5.1 Coding (Main Module)

For Data Set Through Web Scraping :

```
from bs4 import BeautifulSoup
import requests
import re
import urllib2
import os
import argparse
import sys
import json

# adapted from http://stackoverflow.com/questions/20716842/python-
download-images-from-google-image-search

def get_soup(url,header):
    return
BeautifulSoup(urllib2.urlopen(urllib2.Request(url,headers=header)),'
html.parser')

def main(args):
    parser = argparse.ArgumentParser(description='Scrape Google
images')
    parser.add_argument('-s', '--search', default='iist indore',
type=str, help='search term')
    parser.add_argument('-n', '--num_images', default=10, type=int,
help='num images to save')
    parser.add_argument('-d', '--directory', default='', type=str,
help='save directory')
    args = parser.parse_args()
    query = args.search#raw_input(args.search)
    max_images = args.num_images
    save_directory = args.directory
    image_type="Action"
    query= query.split()
    query='+'.join(query)
    url="https://www.google.co.in/search?q="+query+"&source=lnms&t
bm=isch"
    header={'User-Agent':"Mozilla/5.0 (Windows NT 6.1; WOW64)
AppleWebKit/537.36 (KHTML, like Gecko) Chrome/43.0.2357.134
Safari/537.36"}
    soup = get_soup(url,header)
    ActualImages=[]# contains the link for Large original images,
type of  image
    for a in soup.find_all("div",{"class":"rg_meta"}):
        link , Type =json.loads(a.text)["ou"]
,json.loads(a.text)["ity"]
        ActualImages.append((link,Type))
    for i , (img , Type) in enumerate( ActualImages[0:max_images]):
        try:
            req = urllib2.Request(img, headers={'User-Agent' :
header})
            raw_img = urllib2.urlopen(req).read()
            if len(Type)==0:
```

```python
                    f = open(os.path.join(save_directory , "img" + "_"+
str(i)+".jpg"), 'wb')
                else :
                    f = open(os.path.join(save_directory , "img" + "_"+
str(i)+"."+Type), 'wb')
                f.write(raw_img)
                f.close()
        except Exception as e:
                print "could not load : "+img
                print e

if __name__ == '__main__':
    from sys import argv
    try:
        main(argv)
    except KeyboardInterrupt:
        pass
    sys.exit()
```

