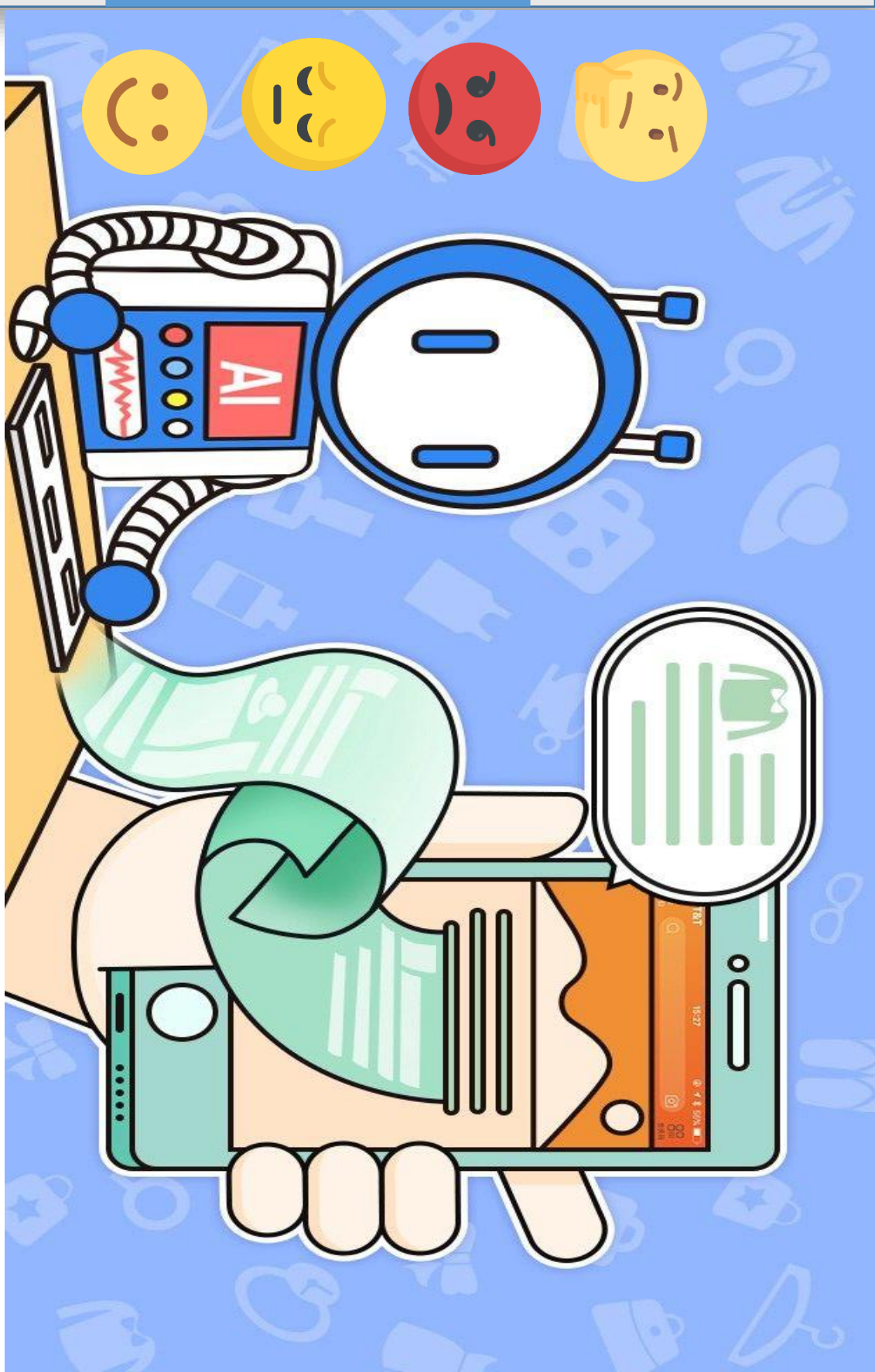
Human Emotion Detection from Text



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Team Members

- Text Emotion Detection is one of the Emerging Areas of Research , where the given user text will be Detected using emotion
- Emotion Detection works with combination of Machine Learning and Major Application Concepts of Natural Language Processing
- It gives emotion of the user input or text and also converts the text to speech and also returns the

