

# Semantic Sentiment Analysis using Machine Learning for Suicidal Tendency Prediction from Social Network

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**Abstract** - With the increase in social networking spots, people are now more engaged in their virtual lives than ever ahead and at the same time, the number of information people puts online is enormous, offering experimenters an inestimable tool for conducting exploration. People tend to put their studies online to partake with the whole world which also includes suicidal studies. Self-murder is a social problem and is a major concern in recent times.

Moment, people witness severe physical diseases and cerebral stress due to a variety of internal and external factors. Although depression is substantially planted in people in their 30s and 40s, it's frequently detected in kids due to academic stress and interpersonal relationships and in seniors. In India, there are social causes as well that promote self-murder attempts, the most common being dowry controversies. A lot of vituperative content, impertunity, gibing, and cyberbullying affiliated conditioning has come veritably common on similar platforms which have dangerous goods on a person's internal and cerebral health. This can occasionally lead to mischievous and life-long traumatic goods on an existent.

**Key Words:** Sentiment analysis, NLP, NLTK, Chatbot

## 1. INTRODUCTION

Self-murder has been an intractable public health problem despite advances in the opinion and treatment of major internal diseases. A growing area is the development of self-murder webbing technologies through penetrating and assaying social media data. former studies have shown that youth are likely to expose suicidal studies and suicidal threat factors online and on social media. For illustration, a study examining exigency room assessment suicidality set up those adolescents were likely to report suicidal creativity not only verbally, but also via electronic means, which included posts on social networking spots, blog posts, instant dispatches, textbook dispatches, and emails. exemplifications similar as drooling on social networks like Twitter, WhatsApp, and Facebook, live blogs, or commentary can be described as novelettish analysis, expressed in these enormous opinions generated by druggies is generally named opinion mining.

## 2. REVIEW OF LITERATURE

This chapter evaluates the current work with the previous one. It depicts the current implementation that overcomes the previous problem and limitation of the problem and the plans to build the project and scope of the project.

### 2.1 A Machine Learning Approach to Analyze and Predict Suicide Attempts, 2021

Data Analysis is carried out, in order to classify data so as to give a set of preventative measures to control them in the future. This can give information about the cause of self-murder taken in a particular state followed by in a particular time. The dataset can also give information about whether the self-murder rate for a particular cause has increased or not. Our end is to find a machine literacy model for the vaticination of self-murder attempts.

Logistic regression, Decision trees, grade Boosted Decision Trees, Support Vector Machines, and Artificial Neural Networks are some of the models used.

### 2.2 Automatic identification of suicide notes with a transformer-based deep learning model, 2021

In this paper, we use the motor encoder to model the input textbook. The motor encoder armature contains the following factors multi-head tone-attention subcaste, completely connected feed-forward network, subcaste normalization, and positional encodings. The general armature is shown as a light green block. originally, the positional encodings are added to the input embeddings to ensure that the model takes advantage of the word-order or fixed successional information, including relative and absolute positional information since there's no complication or rush. In this work, we use sine and cosine functions of different frequentness proposed by Gehring to get positional encodings.

### 2.3 Suicide Risk Assessment Using Machine Learning and Social Network, 2020

In this paper, an increase in anxiety and depression diseases, medicine use, loneliness, domestic violence, and indeed self-murder is anticipated to do in these

individualities. Accordingly, the threat of self-murder attempts has increased among the population. Multiple new factors contribute to an increase in self-murder threats. In particular, the measures for forestallment of COVID-19 that includes social distancing plans are rigorously related to self-murder threat.

#### **2.4 Suicidal Ideation and Mental Disorder Detection with Attentive Relation Networks, 2021**

This action against self-murder and further advancements to the model can be done by perfecting the effectiveness and delicacy factor. Also, the perpetration of these on the big data frame with multilingual wordnet and machine literacy will be the unborn study for further development and prognostications of self-murder-related issues on social networking spots. The procedure allows us to apply multiple types of algorithms related to machine literacy and by using WordNet we semantically anatomized the data we attained.

#### **2.5 Suicidal Ideation and Mental Disorder Detection with Attentive Relation Networks Shaoxiong Ji, Xue Li, Zi Huang, Erik Cambria.**

Text brackets on internal diseases might not be treated as a medical opinion of professional interpreters. It can act as a computer-backed system to automatically give early warnings of online social druggies at threat and notify social workers to give early intervention. It can also help the social workers and levies to identify the type of internal diseases, relieve online druggies' internal health issues through exchanges, and suggest proper consultations or treatments. This paper attempts to render textbooks by integrating suicidal creativity with novelettish pointers and life event-related topical pointers and proposes RNs with an attention medium for relational encoding.

#### **2.6 Suicide Risk Assessment Using Machine Learning and Social Network.**

Social networks are an effective system for descry some behaviors. also, they're particularly applicable to identifying subjects at self-murder threat. The expansive use of social networks leads the authors to probe the current script concerning self-murder forestallment. This is the primary provocation of the presented exploration. This study verifies the trends and results of applying ML algorithms and the styles used by colorful experimenters to address this critical situation.