For Actual Execution Program :

```python
# -*- coding: utf-8 -*-
```

```python
"""
Created on Thu Apr  4 12:16:32 2019

@author: Study
"""
import random
import sys
import cv2
from firebase import firebase
import requests
import json

request = None
JsonResult = None

img_counter = 0

total = 0

bus_route  =  ['Vijay  Nagar','Malviya  Nagar','Dainik  Bhaskar','lig
','Industry                              House','Palasia','Geeta
Bhawan','AIctsl','Gpo','Zoo','Navalakha          Churaha','Holkar
Subway','Bhawar Kuan']

journey_type = ['going','coming']

print("Going :- Vijay Nagar To Bhawar Kuan And Coming :- Bhawar Kuan
To Vijay Nagar")

def number_of_faces( path ):
    global total

    print(path)

    face_cascade                                              =
cv2.CascadeClassifier('haarcascade_frontalface_default.xml')

    image = cv2.imread(path)
    grayImage = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)

    faces = face_cascade.detectMultiScale(grayImage)

    if len(faces) == 0:
        print ("No faces found")

    else:
#         count_face = 0
#         for (x,y,w,h) in faces:
#             count_face = count_face + 1
#         print(count_face)
        total_faces = str(faces.shape[0])
        print ("Number of faces detected: " + total_faces)
        total = total + int(total_faces)

while True :
    index1 = random.randrange(len(bus_route))
```

```python
CurrentStop = bus_route[index1]
print("current Bus Stop is : " ,CurrentStop)

index2 = random.randrange(len(journey_type))
Journey_Type_Selecton = journey_type[index2]
print("Travel Mode is  : " ,Journey_Type_Selecton)

if (Journey_Type_Selecton == 'coming') :
    if  (CurrentStop != 'Vijay Nagar') :
        index1 = index1-1
        print("Next Bus Stop is : " ,bus_route[index1])
    else:
        sys.exit("this is last stop")

else:
    if  (CurrentStop != 'Bhawar Kuan') :
        index1 = index1 + 1
        print("Next Bus Stop is : " ,bus_route[index1])
    else:
        sys.exit("this is last stop")



cam = cv2.VideoCapture(0)

cv2.namedWindow("Hit ENTER to take Picture And ESC to quit")



while True:
    ret, frame = cam.read()
    cv2.imshow("Hit ENTER to take Picture And ESC to quit", frame)
    if not ret:
        break
    k = cv2.waitKey(1)

    if k%256 == 27:
        # ESC pressed
        print("Escape hit, closing...")
        break
    elif k%256 == 32:
        # SPACE pressed
        img_name    =    "C:\\Users\\deena\\Desktop\\Minor\\Face
Detection                    and                    Counting\\cam
picture\\opencv_frame_{}.png".format(img_counter)

        cv2.imwrite(img_name, frame)
        print("{} written!".format(img_name))
        number_of_faces(img_name)
        img_counter += 1

cam.release()
cv2.destroyAllWindows()

average = total/img_counter
total_people = int (average)
```

```python
    print("The Total People is : " + str(total_people))

    img_counter = 0

    total = 0

    firebase                                            =
firebase.FirebaseApplication('https://transportmanagementsyste-
628b3.firebaseio.com/')

    resultput = firebase.put('','TotalPeople',total_people)

    RequestToThingspeak                                 =
'https://api.thingspeak.com/update?api_key=L9BCQF5WS5QW7S3H&field1='
    RequestToThingspeak +=str(total_people)
    request = requests.get(RequestToThingspeak)

    print("Data is sended to Google Firebase and ThingSpeak" )

    print("Here we will show after retrieving from Firebase : ")
    print("The No. of people is : ")
    print(firebase.get('TotalPeople',None))
    print("Here we will show after retrieving from ThingSpeak : ")
    req                                                 =
requests.get("http://api.thingspeak.com/channels/750652/feeds/last.j
son?api_key=QO6LRPOS2CACC77G")
    JsonResult = json.loads((req.text))
    print("The No. of people is : ")
    print(JsonResult['field1'])

    print("one execution ended")

    print("*"*50)
#   print("Do you want to continue then hit ENTER and to terminate
hit ESC")
```
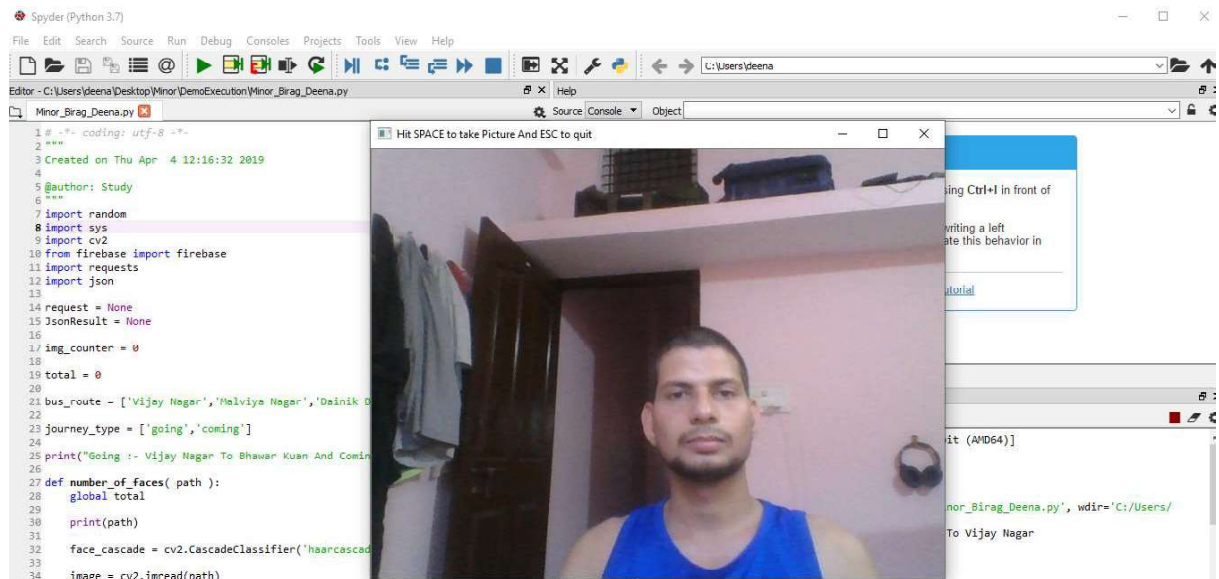
5.2 Results-Screen Shots

