# VISVESVARAYA TECHNOLOGICAL UNIVERSITY

## BELAGAVI – 590018, Karnataka INTERNSHIP REPORT

#### ON

“Virtual Assistant for Visually Impaired”

***Submitted in partial fulfilment for the award of degree(18CSI85)***

## BACHELOR OF ENGINEERING IN COMPUTER SCIENCE AND ENGINEERING

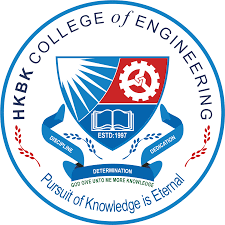
***Submitted by***

**SHEBIN MOHAN K**

**1HK19CS143**



Conducted at

**VARCONS TECHNOLOGIES Pvt Ltd**

HKBK College Of Engineering

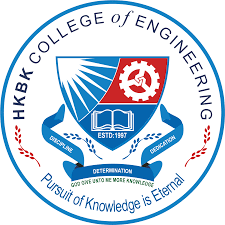
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

##### **No.22/1, Opposite, Manyata Tech Park Rd, Vyalikaval Society, Vyalikaval HBCS Layout, Nagavara, Bengaluru, Karnataka 560045**

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

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**2022-2023**

**CERTIFICATE**

This is to certify that the Internship titled **“Virtual Assistant for Visually Impaired”** carried out by **Mr. SHEBIN MOHAN K,** a Bonafede student of HKBK College of Engineering, in partial fulfillment for the award of **Bachelor of Engineering**, in **Computer Science** under Visvesvaraya Technological University, Belagavi, during the year 2022-2023. It is certified that all corrections/suggestions indicated have been incorporated in the report.

The project report has been approved as it satisfies the academic requirements in respect of Internship prescribed for the course Internship / Professional Practice (18CSI85)

##### Signature of Guide Signature of HOD Signature of Principal

**External Viva:**

Name of the Examiner Signature with Date

1)

2)

# D E C L A R A T I O N

I, **SHEBIN MOHAN K**, final year student of Computer Science Dept., **HKBK College of Engineering** - 560 045, declare that the Internship has been successfully completed, in **VARCONS TECHNOLOGIES Pvt Ltd**. This report is submitted in partial fulfillment of the requirements for award of Bachelor Degree in Branch name, during the academic year 2022-2023.

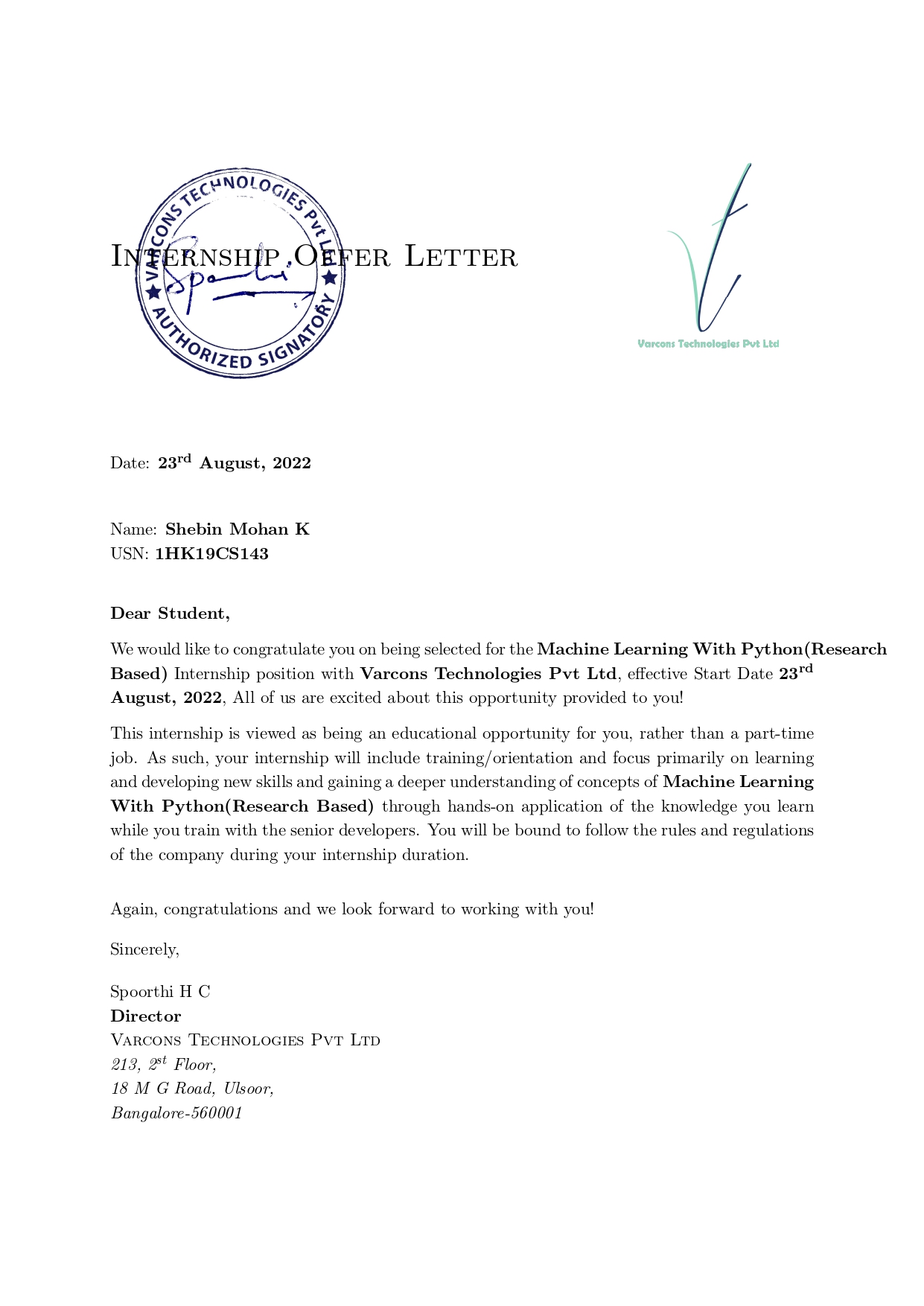
Date: Sept 2022 :