#### **2.7 A Machine Learning Approach to Analysis and Predict Suicide Attempts.**

The model succeeded in distinguishing individualities with an admitted past history of self-murder attempt or plan

from suicidal ideators with an AUC of 0.75, suggesting that advanced scores are reflective of more serious suicidal gesture. A caveat is that SAP status appertained only to an admitted past history of self-murder attempt or plan to essay and therefore, Semantic Sentiment Analysis using Machine Learning for Suicidal Tendency vaticination from social network Dept of ISE, GAT 2021-22 28 | Page prospective studies will be needed to assess the efficacy of the model to identify an unborn threat to self-murder attempt.

#### **2.8 A comparative study of machine learning techniques for suicide attempts predictive model.**

Positive prophetic value in each of the single prophetic models shows a good performance in which the support vector machine achieved the loftiest PPV with 0.86 followed by naïve Bayes (0.83), logistic retrogression (0.81), decision tree (0.81), and k-Nearest Neighbors (0.79). The PPV indicates the capability of the models rightly linked the cases who have a positive result or have attempted self-murder. This means that the support vector machine has rightly linked the 86 of self-murder attempters among those with a positive webbing test. thus, grounded on the overall performance, it shows that the support vector machine is a suitable model for prognosticating self-murder attempters in a single prophetic model.

### **3. SCOPE OF THE PROJECT**

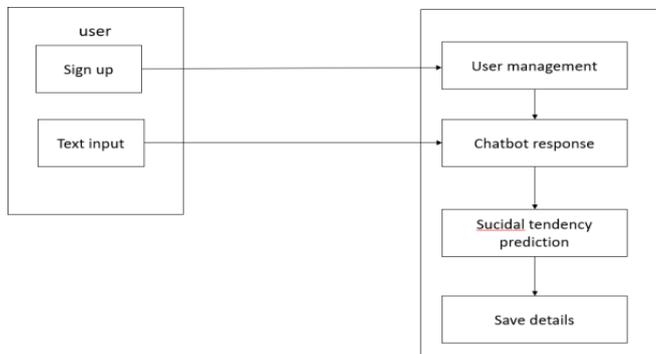
Sentiment analysis (or opinion mining) is a natural language processing (NLP) technique used to determine whether data is positive, negative, or neutral. Sentiment analysis is often performed on textual data to help businesses monitor brand and product sentiment in customer feedback and understand customer needs. The scope and limits of cutting-edge techniques that researchers are using for predictive social media posts tend to be rich in various emotions. Moreover, among nine mental health problems, stress, clinical depression, and suicidal tendency detection on social media and online behavior patterns were used for mental health prediction using recent deep learning techniques.

### **4. SYSTEM DESIGN**

This chapter describes the overall in-depth information about the project. It covers the basic theoretical information about each part and aspect of the project. System Design is the process of designing the architecture, components, modules, interface, and data for a system to satisfy specified requirements. System Design is the application of systems theory to the development of products.

### 4.1 System Architecture

This illustrates the structural design of the system.

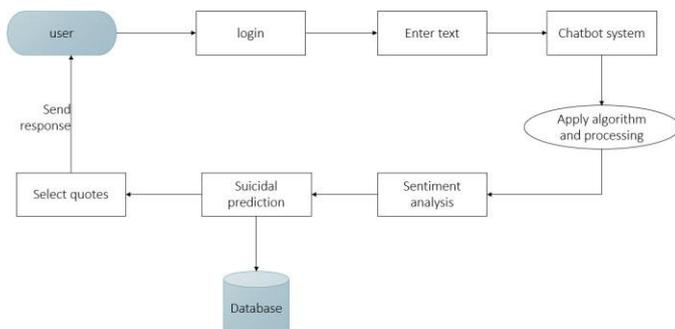


System architecture conveys the informational content of the elements consisting of a system, the relationships among those elements, and the rules governing those relationships. The system architecture of suicidal prediction is seen in the above figure. This primarily concentrates on the internal interfaces among the system's components or subsystems, and on the interface(s) between the system and its external environment, especially the user.

## 5. METHODOLOGY

### 5.1 Proposed work

The interface is enforced using Python flask for predicting the sentiment analysis from the user text. The NLTK library is used for sentiment analysis, the NLTK library contains prismatic services that allow us to effectively manipulate and anatomize verbal data. Among its advanced features are text classifiers that we can use for numerous kinds of the division including sentiment analysis. Semantic analysis is the practice of using algorithms to classify colorful samples of related text into overall positive and negative NLTK. With NLTK, we can employ those algorithms through important erected-in machine literacy operations to gain perceptivity from verbal data. We've used a multinomial naive Bayes algorithm to classify suicidal text. It isn't a single algorithm but a family of algorithms where all of them partake in a common principle, i.e. every brace of features being classified is independent of each other.



