Univ.AI

# Amigo

**DialoGPT-based Chatbot that listens to you and your emotion.**

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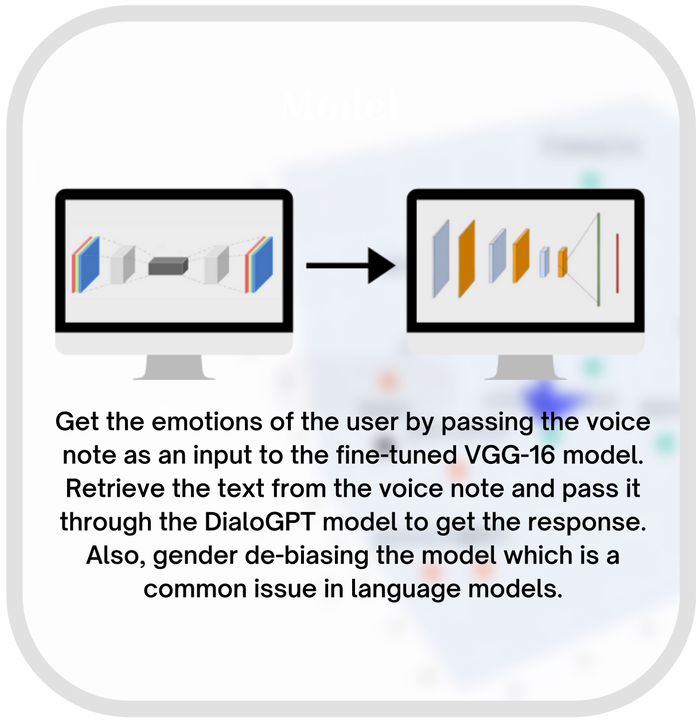
## Overview

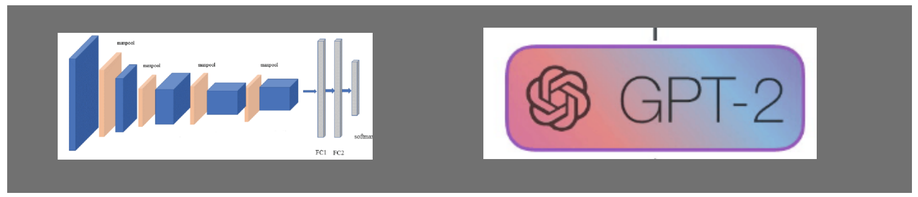
A chatbot that responds to the most important aspect of communication, ie. the tone.
A de-biased model that takes care of the gender bias that is prominent in language embeddings.

## Dataset Details

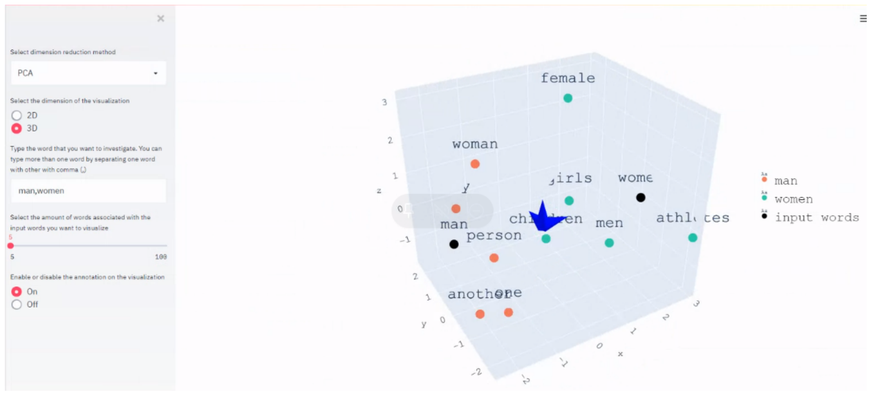
***The Ryerson Audio-Visual Database of Emotional Speech and Song (RAVDESS):***
The database contains 24 professional actors (12 female, 12 male), vocalizing two lexically-matched statements in a neutral North American accent. Speech includes calm, happy, sad, angry, fearful, surprise, and disgust expressions, and song contains calm, happy, sad, angry, and fearful emotions. Each expression is produced at two levels of emotional intensity (normal, strong), with an additional neutral expression.



Get the emotions of the user by passing the voice note as an input to the fine-tuned VGG-16 model. Retrieve the text from the voice note and pass it through the DialoGPT model to get the response. Also, gender de-biasing the model which is a common issue in language models.




**Streamlit App for visualizaing Word Embeddings.**




## Results and Conclusion

- A Fine-tuned VGG16 model detected emotion from the tone of speech using a spectrogram with an accuracy of 81%.
- A DialoGPT chatbot that responds based on the input tone and text.
- Successfully debiased words in Glove Embeddings to curb gender discrimination.

## Possible Improvements

- Debasing contextual and positional embeddings outside of GLoVe.
- Developing interface with chatbot.
- Fine tuning DialoGPT further.
- Application of the same in the area of Mental Health - to assess tone of person using chatbot and accordingly provide audio responses catered to the mental health issue.

## References

- https://arxiv.org/abs/1911.00536
- https://huggingface.co/transformers/model_doc/dialogpt.html