Place: Bangalore

USN: **1HK19CS143**

NAME: **SHEBIN MOHAN K**

**OFFER LETTER**



# A C K N O W L E D G E M E N T

This Internship is a result of accumulated guidance, direction and support of several important persons. We take this opportunity to express our gratitude to all who have helped us to complete the Internship.

We express our sincere thanks to our Principal, for providing us adequate facilities to undertake this Internship.

We would like to thank our Head of Dept – branch code, for providing us an opportunity to carry out Internship and for his valuable guidance and support.

We would like to thank our (Lab assistant name) Software Services for guiding us during the period of internship.

We express our deep and profound gratitude to our guide, **Ayesha Anjum**, Assistant/Associate Prof, for her keen interest and encouragement at every step in completing the Internship.

We would like to thank all the faculty members of our department for the support extended during the course of Internship.

We would like to thank the non-teaching members of our dept, forhelping us during the Internship.

Last but not the least, we would like to thank our parents and friends without whose constant help, the completion of Internship would have not been possible.

**SHEBIN MOHAN K**

**1HK19CS143**

# ABSTRACT

Research shows that people with visual impairments are 31% less likely to access the internet than individuals without disabilities. This paper illustrates the implementation of software that provides assistance to the visually impaired for accessing the internet. The software shall prove instrumental in the way we access the internet and will increase the ease of use drastically. Although technology has grown leaps and bounds, the internet - especially websites are still inaccessible by the visually impaired. The software provides a way to interact with these websites with much ease. With the use of voice commands instead of the traditional keyboard and mouse, our software provides a new dimension to access and provide commands to any website. The software will read out the content of the website and then using speech to text and text to speech modules along with selenium, our software can automate any website. The user is free from remembering complex braille keyboard commands or the hassle of typing, he/she can simply voice out his/her command and the software will execute it. The system also has the functionality of providing a summary of the content on the website and answering questions asked by the user with reference to the summary using a BERT model trained on the Stanford Question Answer Dataset. This software will revolutionize the internet and pave the way for Web3.0.

### TEAM MEMBERS:

1. SUKARN SRIVASTAVA (1BO19CS105)

2. ROHAN KR RAY (1BO19CS083)

3. SOVIL BAGAVAN (1BO19CS102)

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# COMPANY PROFILE

## A Brief History of Varcons Technologies

Varcons Technologies, was incorporated with a goal” To provide high quality and optimal Technological Solutions to business requirements of our clients”. Every business is a different and has a unique business model and so are the technological requirements. They understand this and hence the solutions provided to these requirements are different as well. They focus on clients requirements and provide them with tailor made technological solutions. They also understand that Reach of their Product to its targeted market or the automation of the existing process into e-client and simple process are the key features that our clients desire from Technological Solution they are looking for and these are the features that we focus on while designing the solutions for their clients.

