



Emotion based chat bot

Team 6

A chatbot that can help you stay positive

Group members:

- Esraa Badawi
- Esraa El-Kot
- Salma Sultan
- Sondos Ali

Problem formulation

Life is stressful and we all find ourselves sometimes in dark places, needing someone to talk to and share our feelings.

For this reason, we propose a chatbot that will assess the current user's emotion and respond accordingly to improve the users' mood. For example, If the user is feeling depressed the chatbot should suggest positive activities or send positive messages to ease the user's feelings. It will also keep the user engaged in the conversation till the user decides to quit.

Methodology

- The emotions dataset will be loaded explored, visualized.
- If the data is unbalanced, oversampling or under-sampling techniques will be applied accordingly.
- Nltk for cleaning the input user text
- TF-IDF or Word2vec text vectorization to transform the users input text into a vector.
- Basic conversation intents will be created to maintain a more humane conversation with the user, these intents will include (welcoming – endingConversation – thanking - invalidUserInput), matching the user input text to intents will be done using string matching and regex.
- Emotion classification model, we intend to use SVM, Naïve Bias, Logistic regression models for starters on the selected dataset to classify users' emotion, some of these models were suggested in [1] and [2].
- Based on the predicted user's emotion a response from the response's dataset will be selected or an appropriate quote.

Data Description and Data Sources

- 1- Emotion Dataset For NLP: This dataset contains a collection of documents and their emotions and is available on Kaggle in this [link](#).
- 2- Quotes Dataset: This dataset contains a big collection of quotes with their authors, category, tags, and popularity. It is available on Kaggle in this [link](#).
- 3- Dataset for chatbot responses: we will create a small dataset ourselves since no available dataset was found online.

Evaluation Method/s

Emotion Classification models

Classification error metrics such as confusion matrix, accuracy, recall, precision and f1 score.

Results Expectations

Creating a chatbot that can engage with the user in a friendly conversation and help in improving user's mood.

Future Steps

- Add movies/tv shows recommendation.
- Using NER to extract more information from the user's input text then use this information in chatbot's generated responses.
- Use more advanced models for making chatbot response more personalized and humane, for example deep learning models as proposed here[3].

References

- [1] S. Moulya and T. R. Pragathi, "Mental Health Assist and Diagnosis Conversational Interface using Logistic Regression Model for Emotion and Sentiment Analysis," *Journal of Physics: Conference Series*, vol. 2161, no. 1, p. 012039, Jan. 2022, doi: 10.1088/1742-6596/2161/1/012039.
- [2] X. Wu *et al.*, "Text-based emotion prediction system using machine learning approach," *IOP Conference Series: Materials Science and Engineering*, vol. 769, no. 1, p. 012022, Feb. 2020, doi: 10.1088/1757-899X/769/1/012022.
- [3] R. K. Csáky, "Deep Learning Based Chatbot Models," Aug. 2019, doi: 10.48550/arxiv.1908.08835.

<https://towardsdatascience.com/building-a-chatbot-in-python-the-beginners-guide-2743ad2b4851>

<https://www.analyticsvidhya.com/blog/2022/05/a-complete-guide-on-chatbot-development-using-python/>

<https://www.analyticsvidhya.com/blog/2021/07/build-a-simple-chatbot-using-python-and-nltk/>

<https://online.datasciencedojo.com/blogs/rule-based-chatbot-in-python/>

<https://www.projectpro.io/article/python-chatbot-project-learn-to-build-a-chatbot-from-scratch/429#toc-1>

<https://towardsdatascience.com/how-to-build-your-own-chatbot-using-deep-learning-bb41f970e281>