

1.INTRODUCTION:

Humans are able to recognize body and sign language easily. This is possible due to the combination of vision and synaptic interactions that were formed along brain development . In order to replicate this skill in computers, some problems need to be solved: how to separate objects of interest in images and which image capture technology and classification technique are more appropriate, among others.

In this project Gesture based Desktop automation ,First the model is trained pre trained on the images of different hand gestures, such as a showing numbers with fingers as 1 ,2,3,4 . This model uses the integrated webcam to capture the video frame. The image of the gesture captured in the video frame is compared with the Pre-trained model and the gesture is identified. If the gesture predicts is 1 then images is blurred;2, image is resized;3,image is rotated etc

Overview:

1. Defining our classification categories
2. Collect training images
3. Train the model
4. Test our mode

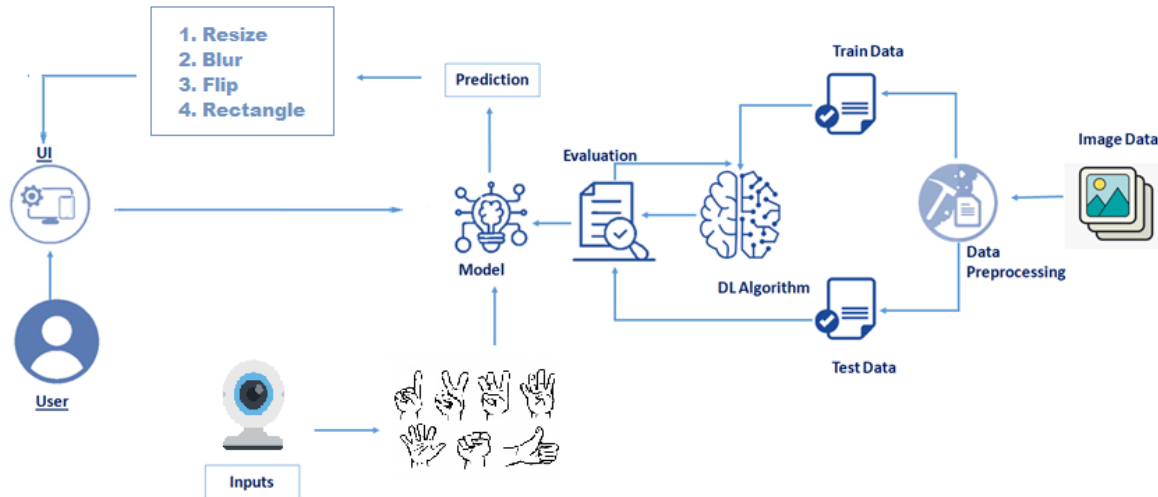
2.LITERATURE SURVEY:

To complete this project, you must require following software's , concepts and packages

- **Anaconda navigator:**
 - Refer to the link below to download anaconda navigator
- **Python packages:**
 - open anaconda prompt as administrator
 - Type "pip install tensorflow" (make sure you are working on python 64 bit)
 - Type "pip install opencv-python"
 - Type "pip install flask".

3.THEORITICAL ANALYSIS:

BLOCK DIAGRAM:



4.EXPERIMENTAL INVESTIGATIONS:

CNN: a convolutional neural network is a class of deep neural networks, most commonly applied to analyzing visual imagery.

Opencv – It is an Open Source Computer Vision Library which are mainly used for image processing, video capture and analysis including features like face detection and object detection.

Flask: Flask is a popular Python web framework, meaning it is a third-party Python library used for developing web applications.

5.FLOWCHART:

Project Flow:

- User interacts with the UI (User Interface) to upload the image as input
- Depending on the different gesture inputs different operations are applied to the input image.
- Once model analyses the gesture, the prediction with operation applied on image is showcased on the UI.

To accomplish this, we have to complete all the activities and tasks listed below

