Voice Interfaces for Human-Robot Interaction

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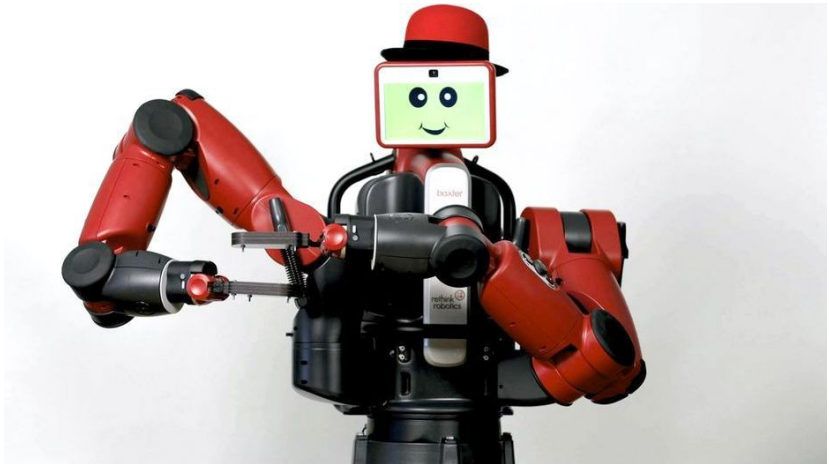
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Agenda

Motivation

Speech Recognizer

Speech recognition is the process by which a computer identifies spoken words. It means that an user can talk to the computer, and having it correctly recognize what he is saying.

- Google Speech API
- Microsoft Bing Voice Recognition
- CMU Sphinx

Motivation
Speech Recognizers
Voice Human-Robot Interface
Conclusion
Further Work

Module 1 : Predefined Actions
Module 2 : Driving Actions
Module 3 : User Custom

Voice Human-Robot Interface

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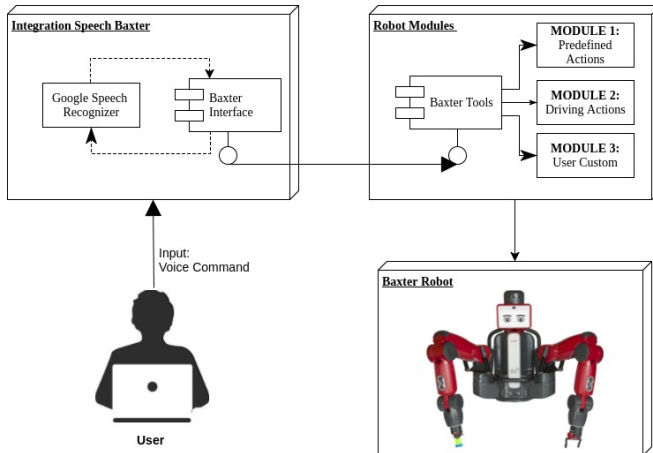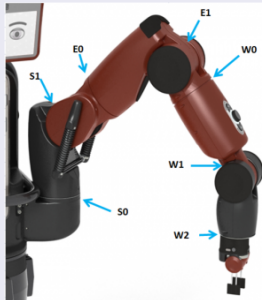
Predefined Actions

Basic Actions Voice Commands

Enjoy the Video !

Driving Actions

Driving Actions - Grasp an object

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User Custom

Create Directed Movements

```
reader.txt  ×

## How to add a new custom command: keyword1 keyword2 ; shell_command .
## Example: work ready ; rosrun baxter_tools tuck_arms.py -u .
work ready ; rosrun baxter_tools tuck_arms.py -u .
sleep ; rosrun baxter_tools tuck_arms.py -t .
```

Conclusions

Conclusions :

- Good Performance of the Voice Human-Robot Interface with respect to the accuracy of the interface, the time of response and the error rate

- The speech recognition is sensitive to noise but also sensitive to voice tone change in order to recognize the sentences.

- The time of response is directly proportional with the complexity of the task that the user wants to perform, but also it depends of the complexity of the sentence.

- The structure of the interface is based on cycles that enable or disable the actions in accordance with the command given

Further Work and Repository

Further Work :

- Natural Language Processing
- Complex actions and tasks
- Gestures

Repository :

GitHub : https ://goo.gl/gFnGJr

Thanks !