Emotion Controlled Robot using IBM Watson Tone Analyzer

Team Members:
Kaustubh Prabhu
Mexson Fernandes
Dinesh Sharma
Sandeep Singh

Mentors:
Dr. Madhushi Verma
Dr. Arpit Bhardwaj

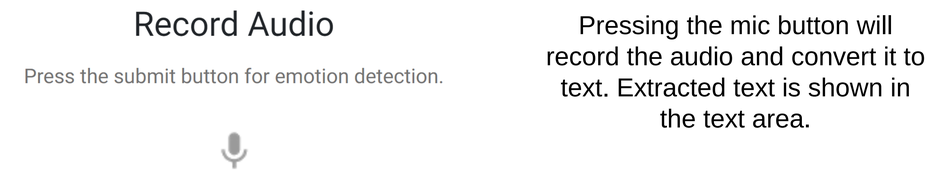
Project repository:
http://bit.ly/EmotionControlledBot

Abstract

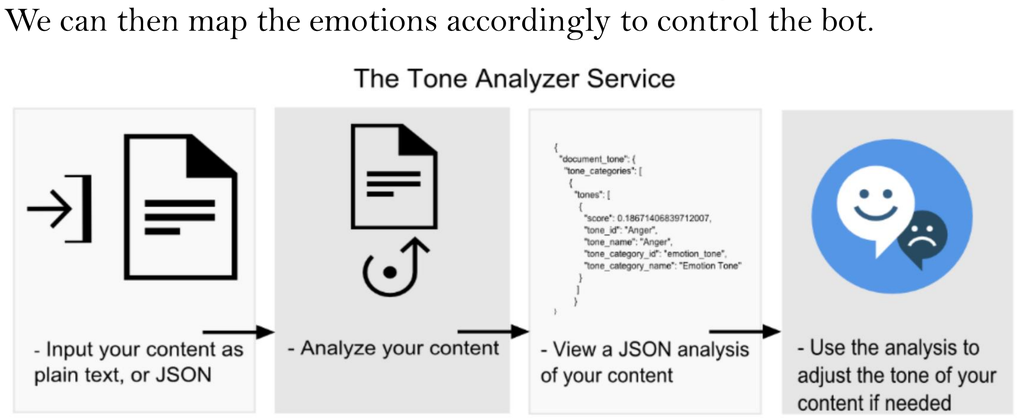
The field of text mining has evolved over the past few years to help analyze the vast amount of textual resources available online. In this project, we are particularly interested in controlling the movement of arduino robot. We, by using Google Speech Recognizer, convert the audio to the text and detect the emotions using IBM Watson Tone Analyzer. This system can be used to control a real robot by sending normal text as the input to Tone Analyzer.

Introduction

Google Speech Recognizer is used to convert speech to text. It is integrated inside the client side of users browser.



Now the text can be fed to IBM Watson tone analyzer to fetch emotions. We can then map the emotions accordingly to control the bot.



Commands sent to robot are shown in table.

