# IMAGE PROCESSING OVER CLOUD

**A PROJECT REPORT**

*Submitted by*

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**APPENDIX 2**

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## BONAFIDE CERTIFICATE

Certified that this project report **"IMAGE PROCESSING OVER CLOUD"** is the bonafide work of "**VANCHEESWARAN VAIDIYANATHAN, VIJAY LOGESH T S, SARAVANAN A, SURIYA NARAYANAN A"** who carried out the project work under my supervision.


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# ABSTRACT

The ultimate aim in a large number of image processing applications is to extract important features from image data, from which a description, interpretation, or understanding of the scene can be provided by the machine. The availability of sophisticated semi-conductor digital devices and compact powerful computers, play an important role in advancements in image processing algorithms.

Digital Image Processing Domain may be the old but the techniques and algorithms which are generating day by day are the trends of next generation real time applications. It has a wide scope in the field of research. When this domain is combined, implemented and operated over the cloud it becomes a very intriguing intersection.

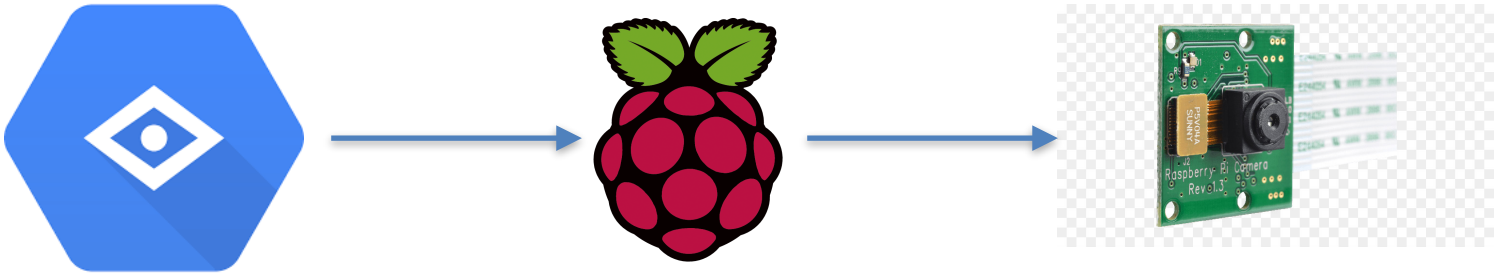
We also have an idea of using ML and DL algorithms in the cloud to make it more customisable in future.

We believe that image processing over cloud's going to change the future.

# OBJECTIVE

We plan to capture the image using the camera module connected to Raspberry Pi and use Google Vision REST and RPC API. This is then used to perform image processing. We intend to perform emotion detection and logo detection in this project.

# BLOCK DIAGRAM



# COMPONENTS REQUIRED

1.HARDWARE:

- Raspberry Pi 3b+
- Camera Module

2.Software:

- Google Cloud Platform
- Google Vision
- Idle or any other python compiler
- Raspbian OS
- Libraries:
  - Picamera
  - PIL
  - OS
  - Google.cloud

# DESCRIPTION

In this project, as mentioned before we intend to do image processing over cloud for image recognition and emotion detection. In this section, we try to explain the process behind it

1.Image Recognition:

Image recognition can be done through Raspberry pi python algorithm. It detects the object or image which is kept in front of the camera by comparing the image with the user fed image in cloud and it returns the object or image name.

2.Emotion Detection:

Emotion Detection can be done through the same algorithm. It detects the facial expressions of the object in the image or a real time image of a person or an object and returns the faces in the output screen with included parameters.

# APPLICATIONS

Our project can be used to develop image processing algorithm over the cloud.This method has high accuracy, easy to perform and requires less complexity in hardware level implementation. All these thing make to attractive for applications like wide area surveillance.

# OUTCOME OF THE PROJECT

1. Through this project we learnt how cloud plays a major role in digital image processing for emotion detection and image recognition.
2. We also get to know about the cloud computing and its features and how to apply it in real life.
3. We plan on making some advancement to this project by using Machine Learning and Deep learning Algorithms to make this project more effective and attractive.

# APPENDIX B

```
import picamera
import os
from PIL import Image, ImageDraw

from google.cloud import vision
client = vision.ImageAnnotatorClient()
image_name = 'image.jpg'

def takephoto():
    camera = picamera.PiCamera()
    camera.capture(image_name)

def draw_face_rectangle(image_in, rect_in):
    im = Image.open(image_in)
    f,e = os.path.splitext(image_in)
    image_out = f + "_out_boundrectangle" + e
    print("image out is named: "+ image_out)

    draw = ImageDraw.ImageDraw(im)
    draw.rectangle(rect_in)
    im.save(image_out)

def main():
    takephoto() # First take a picture
    """Run a label request on a single image"""

    with open(image_name, 'rb') as image_file:
        content = image_file.read()

    image = vision.types.Image(content=content)
    response = client.face_detection(image=image)
    faces = response.face_annotations
    print(faces)

    # Names of likelihood from google.cloud.vision.enums
    likelihood_name = ('UNKNOWN', 'VERY_UNLIKELY', 'UNLIKELY', 'POSSIBLE',
                       'LIKELY', 'VERY_LIKELY')
    print('Faces:')

    for face in faces:
        print('anger: {}'.format(likelihood_name[face.anger_likelihood]))
        print('joy: {}'.format(likelihood_name[face.joy_likelihood]))
        print('surprise: {}'.format(likelihood_name[face.surprise_likelihood]))

        vertices = ['({},{})'.format(vertex.x, vertex.y)
```

```
                for vertex in face.bounding_poly.vertices])

        rectangle = []

rectangle.append((face.bounding_poly.vertices[0].x,face.bounding_poly.vertices[0].y
))

rectangle.append((face.bounding_poly.vertices[2].x,face.bounding_poly.vertices[2].y
))
        print('face bounds: {}'.format(','.join(vertices)))

        draw_face_rectangle(image_name, rectangle)



if __name__ == '__main__':

    main()
```

# REFERENCES AND LITERATURE SURVEY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