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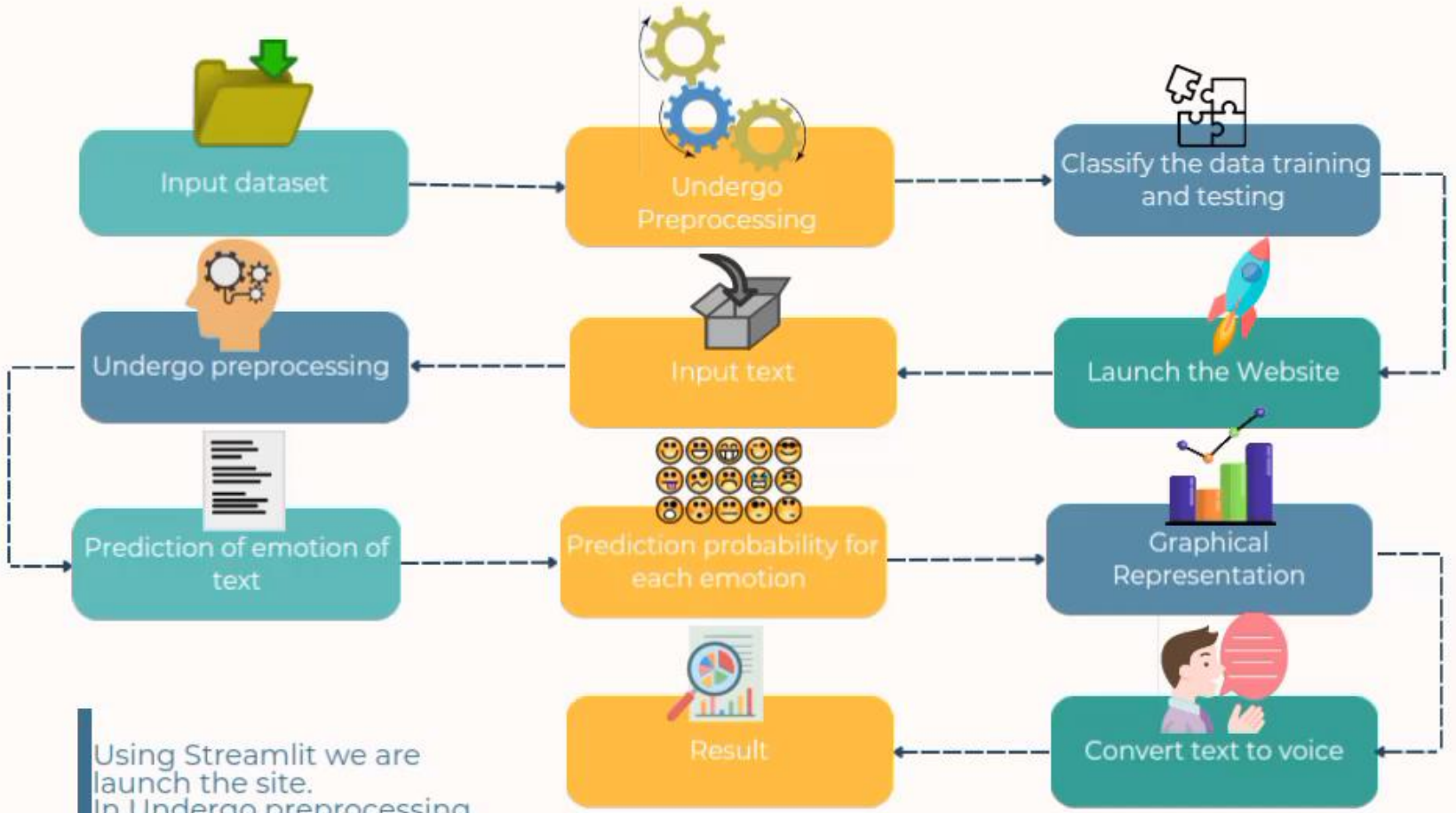
S.No / Published Year	Paper Title	Objective	Method	Advantage	Disadvantage
1 / 2022	**Multi Label Emotion Classification in Text Using Transfer Learning**	To find Multi class Labelled emotions for given user text It Uses Previously Acquired Knowledge and implements it	• Recurrent Neural Networks • LSTM • 3)XLNet	• For given User Text it classifies Labels • It gives prediction probability	1) It Mis Understands with Disambigous Statements 2) The Emotions for The actual Text will be Wrong in Few Context
2 / 2022	**A Data Augmentation and Channel Selection Technique for Grading Human Emotions on DEAP Dataset**	Data augmentation to create more samples of data using signal processing methods. To classify the emotional intensities	• LSTM • GA • Grey Wolf Optimization(GSA)	• Signal Processing techniques can be used to • Metaheuristics algorithms can be applied for channel analysis	1) All the channels are not important in channel analysis 2) Small Size of training set
3/ 2022	**Recommend or not? The influence of emotions on Passengers intention of Airline Recommendation During COVID-19**	This is to identify the airline flight recommendation , wheather a a person can be recommonded or not To predict the emotions of users after experience with an airline	• Deep Neural Networks • Artificial Neural Networks	• It helps People make better decisions and choose airline based on emotions • It also shows the emotion beside the airlines , becomes easy to choose	Because of the subjective nature of emotions, emotional AI is especially prone to bias Recommending the airline based on emotions is very difficult and cannot cover all the aspects
4 / 2022	**Learning Multi-Scale Features for Speech Emotions Recognition with Connection Attention Mechanisms**	1) The proposed method is evaluated on two open datasets and achieve good performance. 2) We need to Detect the emotions for the speech using attention Mechanisms	• FRLM • URLM • SCNN • AMSNET	• An independent training method is proposed for speech feature training. • It also works for feature fusion and detects the emotion	1) Connection attention mechanism is designed only for speech feature fusion. 2) Detecting the Emotions from noisy data is very difficult
5/ 2016	**Emotion Detection Through Text**	1) Emotion Detection Through text where the model will analyze the text and give the emotions 2) Also Based on Textual Data this model will detect emotions and gives prediction graph	• Multinomial NB • Emotion Word Ontology	• Detecting the emotion is easy for structured data rather than speech • This Model also takes user input through speech and converts into text	1) Some Context have no proper Meaning so Model Confuses and gives wrong emotion 2) Conscious or unconscious emotional bias can perpetuate stereotypes and assumptions at an unprecedented scale