Fig. 11

Data Set Formation


```
In [1]: runfile('C:/Users/deena/Desktop/Minor/DemoExecution/Minor_Birag_Deena.py', wdir='C:/Users/
deena/Desktop/Minor/DemoExecution')
Going :- Vijay Nagar To Bhawar Kuan And Coming :- Bhawar Kuan To Vijay Nagar
current Bus Stop is :  Gpo
Travel Mode is  :  going
Next Bus Stop is :  Zoo
C:\Users\deena\Desktop\Minor\DemoExecution\DataSet\picture0.png written!
C:\Users\deena\Desktop\Minor\DemoExecution\DataSet\picture0.png
Number of faces detected: 1
C:\Users\deena\Desktop\Minor\DemoExecution\DataSet\picture1.png written!
C:\Users\deena\Desktop\Minor\DemoExecution\DataSet\picture1.png
Number of faces detected: 1
C:\Users\deena\Desktop\Minor\DemoExecution\DataSet\picture2.png written!
C:\Users\deena\Desktop\Minor\DemoExecution\DataSet\picture2.png
Number of faces detected: 1
C:\Users\deena\Desktop\Minor\DemoExecution\DataSet\picture3.png written!
C:\Users\deena\Desktop\Minor\DemoExecution\DataSet\picture3.png
Number of faces detected: 1
Escape hit, closing...
The Total People is : 1
Data is sended to Google Firebase and ThingSpeak
Here we will show after retrieving from Firebase :
The No. of people is :
1
Here we will show after retrieving from ThingSpeak :
The No. of people is :
1
one execution ended
***************************************************
current Bus Stop is :  lig
Travel Mode is  :  coming
Next Bus Stop is :  Dainik Bhaskar
Escape hit, closing...
```