Sarvamoola Software Services. is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Sarvamoola Software Services. specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements.

Varcons Technologies, strive to be the front runner in creativity and innovation in software development through their well-researched expertise and establish it as an out of the box software development company in Bangalore, India. As a software development company, they translate this software development expertise into value for their customers through their professional solutions.

They understand that the best desired output can be achieved only by understanding the clients demand better. Varcons Technologies work with their clients and help them to defiine their exact solution requirement. Sometimes even they wonder that they have completely redefined their solution or new application requirement during the brainstorming session, and here they position themselves as an IT solutions consulting group comprising of high caliber consultants.

They believe that Technology when used properly can help any business to scale and achieve new heights of success. It helps Improve its efficiency, profitability, reliability; to put it in one sentence ” Technology helps you to Delight your Customers” and that is what we want to achieve.

# [CHAPTER](https://1.bp.blogspot.com/-dODuK8N5h1Q/Wlnyb3V9HFI/AAAAAAAACL4/WxQtCJ1pM5wccDABg4wIrTBUB0vlikXQQCLcBGAs/s1600/poly1.jpg) 2 ABOUT THE COMPANY

1. **ABOUT THE COMPANY**



Varcons Technologies is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Varcons Technologies specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements. The organization where they have a right mix of professionals as a stakeholders to help us serve our clients with best of our capability and with at par industry standards. They have young, enthusiastic, passionate and creative Professionals to develop technological innovations in the field of Mobile technologies, Web applications as well as Business and Enterprise solution. Motto of our organization is to “Collaborate with our clients to provide them with best Technological solution hence creating Good Present and Better Future for our client which will bring a cascading a positive effect in their business shape as well”. Providing a Complete suite of technical solutions is not just our tag line, it is Our Vision for Our Clients and for Us, We strive hard to achieve it.

## Products of Varcons Technologies.

**Android Apps**

It is the process by which new applications are created for devices running the Android operating system. Applications are usually developed in Java (and/or Kotlin; or other such option) programming language using the Android software development kit (SDK), but other development environments are also available, some such as Kotlin support the exact same Android APIs (and bytecode), while others such as Go have restricted API access.

The Android software development kit includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and zutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows 7 or later. As of March 2015, the SDK is not available on Android itself, but softwaredevelopment is possible by using specialized Android applications.

**Web Application**

It is a client–server computer program in which the client (including the user interface and client- side logic) runs in a web browser. Common web applications include web mail, online

retail sales, online auctions, wikis, instant messaging services and many other functions. web applications use web documents written in a standard format such as HTML and JavaScript,which are supported by a variety of web browsers. Web applications can be considered as a specifific variant of client–server software where the client software is downloaded to the client machine when visiting the relevant web page, using standard procedures such as HTTP. The Client web software updates may happen each time the web page is visited. During the session, the web browser interprets and displays the pages, and acts as the universal client for any web application. The use of web application frameworks can often reduce the number of errors in a program, both by making the code simpler, and by allowing one team to concentrate on the framework while another focuses on a specifified use case. In applications which are exposed to constant hacking attempts on the Internet, security- related problems can be caused by errors in the program.

Frameworks can also promote the use of best practices such as GET after POST. There are some who view a web application as a two-tier architecture. This can be a “smart” client that performs all the work and queries a “dumb” server, or a “dumb” client that relies on a “smart” server. The client would handle the presentation tier, the server would have the database (storage tier), and the business logic (application tier) would be on one of them or on both. While this increases the scalability of the applications and separates the display and the database, it still doesn‟t allow for true specialization of layers, so most applications will outgrow this model. An emerging strategy for application software companies is to provide web access to software previously distributed as local applications. Depending on the type of application, it may require the development of an entirely different browser-based interface, or merely adapting an existing application to use different presentation technology. These programs allow the user to pay a monthly or yearly fee for use of a software application without having to install it on a local hard drive. A company which follows this strategy is known as an application service provider (ASP), and ASPs are currently receiving much attention in the software industry.