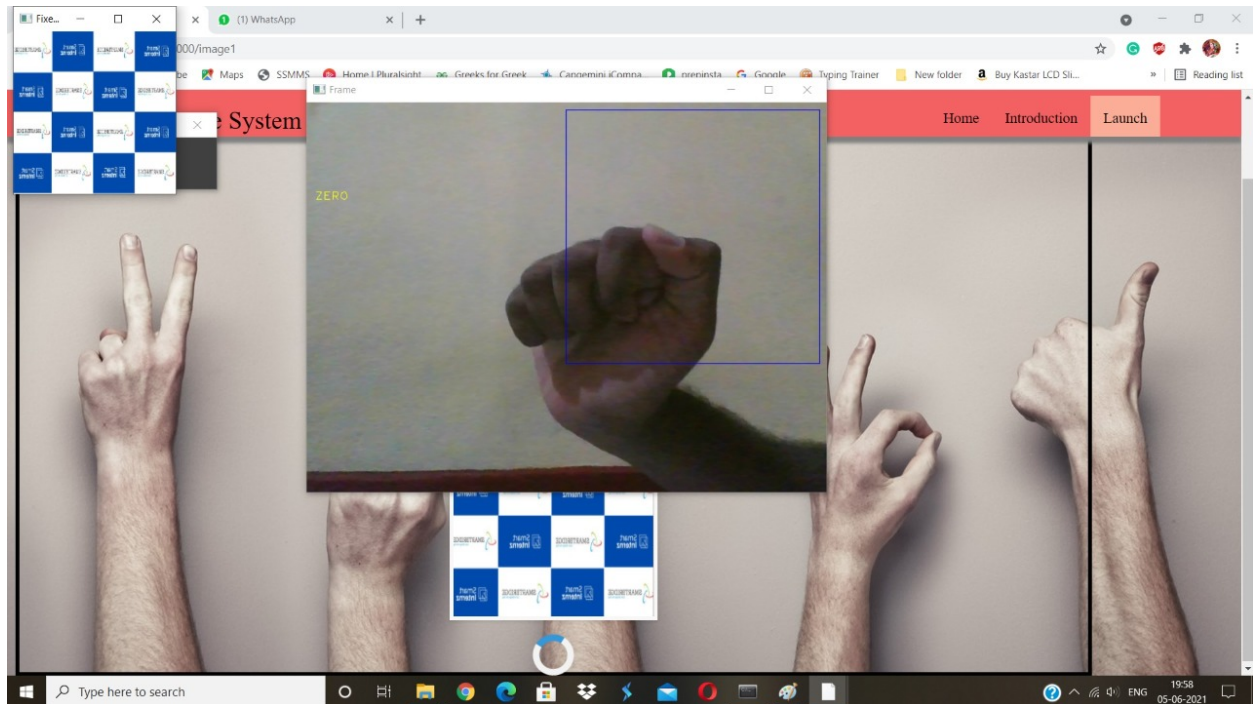
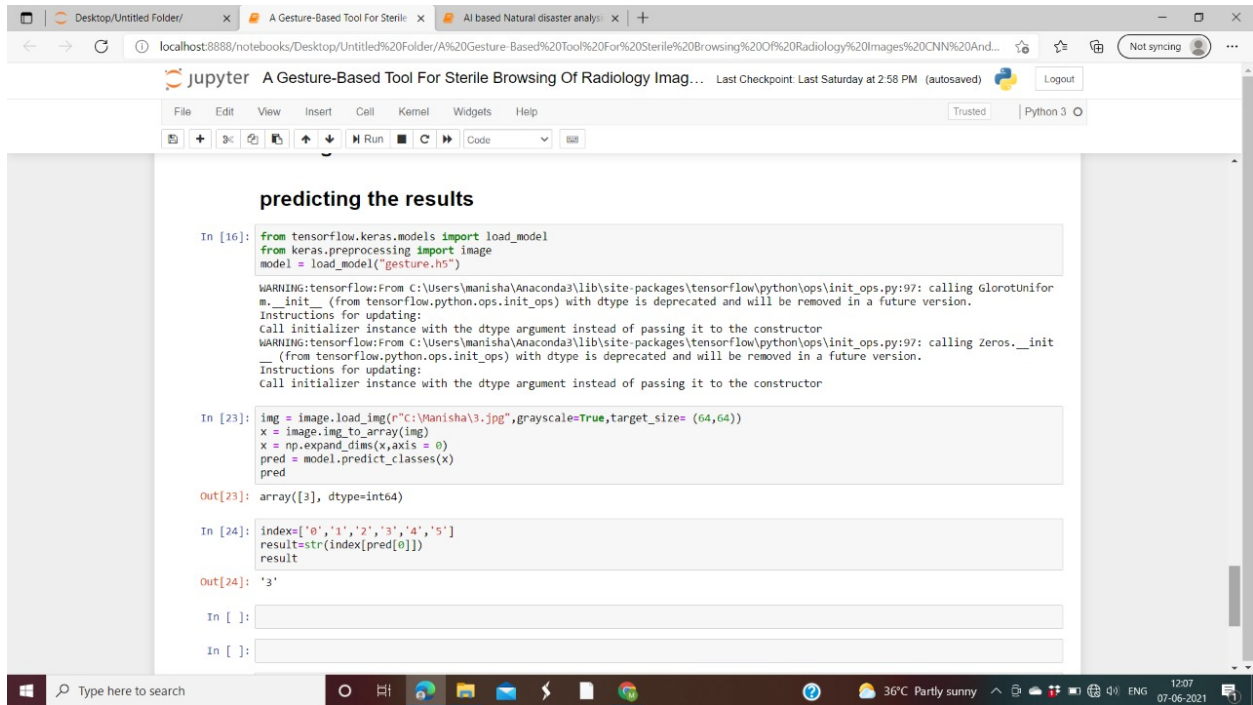
- Data Collection.