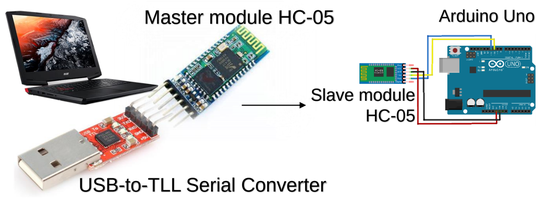
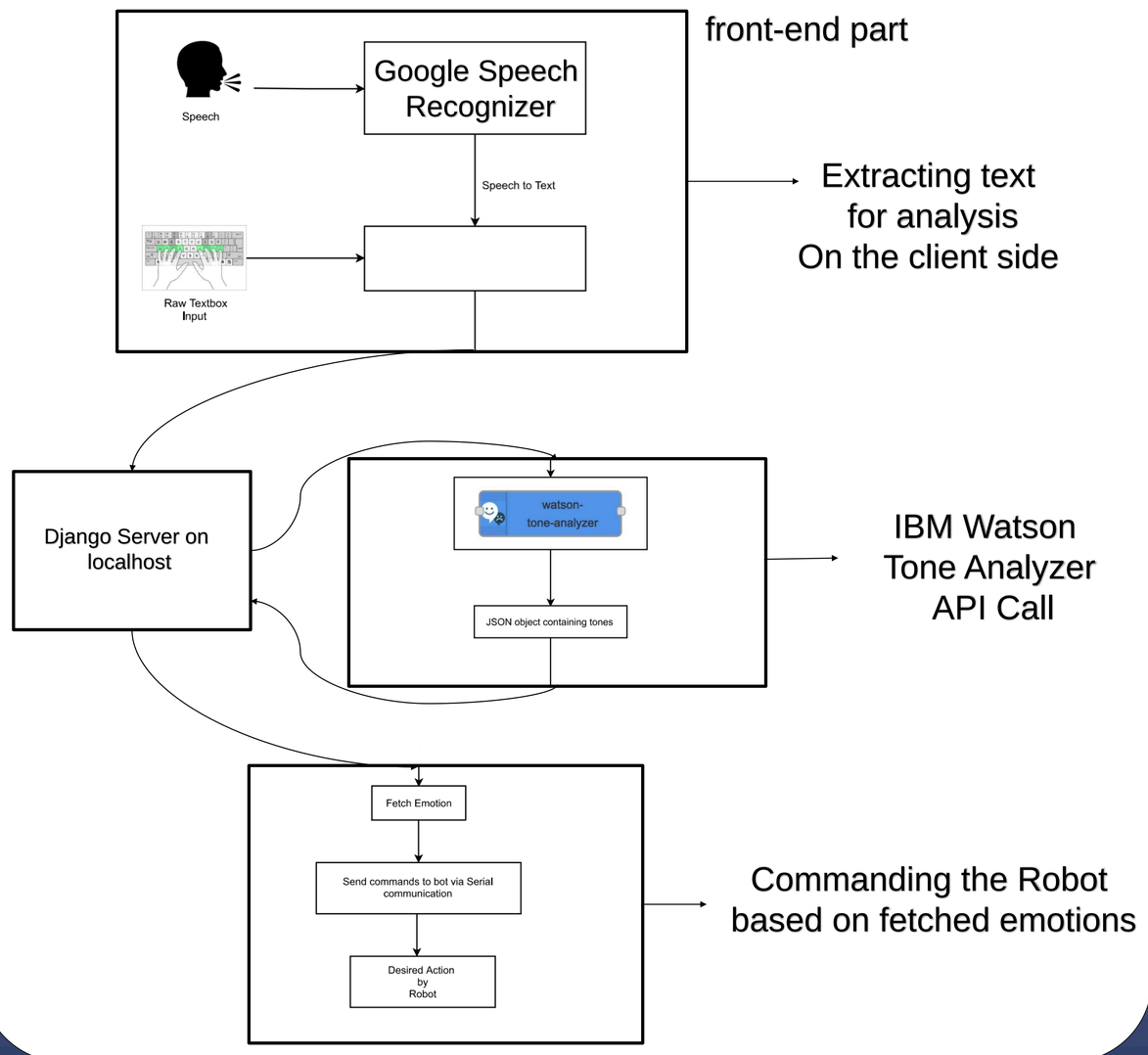


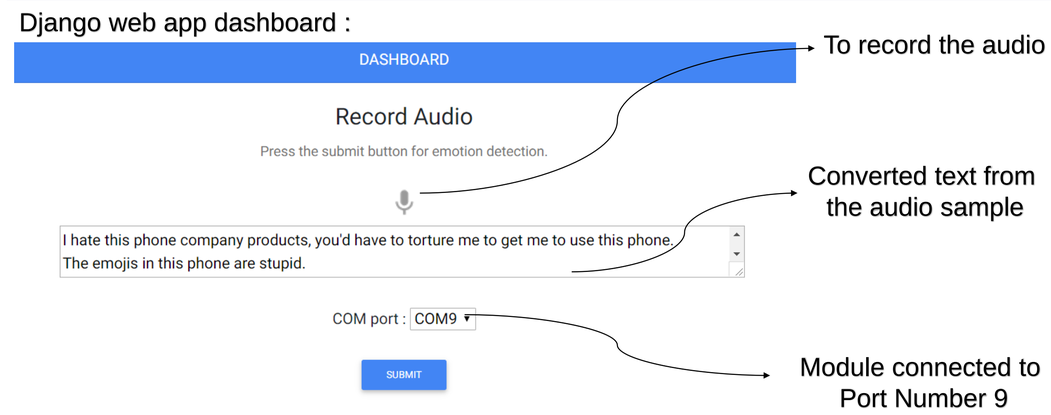
Table 1.1 Emotion mapping table.

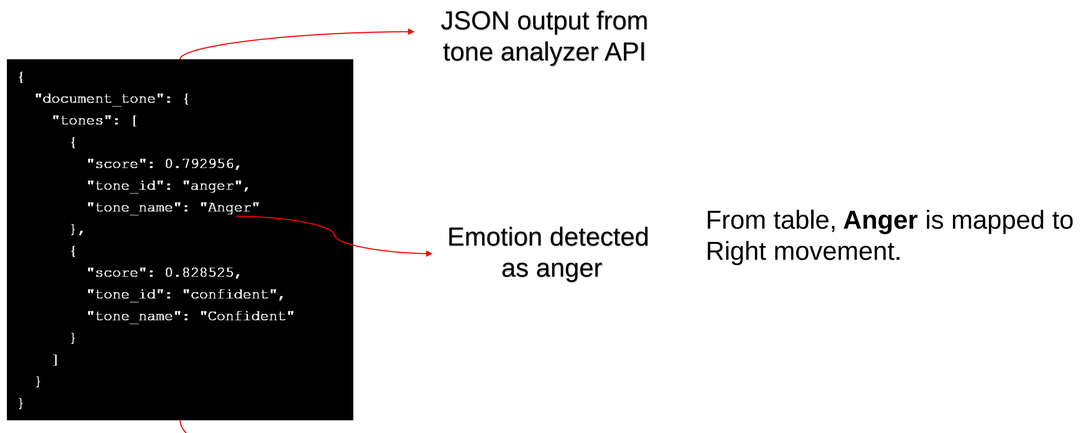
Emotions	Movement
Fear	Forward
Sad	Backward
Joy	Left
Anger	Right
Others	Stop