Security breaches on these kinds of applications are a major concern because it can involve both enterprise information and private customer data. Protecting these assets is an important part of any web application and there are some key operational areas that must be included in the development process. This includes processes for authentication, authorization, asset handling, input, and logging and auditing. Building security into the applications from the beginning can be more effective and less disruptive in the long run.

**Web design**

It is encompasses many different skills and disciplines in the production and maintenance of websites. The different areas of web design include web graphic design; interface design; authoring, including standardized code and proprietary software; user experience design; and

search engine optimization. The term web design is normally used to describe the design process relating to the front-end (client side) design of a website including writing mark up. Web design partially overlaps web engineering in the broader scope of web development. Web designers are expected to have an awareness of usability and if their role involves creating mark up then they are also expected to be up to date with web accessibility guidelines. Web design partially overlaps web engineering in the broader scope of web development.

## Departments and services offered

Varcons Technologies plays an essential role as an institute, the level of education, development of student’s skills are based on their trainers. If you do not have a good mentor then you may lag in many things from others and that is why we at Varcons Technologies gives you the facility of skilled employees so that you do not feel unsecured about the academics. Personality development and academic status are some of those things which lie on mentor’s hands. If you are trained well then you can do well in your future and knowing its importance of Varcons Technologies always tries to give you the best.

They have a great team of skilled mentors who are always ready to direct their trainees in the best possible way they can and to ensure the skills of mentors we held many skill development programs as well so that each and every mentor can develop their own skills with the demands of the companies so that they can prepare a complete packaged trainee.

## Services provided by Varcons Technologies.

* Core Java and Advanced Java
* Web services and development
* Dot Net Framework
* Python
* Selenium Testing
* Conference / Event Management Service
* Academic Project Guidance
* On The Job Training
* Software Training

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1. **INTRODUCTION**

## Introduction to ML

Today there are nearly 285 million people in the world that are visually impaired [12]. Although technology has grown leaps and bounds, the accessibility, especially that of the internet for differently-abled people is still far-fetched. In this modern world, more and more things can be performed online. From shopping, ordering food, to booking train tickets everything can be done online. For almost all of these online facilities a person has to use a website. Using a website can be a trivial task for most people but it is very difficult for visually impaired people. The internet is a highly visual form of communication, different "accessibility blockers" can hinder different types of websites, unlike brick and mortar businesses where accessibility can be made by including a ramp for wheelchairs or braille interfaces. For example, researchers found that 80% of news sites “had significant accessibility issues," while 70% of respondents said they were “unable to access information and services through government websites.” Thus, we wanted to come up with a unique way of allowing visually impaired people to access the internet. Although the W3C has a set of recommendations that stipulate the rules to be followed when designing a website for the visually impaired, not all websites necessarily stick to the high standards in terms of accessibility.

The major challenge in developing a stable software is to include as few keystrokes as possible and to provide an end-to-end experience with the help of voice alone. The inclusion of multiple languages and setting the right pace of the speech when played back to the user are important factors to consider. To support the widespread usage of the software, a crucial parameter is the dependency of the software on the local environment and operating systems. While the tech has evolved greatly, the accessibility, especially the internet for the differently abled is still stagnant.

## Problem Statement

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**4. SYSTEM ANALYSIS**

## Existing System

## Proposed System

## Objective of the System

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**5. REQUIREMENT ANALYSIS**

## Hardware Requirement Specification

### Hardware Requirement Specification

* + MySQL
  + NODE JS
  + Notepad++ Editor
  + Processor: Intel core i5 processer
  + Memory: 15.6 GB
  + Hard Disk: 40 GB

### Software Requirement Specification

#### Functional Requirements

##### Platform : VISUAL STUDIO

* **Programing Language : PHP**

##### Front End Design : HTML, CSS, DJANGO

* **Database : MySQL**

#### Non-Functional Requirements

##### Availability

The online registration system shall permit backing up of the registration database whileother registration actives are going on.

##### Accessibility

The system shall be accessible by people with specific vision needs to the extent that a user shall be able to display whole user interface in a larger font without truncating displayed text or other values.

##### Security

The access permissions for system data may only be change by the systems data administrator passwords shall never be viewable at the point of entry or any other time.

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# [CHAPTE](https://1.bp.blogspot.com/-dODuK8N5h1Q/Wlnyb3V9HFI/AAAAAAAACL4/WxQtCJ1pM5wccDABg4wIrTBUB0vlikXQQCLcBGAs/s1600/poly1.jpg)R 7 IMPLEMENTATION

1. **IMPLEMENTATION**

Implementation is the stage where the theoretical design is turned into a working system. The most crucial stage in achieving a new successful system and in giving confidence on the new system for the users that it will work efficiently and effectively.