The user can log in using his/ her login credentials. Each time the user login, the details will be stored in a database. The sentiment is anatomized from verbal stoner textbook/ input, if the input textbook is a suicidal suggestion, then similar rulings are stored in

The addict can register by giving his/ her credentials, also the user login to the chatbot and start the discussion. The user starts to communicate arbitrary responses will be given when the user text is a suicidal suggestion, and the chatterbot generates arbitrary quotations. The server stores the registered stoner details, when the suicidal textbook has been detected, the server stores similar textbooks. All the user login details and the exertion are stored in the server. addict exertion.

### 5.2 Results

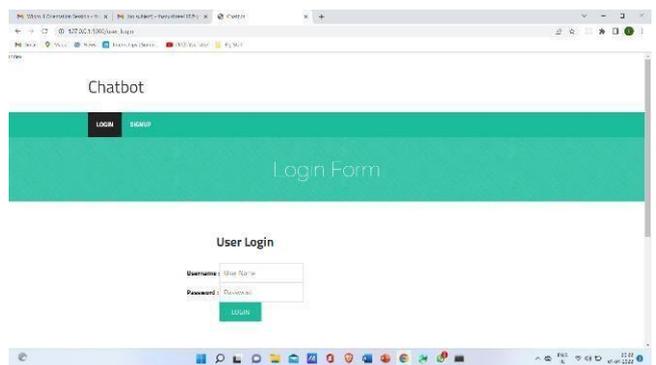


Figure 5.2.1: Login page

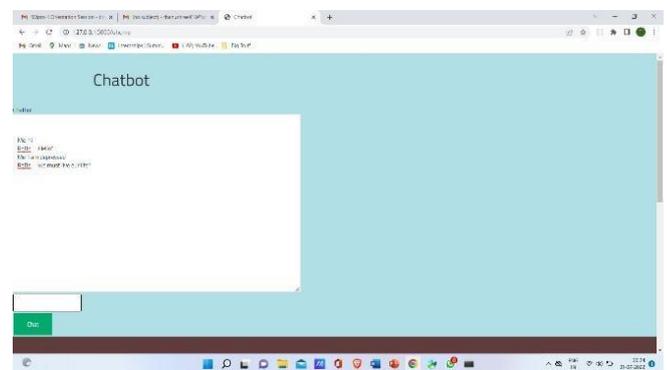
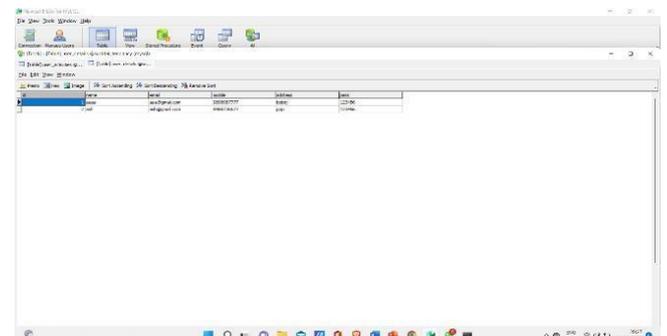


Figure 5.2.2: Chatbot



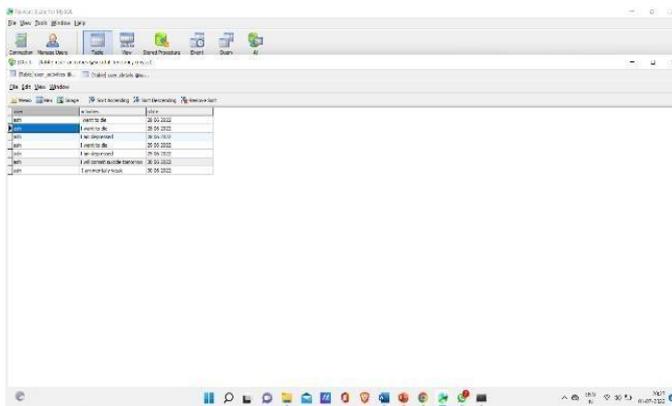


Figure 5.2.3: Storing suicidal text in database

### 3. CONCLUSION

We've taken a close look at the exploration done in the area of self-murder vaticination. Numerous successful high delicacy models have been made butthere's still room for enhancement. Likewise, the analysis will give knowledge about areas for enhancement to the government and other comforting so that effective ways can be taken.

Text brackets on internal diseases might not be treated as a medical opinion of professional interpreters. It can act as a computer-backed system to automatically give early warnings of online social druggies at threat and notify social workers to give early intervention. It can also help the social workersand levies to identify the type of internal diseases, relieve online druggies internal health issues through exchanges, and suggest proper consultations or treatments. This paper attempts to render a textbook by integrating suicidal creativity with novelettish pointers and life event-related topical pointers and proposes RNs with an attention medium for relational encoding. trials show the effectiveness of our proposed model. We argue that it's a significant step to combine canonical point birth with RNs for logic.

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