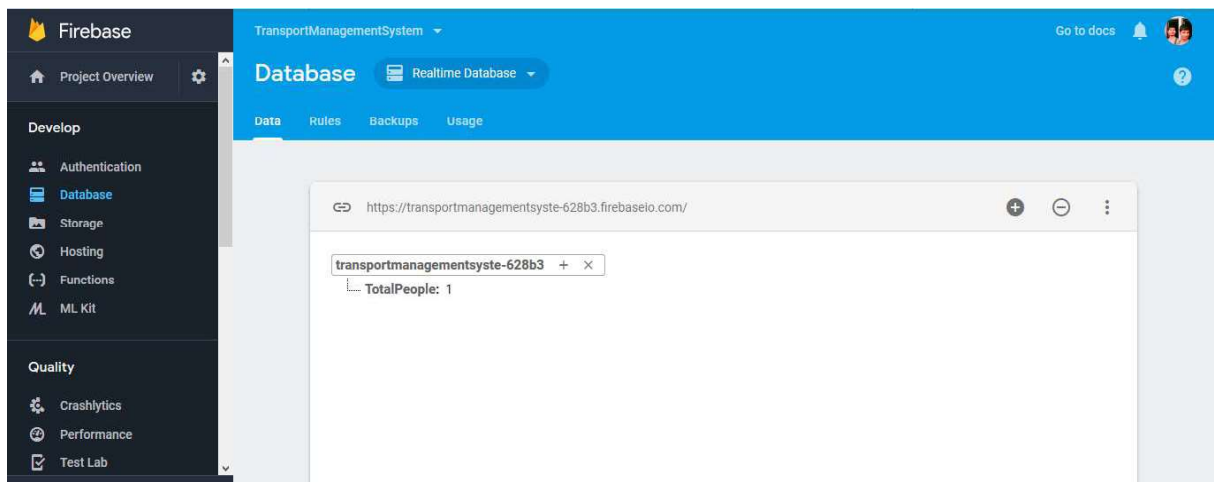**Fig.12**

Complete Execution Of Program
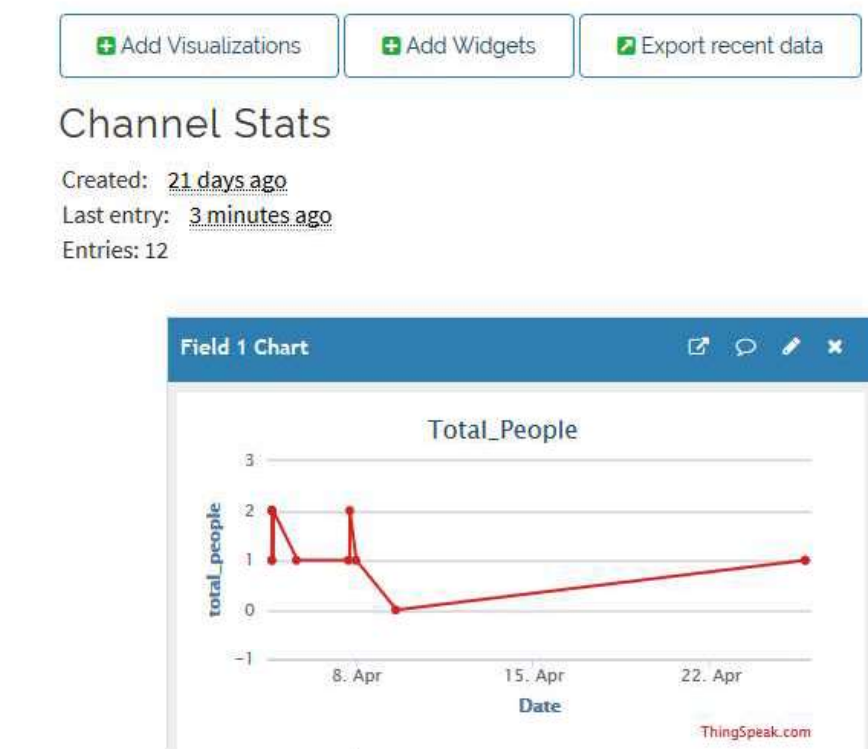
Fig.13

Firebase Database

Fig.14
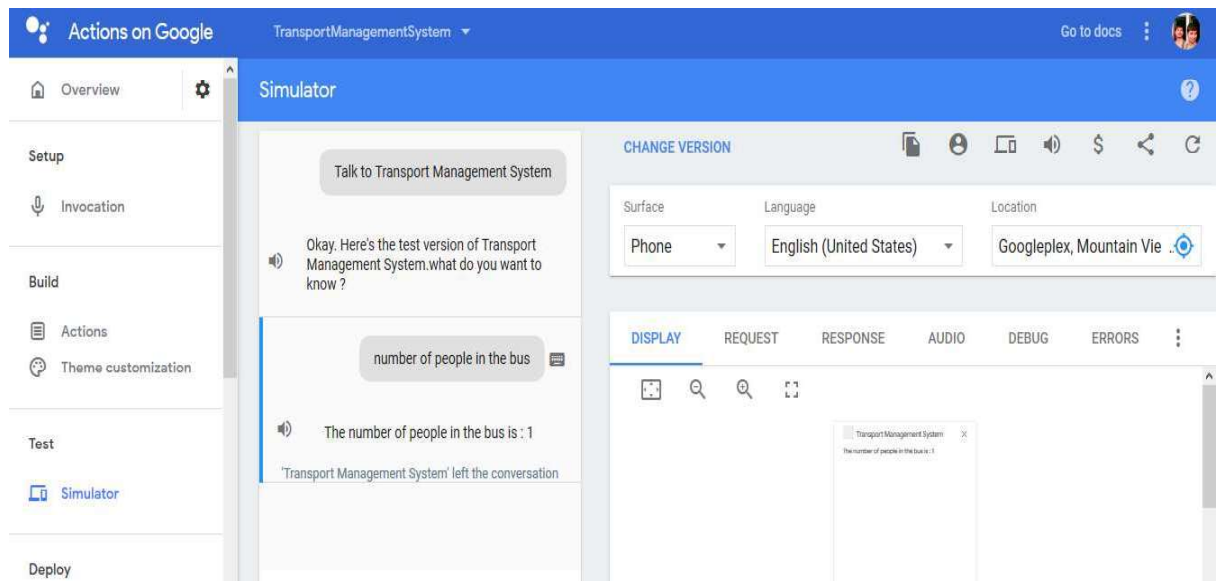
ThingSpeak Database

Fig.15

Google Assistant Output

Chapter 6: Testing

6.1 Testing Objectives