The system can be implemented only after thorough testing is done and if it is found to work according to the specification. It involves careful planning, investigation of the current system and it constraints on implementation, design of methods to achieve the change over and an evaluation of change over methods a part from planning.

Two major tasks of preparing the implementation are education and training of the users and testing of the system. The more complex the system being implemented, the more involved will be the system analysis and design effort required just for implementation.

The implementation phase comprises of several activities. The required hardware and software acquisition is carried out. The system may require some software to be developed. For this, programs are written and tested. The user then changes over to his new fully tested system and the old system is discontinued.

## TESTING

The testing phase is an important part of software development. It is the Information zed system will help in automate process of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. Software testing is carried out in three steps:

1. The first includes unit testing, where in each module is tested to provide its correctness, validity and also determine any missing operations and to verify whether the objectives have been met. Errors are noted down and corrected immediately.
2. Unit testing is the important and major part of the project. So errors are rectified easily in particular module and program clarity is increased. In this project entire system is divided into several modules and is developed individually. So unit testing is conducted to individual modules.
3. The second step includes Integration testing. It need not be the case, the software whose modules when run individually and showing perfect results, will also show perfect results when run as a whole.

Main:

import functions

import yolopy

import speech

import cv2

import os

import detect

import datetime

os.environ["GOOGLE\_APPLICATION\_CREDENTIALS"]= "dfkey.json"

labelsPath = "yolo/coco.names"

weightsPath = "yolo/yolov3.weights"

configPath = "yolo/yolov3.cfg"

args = {"threshold":0.3, "confidence":0.5}

project\_id = "blindbot-4f356"

#project\_id = "blindbot-286ed"

engine = speech.speech\_to\_text()

model = yolopy.yolo(labelsPath, weightsPath, configPath)

listening = False

intent = None

while True:

cam = cv2.VideoCapture(1)

if not listening:

resp = engine.recognize\_speech\_from\_mic()

print(resp)

if(resp != None):

intent, text = detect.detect\_intent\_texts(project\_id, 0, [resp], 'en')

if(intent == 'Jyoti' and resp!=None):

listening = True

else:

engine.text\_speech("What can I help you with?")

intent = ''

engine.text\_speech("Listening")

resp = engine.recognize\_speech\_from\_mic()

engine.text\_speech("Processing")

if(resp!=None):

print(resp)

intent, text = detect.detect\_intent\_texts(project\_id, 0, [resp], 'en')

if intent == 'Describe':

detect.describeScene(cam, model, engine)

elif intent == 'endconvo':

print(text)

listening = False

engine.text\_speech(text)

elif intent == 'Brightness':

engine.text\_speech("It is {} outside".format((functions.getBrightness(cam))[0]))

elif intent == "FillForm":

detect.detect\_form(cam, engine)

elif intent == "Read":

print("read")

detect.detect\_text(cam, engine)

elif intent == "Time":

currentDT = datetime.datetime.now()

engine.text\_speech("The time is {} hours and {} minutes".format(currentDT.hour, currentDT.minute))

elif resp != 'None':

engine.text\_speech(text)

cam.release()

Functions:

import cv2

import numpy as np

import wave

import pyaudio

def getBrightness(cam):

ret, frame = cam.read()

frame = cv2.cvtColor(frame, cv2.COLOR\_BGR2GRAY)

avg = np.sum(frame)/(frame.shape[0]\*frame.shape[1])

avg=avg/255

if(avg > 0.6):

return ("Very bright", avg)

if(avg > 0.4):

return ("Bright", avg)

if(avg>0.2):

return ("Dim", avg)

else:

return ("Dark",avg)

def play\_file(fname):

# create an audio object

wf = wave.open(fname, 'rb')

p = pyaudio.PyAudio()

chunk = 1024

# open stream based on the wave object which has been input.

stream = p.open(format=p.get\_format\_from\_width(wf.getsampwidth()),

channels=wf.getnchannels(),

rate=wf.getframerate(),

output=True)

# read data (based on the chunk size)

data = wf.readframes(chunk)

# play stream (looping from beginning of file to the end)

while data != '':

# writing to the stream is what \*actually\* plays the sound.

stream.write(data)

data = wf.readframes(chunk)