- Collect the dataset or Create the dataset
- Data Preprocessing.
- Import the ImageDataGenerator library
- Configure ImageDataGenerator class
- Apply ImageDataGenerator functionality to Trainset and Testset
- Model Building
 - Import the model building Libraries
 - Initializing the model
 - Adding Input Layer
 - Adding Hidden Layer
 - Adding Output Layer
 - Configure the Learning Process
 - Training and testing the model
 - Save the Model
- Application Building
 - Create an HTML file
 - Build Python Code

6.RESULT:

This project aims at developing a system which is a sterile gesture interface for users, such as doctors/surgeons, to browse medical images in a dynamic medical environment.

A vision-based gesture capture system interprets user's gestures in realtime to navigate through and manipulate an image and data visualization environment. Developed a deep learning model using CNN implemented in Keras backend Tensorflow and OpenCV which can recognize various gestures.



THREE

Environment: production
WARNING: This is a development server. Do not use it in a production deployment.
Use a production WSGI server instead.
* Debug mode: off
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
127.0.0.1 - - [05/Jun/2021 19:33:47] "GET /image1 HTTP/1.1" 200 -
inside image
uploads\WhatsApp_Image_2021-01-22_at_14.46.20_PM.jpeg
2021-06-05 19:34:32.633847: I tensorflow/compiler/mlir/mlir_graph_optimization_pass.cc:176] None of the MLIR Optimization
Passes are enabled (registered 2)

Capgemini Compa... prepinsta Google Typing Trainer New folder Buy Kastar LCD Sil... Reading list

Home Introduction Launch

IBM Watson Studio

Projects / image_classification / A Gesture-Based Tool For Sterile ...

```
In [72]: # Your data file was loaded into a botocore.response.StreamingBody object.
# Please read the documentation of ibm_boto3 and pandas to learn more about the possibilities to load the data.
# ibm_boto3 documentation: https://ibm.github.io/ibm-cos-sdk-python/
# pandas documentation: http://pandas.pydata.org/
streaming_body_5 = clientEb2dae481adf49ca5f03bb90f8820a.get_object(Bucket='imageclassification-donotdelete-pr-vxhuesmahlwxd
z', Key='5.png')['Body']
# add missing __iter__ method so pandas accepts body as file-like object
if not hasattr(streaming_body_5, '__iter__'): streaming_body_5.__iter__ = types.MethodType(__iter__, streaming_body_5)

In [73]: img = image.load_img(streaming_body_5, target_size = (64, 64))

In [74]: import numpy as np
x = image.img_to_array(img)
x = np.expand_dims(x, axis = 0)

predicting

In [75]: pred = classifier.predict_classes(x)

In [76]: pred[0]

Out[76]: 5

In [77]: index = ['0', '1', '2', '3', '4', '5']

In [78]: a = index[pred[0]]
print(a)

5

In [ ]:

In [ ]:
```

Type here to search

33°C Partly sunny

ENG 15:44 08-06-2021

7.ADVANTAGES & DISADVANTAGES:

Advantages:

- Very High accuracy in image recognition problems.
- Automatically detects the important features without any human supervision.
- Weight sharing.

Disadvantages:

- CNN do not encode the position and orientation of object.
- Lack of ability to be spatially invariant to the input data.
- Lots of training data is required.

8.APPLICATIONS:

- * Decoding Facial Recognition
- * Analyzing Documents
- * Historic and Environmental Collections
- * Understanding Climate
- * Grey Areas
- * Advertising
- * Other Interesting Fields

9.CONCLUSION:

- know fundamental concepts and techniques of Convolutional Neural Network.
- gain a broad understanding of image data.
- Know how to pre-process/clean the data using different data preprocessing techniques.
- know how to build a web application using Flask framework.

10.FUTURE SCOPE:

neural nets also have the power of flexibility. Once established, they can be applied to almost anything, whether it's helping people spot the issues [interfering with their productivity](#) or improving air traffic patterns for smoother flights. The core functionality of a neural net is to learn something efficiently, so if you have a system that can learn to recognize patterns, it could feasibly recognize patterns in almost any domain.

11.BIBILOGRAPHY:

We use References of previous works in websits.

<https://www.google.com/search?q=A+Gesture-Based+Tool+For+Sterile+Browsing+Of+Radiology+Images+CNN+And+Open+CV&oq=A+Gesture-Based+Tool+For+Sterile+Browsing+Of+Radiology+Images+CNN+And+Open+CV&aqs=chrome.69i59j69i64.1241j0j7&sourceid=chrome&ie=UTF-8>

We used saw some Reference videos in You Tube.

https://www.youtube.com/watch?v=4y_zD-0Q3F8&t=1s

<https://www.youtube.com/watch?v=BzouqMGJ41k&t=1854s>