**Google Pi using Raspberry Pi with Respeaker – Voice Assistance**

# Introduction

Nowadays, there are a lot of Voice assistance devices such as Amazon Echo, Google Home Mini, etc. Likewise this Google Pi is also one kind of voice assistant device which is mainly for Visually impaired people to fulfill their needs. It has 4 Great Features, they are

* 1. Currency Recognition – This will be helpful for Blind people while doing Purchase
  2. Object Recognition – This will be helpful to know the object or vehicle present in front of them
  3. Voice assistance – This will be helpful for asking about the weather, General

knowledge, Jokes, etc.

* 1. YouTube support – This will be helpful to listen to music and any other educational audio from YouTube Video

# **Abstract**

In this Google Pi, Raspberry Pi is used as a core system. Respeaker a 4 Mic array is connected with Raspberry Pi to receive voice commands from the distance. For Object recognition and Currency recognition, Deep learning is used. For Voice assistance and YouTube Google API is used and also customized. It will be a friendly device for blind people. For object and currency recognition Web camera or Mobile camera can be interfaced with the Raspberry Pi.

# **Existing System**

In the existing system, there is a lot of disadvantage which stopped only up to voice assistance none other than features. Some device works only by getting the voice input from the USB Mic which should be placed near to the mouth, else input given through mobile.

# **Proposed System**

***In this proposed system, all old disadvantage gets broken by this new Google Pi. Through deep***

***Learning application classifications are more accurate, for voice assistant by using Google API***

***the responses are faster as well as more accurate. Respeaker a 4 Mic array, helps to give voice***

***command from distance and from any direction.***

# **Connection description**

Respeaker has 40 Pin Female header, which can be easily plugged in the Raspberry Pi Male Header, Mini Rechargeable Speaker is connected to the 3.5mm audio jack of the Raspberry Pi. For Camera, you can use either USB Webcam or Android mobile phone as a camera.

# **Project description**

In this Google Pi, Every feature can be run through Voice commands. Commands such as

***Input commands***

* ***Prefix – Ok Google***
  + ***A prefix is necessary to avoid unnecessary listening of other voice, which spoken by others***

***Google commands***

* ***Prefix – Ok Google + “Your command” for google search***

***For Example:***

* + - ***Ok google what’s the time now***
    - ***Ok google who is the prime minister of America***
    - ***Ok google Tell me a joke***
* ***Prefix – Ok Google + play + “Your command” + youtube***
* ***To play only first YouTube audio***

***For Example:***

* + - ***Ok google play embedded system In English Youtube***
    - ***Ok google play AR Rahman songs Youtube***
* ***Prefix – ok Google + Autoplay + “your command” + Youtube***
* ***To playlist of songs as one by one, where “Play next” and “Play Previous” command will work***

***For Example:***

* + - ***Ok google play previous***
    - ***ok Google auto play Justin Bieber songs Youtube***
    - ***Ok google play next***
* ***Prefix – ok Google stop***
  + ***To stop playing any audio***

***Custom commands***

* ***Prefix – ok google + Trigger + “in front”***
  + ***Object Recognition – Deep Learning***
    - ***To detect an obstacle in front of the person (Before this application IP should be configured in the code and Camera also should be opened)***
    - ***it will tell the list of the object present in the frame with Multi-object***
* ***Prefix – ok google + Trigger + “Currency”***
  + ***Currency Recognition – Deep learning***
    - ***To detect the currency in front of the camera(Before this application IP should be configured in the code and Camera also should be opened)***
    - ***It will detect the currency and results as a voice command. If not detected, it will say No currency detected***

# **Hardware required**

* Raspberry Pi 3 Model B
* Respeaker 4 Mic Array
* 16GB Class 10 SD Card
* Laptop Speaker with 3.5mm Audio Jack
* Power adapter with Type-B USB Cable
* USB Camera / Android Mobile

# **Software required**

* Raspbian Image
* SD Card Formatter
* Etcher/Win32 disk imager

# **Result**

Google Pi helps in many ways by adding furthermore custom voice commands to turn ON/OFF the Home appliance. It uses Google as search assistant to have excellent accuracy. That’s why it is named as “Google Pi”