# cleanup stuff.

stream.close()

p.terminate()

Detect:

import io

from google.oauth2 import service\_account

from google.cloud import vision

import dialogflow\_v2 as dialogflow

import cv2

def detect\_text(cam, engine):

credentials = service\_account.Credentials.from\_service\_account\_file('aj.json')

client = vision.ImageAnnotatorClient(credentials=credentials)

ret, content = cam.read()

cv2.imwrite('op.jpg', content)

with io.open('op.jpg', 'rb') as image\_file:

content = image\_file.read()

image = vision.types.Image(content=content)

response = client.text\_detection(image=image)

texts = response.text\_annotations

print(len(texts))

print('Text:')

textm = ""

for i, text in enumerate(texts):

engine.text\_speech(text.description)

textm += text.description

textm = textm + " "

print(textm)

def detect\_form(cam, engine):

credentials = service\_account.Credentials.from\_service\_account\_file('aj.json')

client = vision.ImageAnnotatorClient(credentials= credentials)

#content = cam.read()

path = 'bank.jpg'

with io.open(path, 'rb') as image\_file:

content = image\_file.read()

image = vision.types.Image(content=content)

response = client.text\_detection(image=image)

texts = response.text\_annotations

print('Text:')

textm = ""

for i, text in enumerate(texts):

if(i==0):

engine.text\_speech("The form is entitled as")

if(i==1):

engine.text\_speech("The form asks about these details")

engine.text\_speech(text.description)

if("Official" in text.description):

break

textm += text.description

textm = textm+" "

print(textm)

def detect\_intent\_texts(project\_id, session\_id, texts, language\_code):

"""Returns the result of detect intent with texts as inputs.

Using the same `session\_id` between requests allows continuation

of the conversation."""

session\_client = dialogflow.SessionsClient()

session = session\_client.session\_path(project\_id, session\_id)

print('Session path: {}\n'.format(session))

for text in texts:

text\_input = dialogflow.types.TextInput(

text=text, language\_code=language\_code)

query\_input = dialogflow.types.QueryInput(text=text\_input)

response = session\_client.detect\_intent(

session=session, query\_input=query\_input)

# print('=' \* 20)

# print('Query text: {}'.format(response.query\_result.query\_text))

# print('Detected intent: {} (confidence: {})\n'.format(

# response.query\_result.intent.display\_name,

# response.query\_result.intent\_detection\_confidence))

# print('Fulfillment text: {}\n'.format(

# response.query\_result.fulfillment\_text))

return response.query\_result.intent.display\_name, response.query\_result.fulfillment\_text

def describeScene(cam, model, engine):

ret, frame = cam.read()

cv2.imwrite('op.jpg',frame)

credentials = service\_account.Credentials.from\_service\_account\_file('aj.json')

client = vision.ImageAnnotatorClient(credentials= credentials)

path = 'op.jpg'

#path = 'road.jpg'

with io.open(path, 'rb') as image\_file:

content = image\_file.read()

image = vision.types.Image(content=content)

response = client.label\_detection(image=image)

labels = response.label\_annotations

engine.text\_speech("Description of the view")

stop = 2

for i,j in enumerate(labels):

engine.text\_speech(j.description)

if(i == 1):

break

checkRoad(labels, engine)

tellObjects(client, image, engine)

def checkRoad(labels, engine):

road = 0

car = 0

motor\_vehicle = 0

bicycle = 0

classroom = 0

truck = 0

traffic = 0

face = 0

for i, label in enumerate(labels):

if (label.description == "Highway" or label.description == "Lane" or label.description == "Road"):

road += 1

if (label.description == "Car"):

car += 1

if (label.description == "Motor vehicle"):

motor\_vehicle += 1

if (label.description == "Bicycle"):

bicycle += 1

if (label.description == "Truck"):

truck += 1

if (label.description == "Face"):

face += 1

if (label.description == "Classroom"):

classroom += 1

if (label.description == "Traffic"):

traffic += 1

if (road >= 1):

if (car >= 1 or motor\_vehicle >= 1 or bicycle >= 1 or truck >= 1 or traffic >= 1):

engine.text\_speech(

"It seems you are walking on a road with vehicles. Beware! Do you want me to find people for help?")

else:

engine.text\_speech("It seems the road you are walking on is quite safe. Yet beware.")

if (classroom >= 1):

engine.text\_speech("You seem to be in a classroom!")