Literature survey

Literature survey

7 / 2018	**Emotion Detection in a Text: a Review**	identifying emotion expressions in text precise types of information on the nature of human emotions indicate poten-tial uses of emotion detection	• LIWC lexicon, MPQA lexicon, WordNet-Affect, and POS	• emotion detection can be used in human computer interaction and recommender systems to produce interactions or recommendations based on the emotional state of the user • Results of emotion detection systems can also be used as input to other systems	complexity of human emotions, and the use of implicit and metaphorical language in expressing it linguistic complexity of this task for detecting emotions
8 / 2021	**A Review on Sentiment Analysis and Emotion Detection Through Text**	Emotion detection is a means of identifying distinct human emotion types such as furious, cheerful, or depressedmany users give feedbacks and reviews various products and services on various e-commerce sites. User's ratings and reviews on multiple platforms encourage vendors and service provid-ers to enhance their current systems, goods, or services.	• Ekman Model • Word NET • NRC	• emotion models are dimensional and categorical • The emotional states defined by the models make up the set of labels used to annotate the sentences or • documents	spelling mistakes, new slang, and incorrect use of grammar. These challenges make it difficult for machines to perform senti-ment and emotion analysis Sometimes individuals do not express their emotions clearly.
9 / 2018	**Emotion Recognition from Text a Survey**	Sentence Emotion Analysis and Recognition Based on Emotion Words Learning to Identify Emotions in Text	• Learning-based detection • Hybrid detection	• research for recognizing from the textual data is valuable Classification of Emotions in Multi Language Texts	One of the challenges faced during emotion recognition and sentiment analysis is the lack of resources People usually express their anger or disappointment in sarcastic and irony sentences, which is hard to detect
10 / 2019	**From Sentiment Analysis to Emotion Recognition: A NLP Story**	task is to identify the emotions from a tweet Common Classisfer can be used for detecting any kind of emotion based on text	• GRU • Embeddin g • Max Pooling	• process to build an emotion labeled dataset • new kind of a review system, giving a more detailed version than a simple sentiment analysis	Need for text normalization to handle negation emotional state of a person may be inferred under different situations

