



Objective

The aim of this project is to combine three different hardware used by differently abled people into a single device. This device is one solution to multiple problems. For this we chose to help people with 3 disabilities namely-seeing, hearing and speaking. For the visually impaired we are accumulating an image to text and text to audio module. For people who can't hear a solution is provided people by converting audio to text and projecting it for reading. For vocally impaired we represent their voice by text to audio conversion technique. Our project is based on the use of python on raspberry pi 3 and uses camera, speakers, mic and projector as the additional hardware.

Design

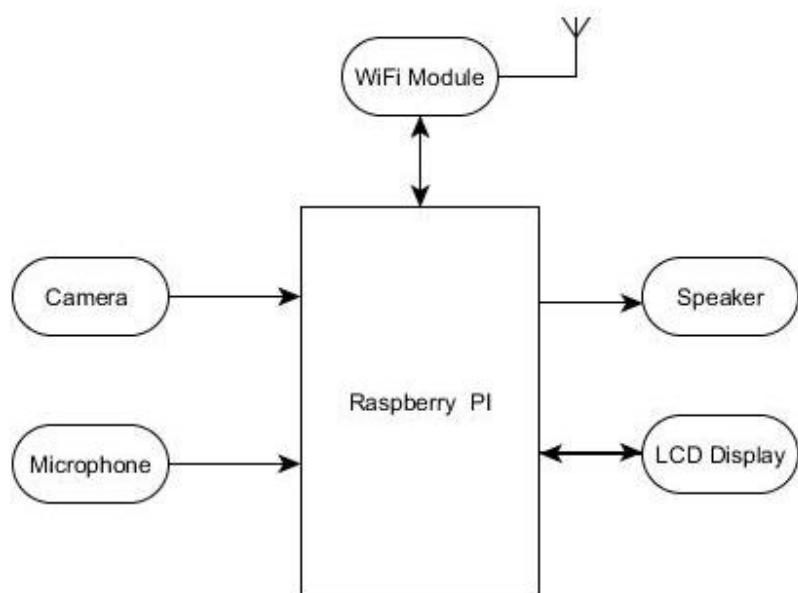


Figure 1 The system architecture with all modules

Methodology

BlindModule:

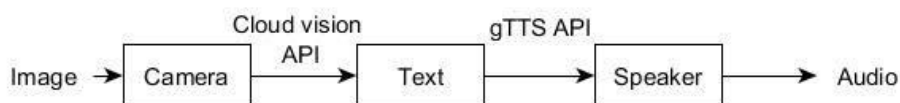


Figure 2 Working of Blind Module

Deafmodule:

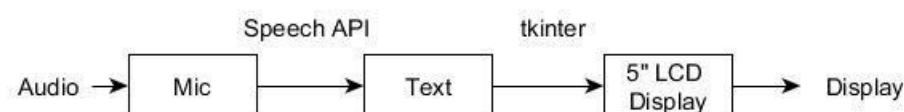


Figure 3 Working of Deaf Module

Dumbmodule:

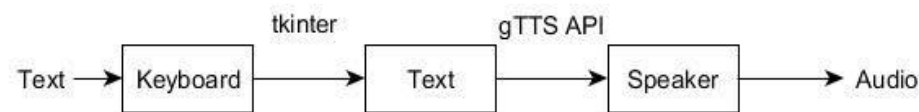


Figure 4 Working of Dumb Module

Result

```
pi@192.168.137.10:~$ cd capstonr
pi@raspberrypi:~/capstonr$ python3 test.py
--- Opening /dev/video0...
stat: No such file or directory
1. Introduction
1.1 Purpose
The purpose of this SRS document is to provide a detailed overview of our software
product, its parameters and goals. This document describes the project's target
sadience, hardware and software requirements. It defines how our client, team and
audience see the product and its functionality Nonetheless, it helps any designer and
developer to assist in software delivery lifecycle processes
1.2 Document Conventions
There are no such document conventions as it is a simple implementation meant to
used by common people and respective administrators.
1.3 Intended Audience and Reading Suggestions
Audio codec mp3 channels 1 samplerate 24000 bitspersample 16
Subtitle count: 0, state: off, index: 1, delay: 0
have a nice day :)
pi@raspberrypi:~/capstonr$
```

