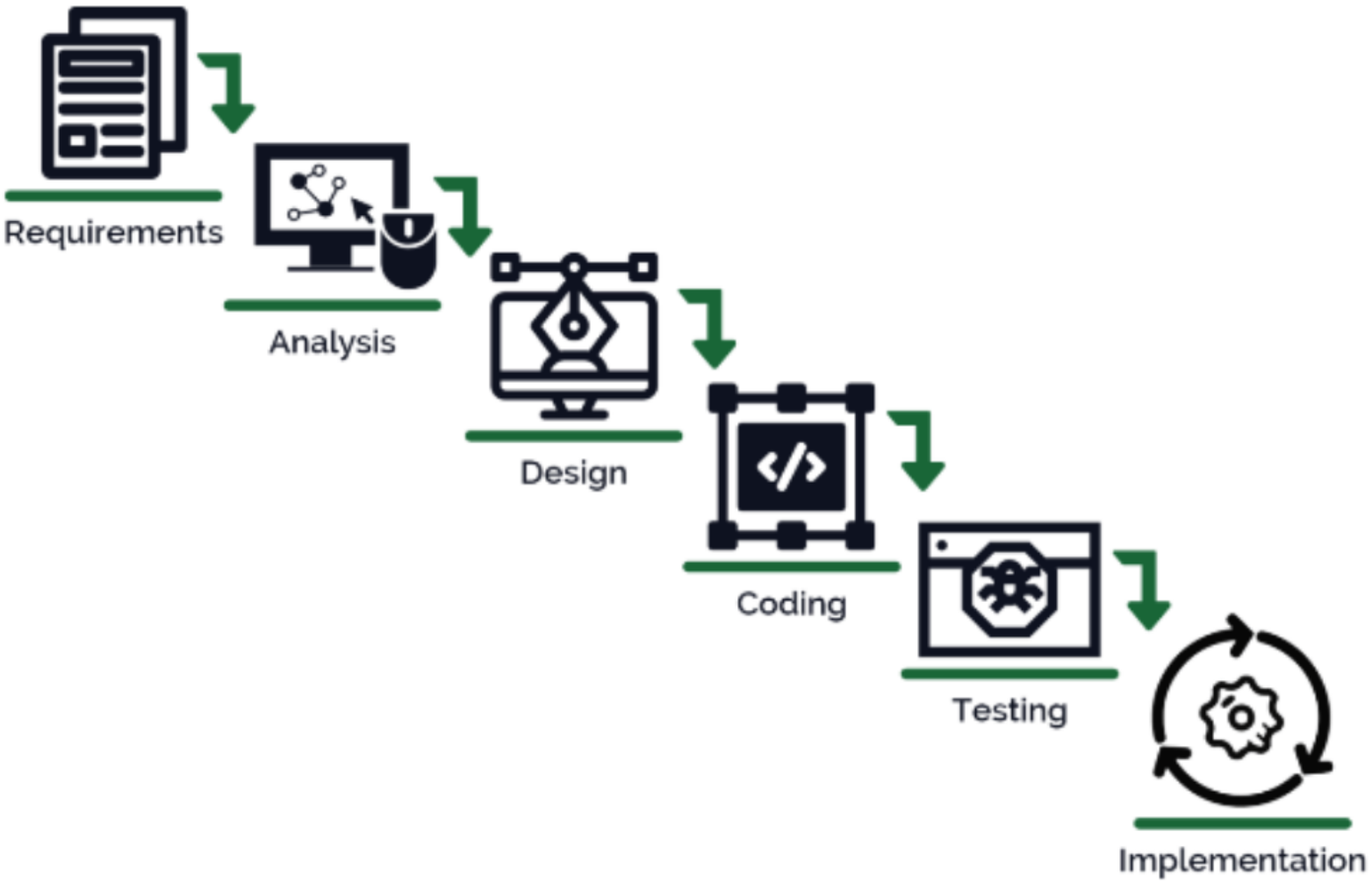
Problem Statement

- Depression is a leading cause of mental illness, and it has been linked to an increased risk of premature death. One in every 15 adults suffers from depression. Furthermore, it is a major contributor to suicidal thoughts and causes significant impairment in daily life.
- Several previous empirical studies have shown that certain linguistic characteristics can be analyzed and correlated to likely depression symptoms, as well as help predict self-destructive behaviour.

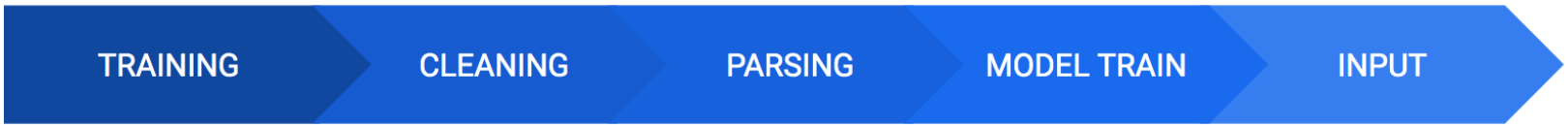
Problem Description

- Creating a system which detects depression using questionnaires, linguistic characteristics and so on; provides information about the nearby clinics. Planning to develop a web application for the same.

Project Life Cycle



Project Work Flow



TRAINING	CLEANING	PARSING	MODEL TRAIN	INPUT
Training data set taken from Twitter	Cleaned the data to keep only texts.	Parsed the text to get consecutive strings of 2 - 3 words	Trained our model on a given data set.	Fed the cleaned input into the trained model to obtain an output.