FLOW CHART



Using Streamlit we are launch the site.
In Undergo preprocessing Stemming,Lemmatization, Stopwards,Morphing.

- Naïve Bayes algorithm is a supervised learning algorithm, which is based on Bayes theorem and used for solving classification problems.
- It is mainly used in text classification that includes a high-dimensional training dataset
- Naïve Bayes Classifier is one of the simple and most effective Classification algorithms which helps in building the fast machine learning models that can make quick predictions.
- We have also used logistic regression . It is used for predicting the categorical dependent variable using a given set of independent variables.
- Logistic regression predicts the output of a categorical dependent variable. Therefore the outcome must be a categorical or discrete value. It can be either Yes or No, 0 or 1, true or False, etc. but instead of giving the exact value as 0 and 1, it gives the probabilistic values which lie between 0 and 1.

Logistic regression

- Logistic regression.
- When User Gives Reviews , based on that text it will detect the emotions.
- Logistic regression estimates the probability of an event occurring, such as voted or didn’t vote.
- Logit(pi) = 1/(1+ exp(-pi))
- ln(pi/(1-pi)) = Beta_0 + Beta_1*X_1 + … + B_k*K_k.
- It Uses Sigmoid Function.
- Since the outcome is a probability, the dependent variable is bounded between 0 and 1.

Naive Bayes

- Naive Bayes is a machine learning algorithm we use to solve classification problems. It is based on the Bayes Theorem.
- Building the Naive Bayes model is quite simple and helps you in working with vast datasets. Moreover, this equation is popular for beating many advanced classification techniques in terms of performance.
- Here's the equation for Naive Bayes:P (c|x) = P(x|c) P(c) / P(x)P(c|x) = P(x1 | c) x P(x2 | c) x … P(xn | c) x P(c) Here, P (c|x) is the posterior probability according to the predictor (x) for the class(c). P(c) is the prior probability of the class, P(x) is the prior probability of the predictor, and P(x|c) is the probability of the predictor for the particular class(c).

