Automated Gesture Controlled Presentation

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Abstract- **The objective of this research paper is to construct a presentation controller which uses hand gestures as the system's input to control presentation. The OpenCV module is mostly utilized in this implementation to control the gestures. This system primarily employs a web camera to record or capture photos and videos, it allows real time recognition of hand gestures captured from webcam and translates them into actionable commands. This project is very helpful in a situation where the users cannot use any kinds of input devices or touch them, With the help of gesture recognition one can easily a specific action needed without physically access the input methods for example mouse, keypad etc. 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.**

Keywords: Open CV, Hand Gesture Recognition, Human Computer Interaction, Machine learning, Artificial Intelligence, Presentation Slides

I. INTRODUCTION

In today's tech-savvy era, where automation and seamless interaction are paramount, innovative solutions like hand gesture control have gained prominence. Imagine controlling your presentation slides without the need for traditional input devices like keyboards or mice. Instead, you can use your hands and gestures to navigate through your slides effortlessly.

The research has gravitated toward new sort of Human-Computer-Interaction (HCI) known as gesture-based control. Recognizing hand movements using Human-Computer-Interaction (HCI) might aid in achieving the necessary ease and naturalness. Employing hand gesture as a tool and integrating them with computers might enable more intuitive communication between individuals. To simplify things for everybody and to create Artificial Intelligence (AI) based apps, various frameworks or libraries have been developed for hand gesture detection. Media pipe is one of them. The system was constructed mainly using Python framework along with technologies like Open CV, CV Zone, NumPy, and MediaPipe. This method seeks to enhance efficiency and utility of presentations. Additionally, the system employs movements to write, undo, and position the pointer on different text regions. To enhance the slideshow experience, we aimed to make it possible for users to control it with hand gestures.

The aim of developing this project was to simplify presentations and finding the best methodology to create a low-cost gesture detection system to control the PowerPoint application.

II. MODELING AND ANALYSIS OF SYSTEM

Our project code is written in python language utilizing the NumPy and OpenCV packages. In this

work, the libraries used are initially installed for further input and output. The installed libraries include Media Pipe, Tensor Flow, Open CV, NumPy etc. that are used for capturing and detecting image.

When we start the project, the webcam activates and capture the hand gestures. Then, we try to detect and recognize the gestures. These gestures are then compared with the hand gestures data in the database by the system. After this, the system can give accurate result based on the learning.
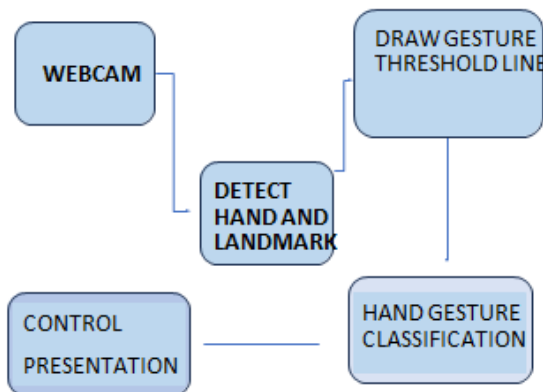
III. METHODOLOGY

Our project code is written in python language utilizing the NumPy and Open CV packages. In this work, the libraries used are installed initially for further input and output. The installed libraries are Media Pipe, Tensor Flow, Open CV, Num Py etc., which are used for capturing and detecting images.

Open CV
It is a huge open source library for computer vision, machine learning and image recognition. Open CV supports a variety of languages like Python, C++, Java etc. It is used for face recognition, hand gestures, images and video processing, and even for human handwriting recognition. When it is used with NumPy library in Python, it becomes more powerful weapon.

Tensor Flow
Tensor Flow is machine learning library used to build and train machine learning models. We have used Tensor Flow for hand gesture recognition to achieve better results. It has the ability to offer solutions for object recognition using images and can be used for training models for recognition.

Media Pipe
Media Pipe is a Python package used for building complex ML models. It basically acts as a mediator for handling the implementation of models for systems running on the platform which eases the work for developers. It can be used for multi-hand tracking, facial recognition, object detection and many more. Media Pipe is a single end-to-end solution for all these types of

IV. RESULT

Figure 1: To get a pointer on the slide

Figure 2: Changing the slide

Figure 3: Draw using the pointer

V. CONCLUSION

The conclusion for the project 'Hand Gesture Controlled Presentation' could be that it was successful and innovative way to interact with presentations. It allowed for a more engaging and intuitive experience for the audience.

The project showed us how powerful and exciting it can be to use our hands to control technology. It opens up a whole new world of possibilities for how we can interact with computers and other devices. Overall, it was a great project that showcased the power of Human-Computer Interaction.

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