**Overview:**

The objective of this project is to use Microsoft azure services to make my chat bot seem more intelligent and more usable to a wider audience. The main service used will be the translation service which will allow all the functionalities of my chat bot to be used by people who do not speak English.

**Aims:**

Must:

* Be able to detect language of inputted messages from user using azure translate services.
* Be able to translate inputted message from user and respond to the user in the inputted language.

Should:

* Allow the user to enter an audio mode that takes recordings as input rather than text and returns output as speech to the user.
* Use azures speech-text and text-speech services to understand audio inputs from other languages and speak back to the user in that language.
* Be able to analyse the sentiment of inputs and comment if the user if extremely positive or negative.

Could:

* Use azure image and audio classification services to compare results between azures preferred model and the models I produced.

**System Requirements:**

System:

All computers running any major non mobile OS should be able to run the program with no additional hardware or peripherals required except a standard keyboard and webcam. Python is required to be installed as well as several Python libraries:

* All Previous Libraries from part 1, part 2 and part 3

User:

* Users can ask all previous questions from previous parts in any language, be understood and responded to in the given language.
* Users can enter an audio mode allowing for the input of questions and statements through speech. Outputs will also be spoken to the user.
* User will have inputs analysed for positive and negative sentiment. The bot will intelligently comment on this.

**Techniques to use:**

The following azure AI services will be used:

Sentiment analysis:

I will use this service to detect if a user is very positive or negative and provide a random response that comments on this. The service uses the inputted text to determine the sentiment of it using NLP.

Text translation:

I will use this azure service to first detect the language of the inputted message. If the language detected is not English, then this service will be employed to translate the input to English so it can be dealt with by the rest of the program. If the input language was not English, then outputs are also translated to the inputted language.

Test to speech and speech to text:

This azure service will be employed if the user enters audio mode. Inputs will now take the form of audio recordings and this service will detect words said in the audio and output them as text. This text can then be used like a normal input. Outputs can also be translated from text to audio using the service.