



Project Scope:

- Helping the user with studying
- Giving him tips for more efficient learning
- Reading the user's emotions from his messages
- Bot avatar with emotional expression
- Graphical interface
- Bag of Word and a feed forward neural network with Tensorflow
- Displaying predefined messages

System description:

1. Tools

a. Python

i. 3.11

b. Tensorflow/keras

- i. Used to create a simple feed-forward neural network which takes a bag of words as input and returns a class vector as output
- ii. The class vector determines the topic of the conversation, while the specific sentence from the topic is chosen randomly from a pool of responses corresponding to the detected emotion

c. Text2emotion

- i. User's message is analyzed, and his internal emotional state is inferred by the library

d. Numpy

- i. For vector operations

2. Data

a. Predetermined topical responses for each of the recognized emotions

- i. A set of tags was chosen to represent topics the bot can talk about
- ii. Each tag was assigned example input prompts that might trigger the response
- iii. Responses assigned to each tag have been split by emotion and tailored to deliver an empathic response with regards to the emotion displayed by user

b. Handwritten and polished with ChatGPT

- i. Used to correct spelling mistakes and improve the language of the responses while retaining their meaning

3. Field of interest

a. University and Learning augmentation

- i. The bot's purpose is to assist a student with learning techniques and processes, express sympathy for hardships and setbacks and offer solutions. The bot tries to defuse negative emotions such as anger and anxiety while sharing feelings of happiness with the user.

4. Empathy module

a. Inference of the user's emotional state from his messages

- i. The user's message is analyzed with NLP techniques, using the text2emotion library for python
- ii. The most likely emotion contained within the text is used to select an empathic response

b. The bot reacts to the user with appropriate emotion

- i. For example: the bot shares happiness if the user is happy or expresses sympathy if the user is angry or afraid with an appropriate picture and text response
- ii. Recognized emotions: Neutral, Happy, Sad, Angry, Afraid