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Automated Gesture Controlled Presentation Using Machine Learning

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Abstract: ***Now-a-days presentations have a significant role in different fields of life. Whether you are a student, an entrepreneur, businessman, or a corporate worker, you must have had given presentations at some point in your life. PowerPoint presentations sometimes become less lively because either you have to use the keyboard to change and operate the slides or use a dedicated gadget to perform these tasks. We aimed to enable people to control the slideshow with the gestures of hands. The applications of gestures in human-computer interaction have massively risen in the past few years. The research has tried to control different operations of the PowerPoint slideshow through gestures. This research has used Machine Learning to detect gestures with subtle differences and tried to map them with some fundamental PowerPoint slideshow controlling functions using Python. This project make the work of the presenter quite easy.***

Keywords: OpenCV, Mediapipe, Machine Learning, Presentation Slides.

I. INTRODUCTION

Presentation is a source of communication between a speaker and an audience. PowerPoint is popular software that improves your presentation skills, by providing a visual illustration of your content. It allows presenting text, diagrams, audios, videos, statistical graphs, animations, etc.

In the running world, gesture recognition plays a major role in the interaction between humans and computers. To facilitate simple yet user-friendly communication between humans and computers hand Gestures can be used which enable us humans to interact with machines without having to use devices like keyboards, laser pens, mouse etc.

The computer is more important in our daily with the development of technology. Computer applications require interaction between human and computer. Gesture includes physical moments of the fingers, hands, arms, head, face or other parts of the body. The new generation laptops contain built in webcam, touch screen mobile phones with front camera has increased the use of applications working on gestures. The flow of hand gesture recognition goes as follows.

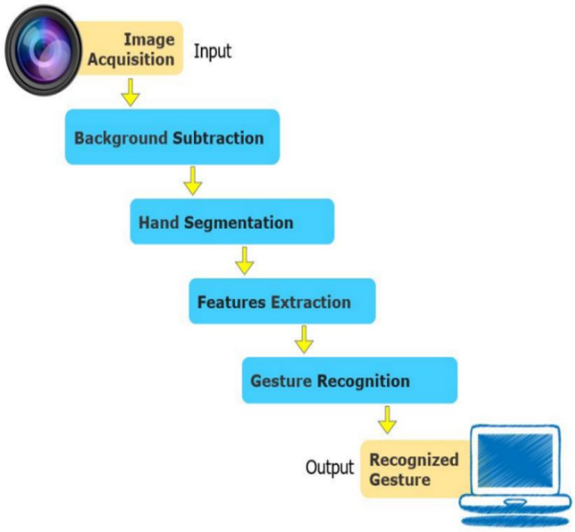


Figure.1.1 Real time gesture recognition system

However, a hand gesture recognition system has been proposed that will control PowerPoint slides without any disturbance during the presentation.

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II. LITERATURE SURVEY

Several experiments have been carried out over the years by different groups of researchers. Here are some of the following groups:

1) Rajeshwari Kumar Dewangan, H. Jabnoun, A. Jaiswal has proposed Hand Gesture Recognition. It used of various algorithms and methods such as tracing significant points in the images and distance calculation between points. Specifically, the system can track the tip positions of the counters and index finger for each hand. It is an efficient and simple way to handle sound devices without much manual work. It does not require any special markers or gloves and can operate in real-time on a commodity PC with low-cost cameras.

2) Muhammad Idrees, ashfag Ahmad, Mahammad Arif Butt, Hafiz Mahammad Danish has proposed Controlling PowerPoint Using Hand Gestures in Python. Their research focused on removing distraction of presenter by allowing the presenter to manage slides solely by gesturing in front of the camera. We managed to map specific gestures for one action on the slides, including the next slide, previous slide, zoom in and out.