def tellObjects(client, image, engine):

objects = client.object\_localization(

image=image).localized\_object\_annotations

print('Number of objects found: {}'.format(len(objects)))

# engine.text\_speech("I will tell you the objects near you")

for object\_ in objects:

print('{} '.format(object\_.name))

# engine.text\_speech(object\_.name)

lbldict = {}

for i in objects:

if i.name in lbldict:

lbldict[i.name] += 1

else:

lbldict[i.name] = 1

once = True

length = len(lbldict)

r = 0

for i, j in lbldict.items():

if once:

if j != 1:

engine.text\_speech("There are")

else:

engine.text\_speech("There is")

once = False

engine.text\_speech("{} {}".format(j, i))

r += 1

if r != length:

engine.text\_speech("and")

if (length == 0):

engine.text\_speech("No objects found")

Speech:

import speech\_recognition as sr

import pyttsx3

from google.oauth2 import service\_account

from nltk.stem.porter import PorterStemmer

from nltk.stem.wordnet import WordNetLemmatizer

import re

import nltk

from nltk.corpus import stopwords

from nltk.tokenize import RegexpTokenizer

from nltk.stem.wordnet import WordNetLemmatizer

class speech\_to\_text():

def \_\_init\_\_(self):

en\_voice\_id = "HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Speech\Voices\Tokens\TTS\_MS\_EN-US\_ZIRA\_11.0"

ru\_voice\_id = "HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Speech\Voices\Tokens\TTS\_MS\_RU-RU\_IRINA\_11.0"

self.recognizer = sr.Recognizer()

self.microphone = sr.Microphone()

self.engine = pyttsx3.init();

self.engine.setProperty('voice', en\_voice\_id)

self.credentials = service\_account.Credentials.from\_service\_account\_file('api-key.json')

def recognize\_speech\_from\_mic(self):

print("Start...")

with self.microphone as source:

self.recognizer.adjust\_for\_ambient\_noise(source)

audio = self.recognizer.listen(source)

print("Found mic")

response = {

"success": True,

"error": None,

"transcription": None

}

try:

response["transcription"] = self.recognizer.recognize\_google(audio)

except sr.RequestError:

# API was unreachable or unresponsive

response["success"] = False

response["error"] = "API unavailable"

except sr.UnknownValueError:

# speech was unintelligible

response["error"] = "Unable to recognize speech"

if(response["transcription"]=="None"):

print("Speech not detected! Pls try again!")

return response["transcription"]

def clean(self, text):

lem = WordNetLemmatizer()

stem = PorterStemmer()

stop\_words = set(stopwords.words("english"))

new\_words = ["hey", "hi", "hello", "what's up", "i", "please", "help", "using", "show", "result", "large",

"also", "iv", "one", "two", "new", "previously", "shown"]

stop\_words = stop\_words.union(new\_words) - {"whom", "who"}

text = text.lower()

text = text.split()

ps = PorterStemmer()

lem = WordNetLemmatizer()

text = [lem.lemmatize(word) for word in text if not word in

stop\_words]

text = " ".join(text)

return text

def text\_speech(self, cleaned\_text):

self.engine.say(cleaned\_text);

self.engine.runAndWait();

yolopy:

import cv2

import time

import numpy as np

class yolo:

def \_\_init\_\_(self,labelsPath, weightsPath, configPath):

# load the COCO class labels our YOLO model was trained on

self.LABELS = open(labelsPath).read().strip().split("\n")

# initialize a list of colors to represent each possible class label

np.random.seed(42)

self.COLORS = np.random.randint(0, 255, size=(len(self.LABELS), 3),

dtype="uint8")

# derive the paths to the YOLO weights and model configuration

# load our YOLO object detector trained on COCO dataset (80 classes)

print("[INFO] loading YOLO from disk...")

self.net = cv2.dnn.readNetFromDarknet(configPath, weightsPath)

# determine only the \*output\* layer names that we need from YOLO

ln = self.net.getLayerNames()

self.ln = [ln[i[0] - 1] for i in self.net.getUnconnectedOutLayers()]

def detectYolo(self,frame,args):

(H, W) = frame.shape[:2]

# construct a blob from the input image and then perform a forward

# pass of the YOLO object detector, giving us our bounding boxes and

# associated probabilities

blob = cv2.dnn.blobFromImage(frame, 1 / 255.0, (416, 416),

swapRB=True, crop=False)

self.net.setInput(blob)

start = time.time()

layerOutputs = self.net.forward(self.ln)

end = time.time()

print("[INFO] YOLO took {:.6f} seconds".format(end - start))

