Creating an Intelligent Chatbot with IBM Watson

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Objectives

• Create a chatbot using IBM Watson Assistant that integrates IBM Watson’s Tone Analyzer API in order to customize responses to a user based on their tone/mood.
• Incorporate the IBM Watson Language Translator API so that the chatbot can interpret and respond to 22 languages, with the response being in the language of the user’s choice.
• The chatbot should be able to communicate with users effectively and intelligently.

IBM Watson Assistant

There are 3 main components of conversation in the creation of a Watson Assistant chatbot:

- INTENTS:
  • Representations of the purpose for what the user is inputting into the chatbot

- ENTITIES:
  • Specific nouns that are important to the user’s intent, such as a specific name or location

- DIALOG:
  • The organization of the flow of conversation to provide the appropriate responses to intents and entities.

Other APIs used:
• Watson Tone Analyzer
• Watson Language Translator
• Watson Text to Speech
• Watson Speech to Text

Hardware

• The microphone utilized for the speech to text capability of the chatbot is the ReSpeaker Core v2.0 by Seeed.
• This microphone is specifically designed for voice interface applications.

Implementation

The chatbot was implemented with the Watson Developer Cloud software development kit for Python. The PyAudio library was used to handle the audio input/output.

Applications

• Student info centres
• Government kiosk
• Health care centres
• Mental health support system
• Airport and immigration support centres

Future Works

• Add integration of IBM Watson Personality Insights API, to gain better insight into user’s personality for increasingly customized responses.
• Incorporate other APIs, such as Google Maps, to better answer user questions.
• Integrate chatbot program with robotic head so that people can have a more “human” experience communicating with the program.
• Add facial recognition ability to create a complete interactive system.

References