3) S.B.Shrote Mandar Deshpande, Prashant Deshmukh, Sanjaykumar Mathapatihas proposed Hand Gestures Recognition System for Dump People using Image Processing. Journal by International Research Journal of Engineering and Technology (IRJET) in Sep 2021. These proposed system acts as a communication bridge between dumb and normal people. There are significant number of researches are already going on in this area to improve the accuracy of real time performance of these models. The proposed model has achieved the accuracy rate up to 95%.

III. PROPOSED SYSTEM

This system is based on gesture recognition method proposed for interactive projection systems. There have been the increasing demands for a more active and interesting viewing experience, and interactive projection technology.

Our proposed model uses the mediapipe (python library) to detect the gestures. The mediapipe detect the 21 landmarks of the palm. Gesture recognition is a technique which is used to understand and analyze the human body language and interact with the user accordingly. This in turn helps in building a bridge between the machine and the user to communicate with each other.

In this model we assigned five gestures to perform five different action.

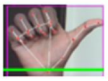
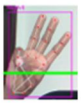
Gesture	Action
	Used to Forward the slide in the presentation
	Used to Backward the slide in the presentation
	To move the Pointer on the Slide
	To Draw on the slides
	To Delete the Drawn thing on the Slides

Figure 3.1: Gestures used in proposed model

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IV. RESULT

We can upload the presentation slides into the model and perform the Gestures to work with this project.
As a result the camera opens in laptop to capture the hand gestures as shown.

