GESTURE BASED TOOL FOR STERILE BROWSING OF RADIOLOGY IMAGES:

PROPOSED SYSTEM:

This paper presents "Gestix," a vision-based hand gesture capture and recognition system that interprets in real-time the user's gestures for navigation and manipulation of images in an database. Navigation and other gestures are translated to commands based on their temporal trajectories, through video capture. "Gestix" was tested during a brain biopsy procedure. In the in vivo experiment, this interface prevented the surgeon's focus shift and change of location while achieving a rapid intuitive reaction and easy interaction. Data from two usability tests provide insights and implications regarding human-computer interaction based on nonverbal conversational modalities.

This paper presents a method to improve the navigation and manipulation of radiological images through a sterile hand gesture recognition interface based on intentional contextual cues. Computer vision algorithms were developed to extract intention and attention cues from the surgeon's behavior and combine them with sensory data from a commodity depth camera. The developed interface was tested in a usability experiment to assess the effectiveness of the new interface. An image navigation and manipulation task was performed, and the gesture recognition accuracy, false positives and task completion times were computed to evaluate system performance. Experimental results show that gesture interaction and surgeon behaviour analysis can be used to accurately navigate, manipulate and access MRI images, and therefore this modality could replace the use of keyboard and mice-based interfaces

PROJECT FLOW:

First we get an image from the user as an input. From the image the hand image is detected. The detected image is stored in the trained database. Then the image is pre-processed through neural network and the gesture is recognized. Then the result is taken from the

● 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 Pre processing

○ 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 Following software, concepts and packages are used in this project

● 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”

DEEP LEARNING CONCEPTS :

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