# initialize our lists of detected bounding boxes, confidences, and

# class IDs, respectively

boxes = []

confidences = []

classIDs = []

# loop over each of the layer outputs

for output in layerOutputs:

# loop over each of the detections

for detection in output:

# extract the class ID and confidence (i.e., probability) of

# the current object detection

scores = detection[5:]

classID = np.argmax(scores)

confidence = scores[classID]

# filter out weak predictions by ensuring the detected

# probability is greater than the minimum probability

if confidence > args["confidence"]:

# scale the bounding box coordinates back relative to the

# size of the image, keeping in mind that YOLO actually

# returns the center (x, y)-coordinates of the bounding

# box followed by the boxes' width and height

box = detection[0:4] \* np.array([W, H, W, H])

(centerX, centerY, width, height) = box.astype("int")

# use the center (x, y)-coordinates to derive the top and

# and left corner of the bounding box

x = int(centerX - (width / 2))

y = int(centerY - (height / 2))

# update our list of bounding box coordinates, confidences,

# and class IDs

boxes.append([x, y, int(width), int(height)])

confidences.append(float(confidence))

classIDs.append(classID)

# apply non-maxima suppression to suppress weak, overlapping bounding

# boxesg

idxs = cv2.dnn.NMSBoxes(boxes, confidences, args["confidence"],

args["threshold"])

return idxs, boxes, classIDs, confidences

def detectAndShow(self, frame, args):

idxs, boxes, classIDs, confidences = self.detectYolo(frame, args)

if len(idxs) > 0:

# loop over the indexes we are keeping

for i in idxs.flatten():

# extract the bounding box coordinates

(x, y) = (boxes[i][0], boxes[i][1])

(w, h) = (boxes[i][2], boxes[i][3])

# draw a bounding box rectangle and label on the image

color = [int(c) for c in self.COLORS[classIDs[i]]]

cv2.rectangle(frame, (x, y), (x + w, y + h), color, 2)

text = "{}: {:.4f}".format(self.LABELS[classIDs[i]], confidences[i])

cv2.putText(frame, text, (x, y - 5), cv2.FONT\_HERSHEY\_SIMPLEX,

0.5, color, 2)

# show the output image

cv2.imshow("Image", frame)

cv2.waitKey(1000)

def detectAndPrint(self, frame, args):

idxs, boxes, classIDs, confidences = self.detectYolo(frame, args)

lbl = []

if len(idxs)>0:

for i,num in enumerate(classIDs):

text = "{}".format(self.LABELS[num])

lbl.append(text)

return lbl

# [CHAPTE](https://1.bp.blogspot.com/-dODuK8N5h1Q/Wlnyb3V9HFI/AAAAAAAACL4/WxQtCJ1pM5wccDABg4wIrTBUB0vlikXQQCLcBGAs/s1600/poly1.jpg)R 8 SNAPSHOTS

* 1. **SNAPSHOTS**

****

Landing Page - Object Detection.

****

Face Recognition Page.



Page to START the system after it is stopped.



Implementation flow

# [CHAPTE](https://1.bp.blogspot.com/-dODuK8N5h1Q/Wlnyb3V9HFI/AAAAAAAACL4/WxQtCJ1pM5wccDABg4wIrTBUB0vlikXQQCLcBGAs/s1600/poly1.jpg)R 9 CONCLUTION

* 1. **CONCLUTION**

The package was designed in such a way that future modifications can be done easily. The following conclusions can be deduced from the development of the project:

* Automation of the entire system improves the efficiency
* It provides a friendly graphical user interface which proves to be better when compared to the existing system.
* It gives appropriate access to the authorized users depending on their permissions.
* It effectively overcomes the delay in communications.
* Updating of information becomes so easier
* System security, data security and reliability are the striking features.
* The System has adequate scope for modification in future if it is necessary.

# REFERENCE

It has been a matter of immense pleasure , honour and challenge to have this opportunity to take up this project and complete it successfully. We have obtained information from various resources to design and implement our project. We have acquired most of the knowledge from the Internet.

The following are some of the resources:

1. Google and YoutTube Tutorials
2. [www.w3schools.com](http://www.w3schools.com)
3. [www.devdocs.io](http://www.devdocs.io)