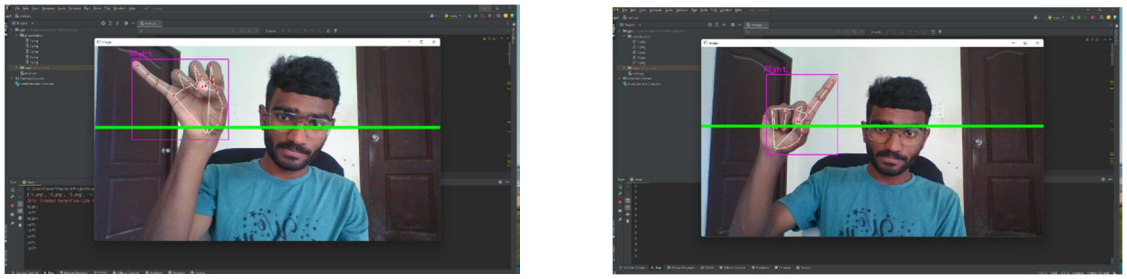


Figure.4.1 Camera captures the hand gestures

The various actions are done with respective to the performed gestures



Figure.4.2 Slide changing



Figure.4.3 Showing pointer on slides



Figure.4.4 Drawing on the slide

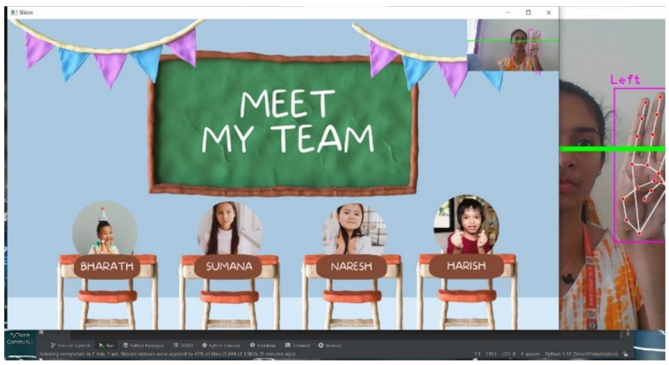


Figure.4.5 Erasing the drawing

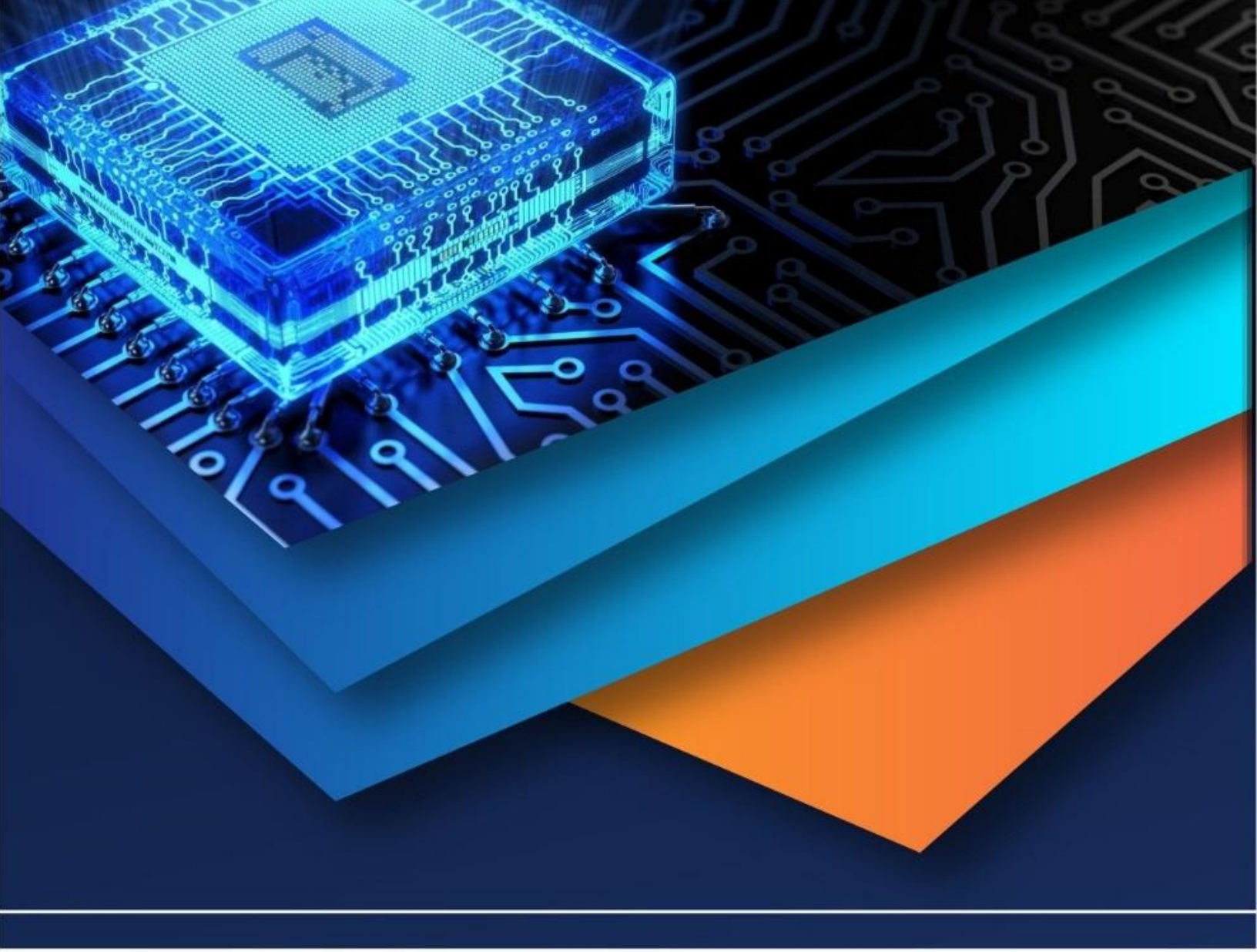
V. CONCLUSION

This project showcases a program that enables hand gestures as a practical and simple method of software control. A gesture-based presentation controller doesn't need any special markers, and it can be used in real life on basic PCs with inexpensive cameras since it doesn't need particularly high quality cameras to recognise or record the hand movements. The method keeps track of the locations of each hand's index finger and counter tips. This kind of system's primary goal is to essentially automate system components so that they are easy to control. As a result, we have employed this method to make the system simpler to control with the aid of these applications in order to make it realistic. By this project the presenter can easy control his presentation without any additional device.

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