Demonstration

Demo:1

```
input_vector = tfidf_vectorizer.transform([input_text])
# Make predictions
prediction = best_clf.predict(input_vector)[0]

# Output the result
if prediction == 1:
    print("You may be experiencing symptoms of depression. Please seek professional help.")
else:
    print("You seem to be doing fine. Keep up the good work!")
```

```
i have been facing anxiety big time panic attacks due to crazy shit kept isolation
You may be experiencing symptoms of depression. Please seek professional help.
```

Demo:2

```

input_text = input()

input_vector = tfidf_vectorizer.transform([input_text])
# Make predictions
prediction = best_clf.predict(input_vector)[0]

# Output the result
if prediction == 1:
    print("You may be experiencing symptoms of depression. Please seek professional help.")
else:
    print("You seem to be doing fine. Keep up the good work!")
```

```
i was bullied in school by so-called friends and i am still facing PTSD due to that
You may be experiencing symptoms of depression. Please seek professional help.
```

Demonstration

Demo:3

```
1
input_text = input()
#Vectorise the input
input_vector = tfidf_vectorizer.transform([input_text])
# Make predictions
prediction = best_clf.predict(input_vector)[0]

# Output the result
if prediction == 1:
    print("You may be experiencing symptoms of depression. Please seek professional help.")
else:
    print("You seem to be doing fine. Keep up the good work!")
```

```
i am working on a machine learning project with my group
You seem to be doing fine. Keep up the good work!
```

Demo:4

```
# Make predictions
prediction = best_clf.predict(input_vector)[0]

# Output the result
if prediction == 1:
    print("You may be experiencing symptoms of depression. Please seek professional help.")
else:
    print("You seem to be doing fine. Keep up the good work!")
```

```
i seem to be doing fine, eating and sleeping properly
You seem to be doing fine. Keep up the good work!
```

Tech Stack

- Python
- TensorFlow
- Naive Bayes
- Panda
- Numpy
- SVM
- Logistic Regression
- Keras

Applications

- The model can be deployed to various social media applications like Instagram, Twitter, Facebook etc to aid the early diagnosis of depression based on linguistic characteristics.

Learnings

- Managed teamwork in remote projects: version control, time management.
- Learnt Tf-idf vectorisation to transform text into vector.
- Learnt ngrams to use clubbed phrases to generate consecutive strings instead of using words separately

Challenges

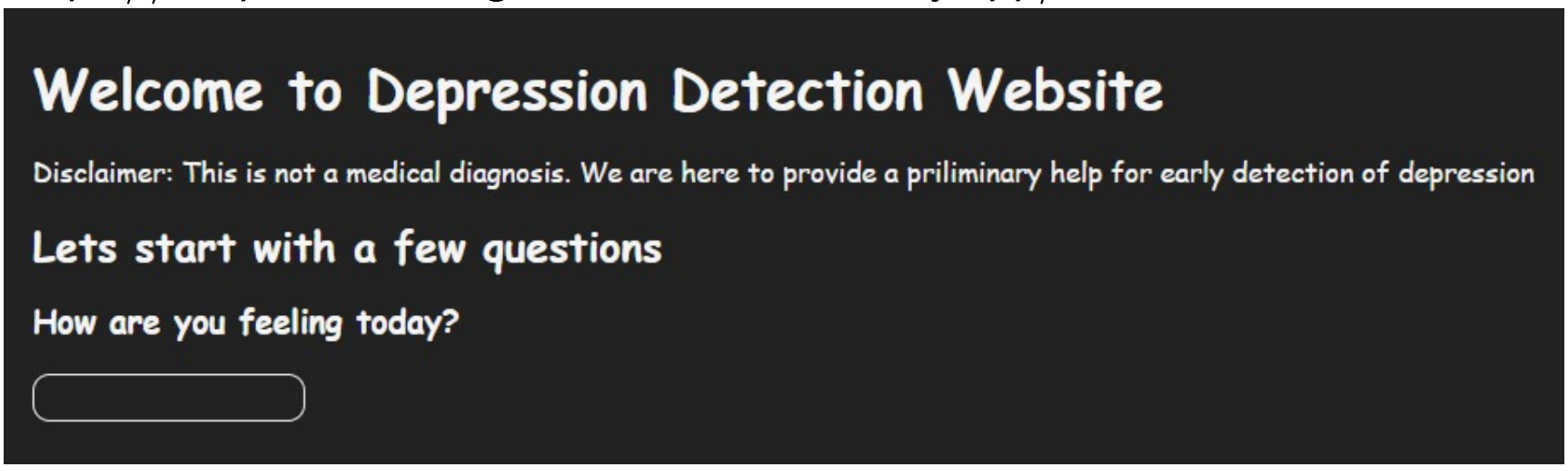
- If emotions are not properly expressed, the outcome will be inaccurate.
- Similarly, if quizzes are not correctly answered, it will predict incorrect results.
- Had to parse English text from other languages to make the model more accurate.
- Grouping of consecutive strings was a cumbersome task.

Future Improvements

- Deploy the model on a Web Application using Machine Learning Operations.
- Provide information about nearby clinics or therapists.

Progress

Learning HTML, CSS and JavaScript Implemented HTML and CSS tools learnt so far to deploy a dummy website using netlify.
https://stupendous-sfogliatella-bd437e.netlify.app/



References

[1] https://www.stevens.edu/news/detecting-depression-using-ai

[2] https://www.hindawi.com/journals/cin/2022/4395358/

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[4] https://ieeexplore.ieee.org/abstract/document/8389299

Thank You