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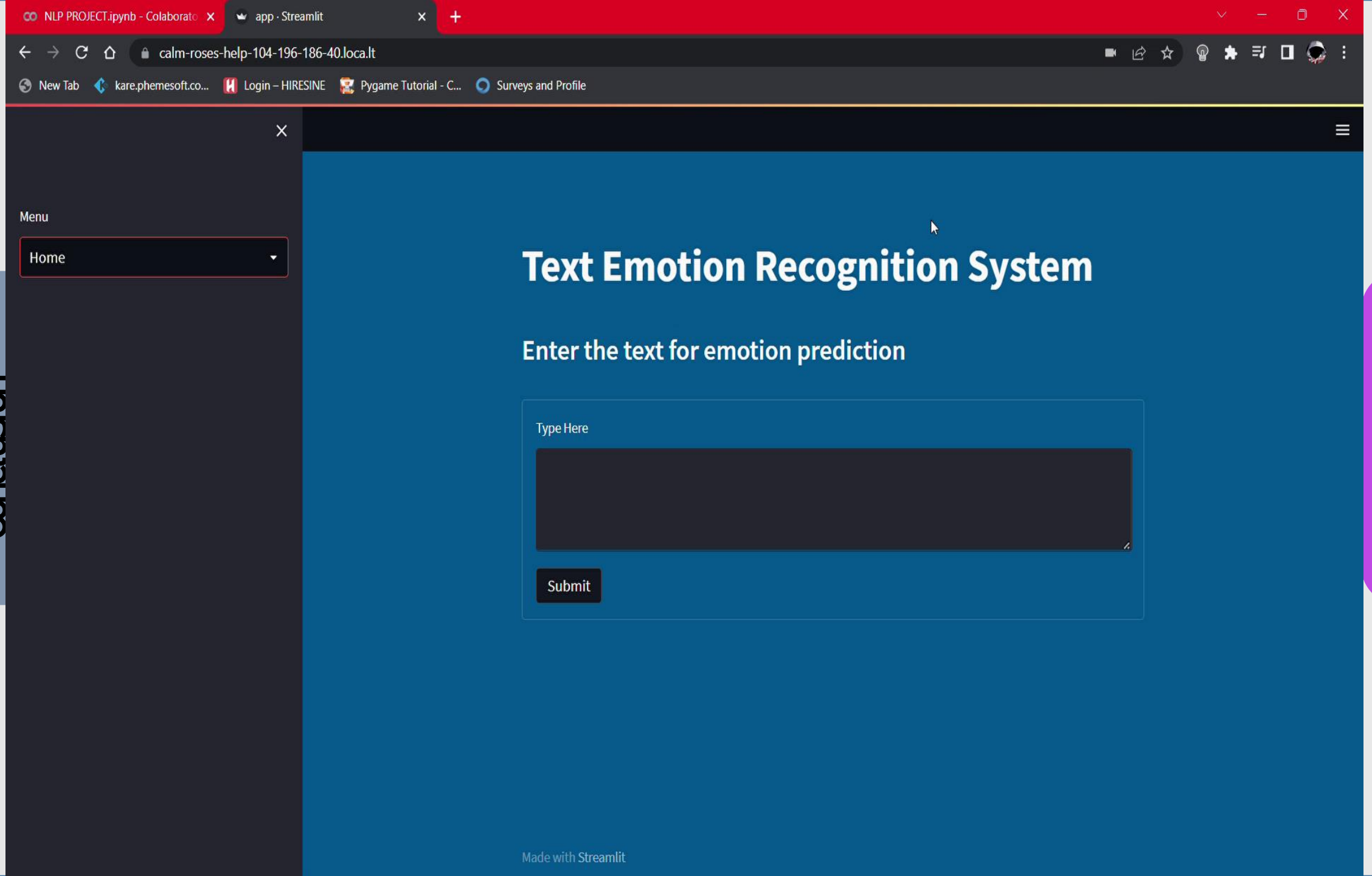
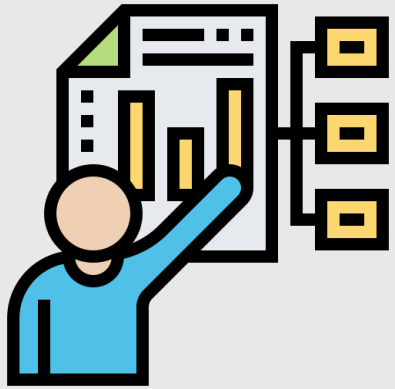


Result



- When User Gives Reviews , based on that text it will detect the emotions.
- In our Research Project , we found emotions for User Given Texts and also We are going to Convert Text to Speech .
- We have used Classification Machine Learning Algorithms like Naïve Bayes and Logistics Regression for Predicting the emotions.
- We have Achieved 90% Accuracy , for Linear Model We have Used Logistic Regression.
- We Have also got prediction Classes for the given user text and also it finds the prediction probability graphs for texts
- Finally it returns the class like Happy , Sad , Anger , Disgust for Given User Text .

References

Future Work

- Text Emotion Detection Currently Focuses on detecting Emotions based on text given by user , in Future Update we will try to use Speech and Detect Emotions from the text

- In this research work we implemented using Machine Learning Algorithms like Naïve Bayes and Logistic Regression , in future implementation we will use Deep Learning Algorithms , Which gives much more better classification and Gives better Accuracy compared to Machine Learning

- In the current model we have used Stream lit as frontend and in Future Work we will use both front and backend and We will Deploy the Model and we will use docker , Kubernetes

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