Figure 5 Conversion of gained text from image to audio

```
pi@192.168.137.10:~$ cd capstonr
pi@raspberrypi:~/capstonr$ python3 test.py
ALSA lib conf.c:4528:(snd_config_evaluate) function snd_func_refer returned error: No such file or directory
ALSA lib conf.c:5087:(snd_config_expand) Evaluate error: No such file or directory
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM surround71
ALSA lib conf.c:1281:(snd_func_refer) Unable to find definition 'cards.bcm2835.pcm.iec958.0:CARD=0,AE50=4,AE51=130,AE52=0,AE53=2'
ALSA lib conf.c:4528:(snd_config_evaluate) function snd_func_refer returned error: No such file or directory
ALSA lib conf.c:5087:(snd_config_expand) Evaluate error: No such file or directory
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM iec958
ALSA lib conf.c:1281:(snd_func_refer) Unable to find definition 'cards.bcm2835.pcm.iec958.0:CARD=0,AE50=4,AE51=130,AE52=0,AE53=2'
ALSA lib conf.c:4528:(snd_config_evaluate) function snd_func_refer returned error: No such file or directory
ALSA lib conf.c:5087:(snd_config_expand) Evaluate error: No such file or directory
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM spdif
ALSA lib conf.c:1281:(snd_func_refer) Unable to find definition 'cards.bcm2835.pcm.iec958.0:CARD=0,AE50=4,AE51=130,AE52=0,AE53=2'
ALSA lib conf.c:4528:(snd_config_evaluate) function snd_func_refer returned error: No such file or directory
ALSA lib conf.c:5087:(snd_config_expand) Evaluate error: No such file or directory
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM spdif
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM cards.pcm.hdmi
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM cards.pcm.hda
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM cards.pcm.modem
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM cards.pcm.modem
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM cards.pcm.phoneline
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM cards.pcm.phoneline
ALSA lib conf.c:1281:(snd_func_refer) Unable to find definition 'defaults.bluealsa.device'
ALSA lib conf.c:4528:(snd_config_evaluate) function snd_func_refer returned error: No such file or directory
ALSA lib conf.c:4996:(snd_config_expand) Args evaluate error: No such file or directory
ALSA lib conf.c:1281:(snd_func_refer) Unable to find definition 'defaults.bluealsa.device'
ALSA lib conf.c:4528:(snd_config_evaluate) function snd_func_refer returned error: No such file or directory
ALSA lib conf.c:4996:(snd_config_expand) Args evaluate error: No such file or directory
ALSA lib pcm.c:2495:(snd_pcm_open_noupdate) Unknown PCM bluealsa
Cannot connect to server socket err = No such file or directory
Cannot connect to server request channel
jack server is not running or cannot be started
JackShmReadWritePtr::JackShmReadWritePtr - Init not done for -1, skipping unlock
JackShmReadWritePtr::JackShmReadWritePtr - Init not done for -1, skipping unlock
Say something!
you said: hello this is Mukta doing testing for module 2
pi@raspberrypi:~/capstonr$
```

Figure 6 Conversion of Audio to text

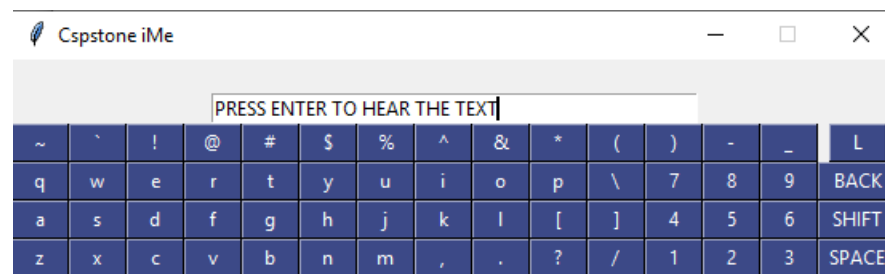


Figure 7 On-screen Keyboard (text to speech)

Conclusion

The device proposed in this paper can be a major help in solving a few of the many challenges faced by the differently abled.

Contact

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