Proposed Method

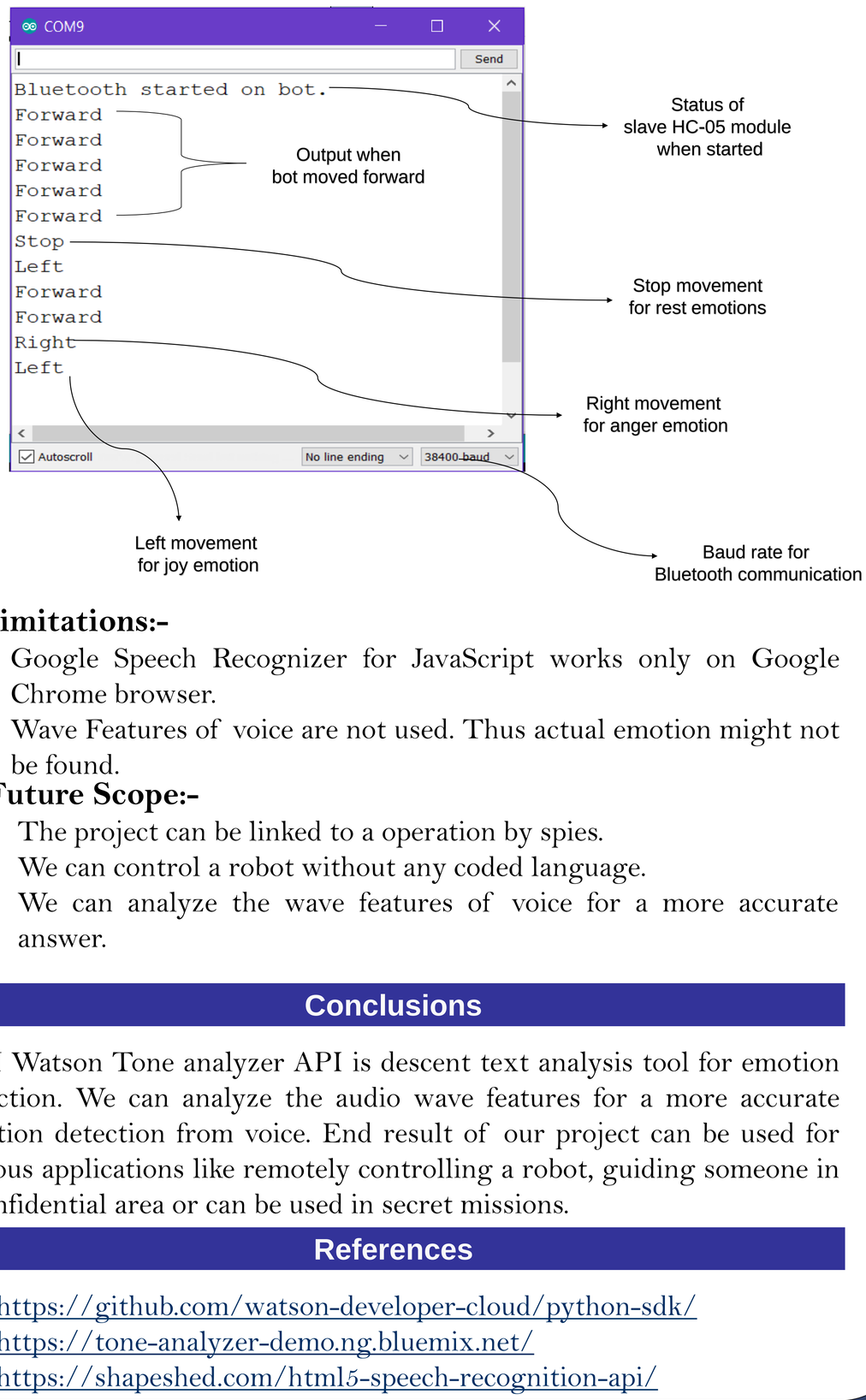


Experimental Results and Discussion





Arduino serial com port output:



- **Limitations:-**
  - Google Speech Recognizer for JavaScript works only on Google Chrome browser.
  - Wave Features of voice are not used. Thus actual emotion might not be found.
- **Future Scope:-**
  - The project can be linked to a operation by spies.
  - We can control a robot without any coded language.
  - We can analyze the wave features of voice for a more accurate answer.

Conclusions

IBM Watson Tone analyzer API is descent text analysis tool for emotion detection. We can analyze the audio wave features for a more accurate emotion detection from voice. End result of our project can be used for various applications like remotely controlling a robot, guiding someone in a confidential area or can be used in secret missions.

References

- https://github.com/watson-developer-cloud/python-sdk/
- https://tone-analyzer-demo.ng.bluemix.net/
- https://shapeshed.com/html5-speech-recognition-api/