

***National University of Computer & Emerging Sciences***

***(FAST-NU)***

***Operating Systems Project Report***

***Project Name: Voice Controlled Shell***

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1. **Project Description**

In computing, a shell is a user interface for access to an operating system's services. In general, operating system shells use either a command-line interface (CLI) or graphical user interface (GUI), depending on a computer's role and particular operation. Our project is a new take on the traditional methods to use shells. Our voice controlled shell uses voice commands to run bash scripts that perform various tasks like:

* informing the user of the time.
* Date.
* Changing directories.
* shutting the machine down.

**USAGE:**

We are using

* a Google API for Speech-to-text (STS) .
* Text-to-speech(TTS) services.
* Python3 Programming Language.

1. **Problem Statement**

To create a voice controlled shell that responds to voice commands and executes shell scripts/commands in order to simplify the process of executing processes and to automate the use of the computer itself. The crux of our problem is to ease the life of the user and to ensure that people who are not familiar with scripting can utilise the major commands through ordinary statements using their voice.

1. **Procedure and Method/implementation**

Our project is implemented using

* python.
* We have utilized the Google Speech-To-Text (GSTT)
* Google Text-To-Speech (GTTS) libraries in order to decode our voice commands, change them into scripts and vice versa.

Moreover, we have used the py audio, subprocess and system libraries that are built-in in python.

The purpose of the pyaudio library is to detect the microphone and capture the sound effectively.

The purpose of the subprocess and system library is to run bash commands.

The procedure of use is as follows:

* PC has a microphone and a speaker connected to it which is always listening.
* Firstly the user will call the name of the assistant.
* Next the user will speak one of the valid commands from the list of commands that we have programmed.
* The program will verify if the command is valid and then find the action to be performed.
* In order to repeat this process, you call the name of Alexa again and continue.
* To stop the process you have to call ‘EXIT”.

1. **Project Result**

As a result of our efforts, we have created a voice controlled shell that supports 26commands. These voice commands correspond to a list of shell scripts and commands that then execute on the terminal.

1. **References**

[https://atwing.net/home%20automation/shell-commands-assistant/](https://atwing.net/home automation/shell-commands-assistant/)

<http://www.kscst.iisc.ernet.in/spp/40_series/39S_bestprojreports/39S_BE_1732.pdf>

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