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Computer Vision to Control Documents

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Abstract - Computer vision, or the ability of artificially intelligent systems to "see" like humans, has been a subject of increasing interest and rigorous research for decades now. As a way of emulating the human visual system, the research in the field of computer vision purports to develop machines that can automate tasks that require visual cognition. Computer Vision, often abbreviated as CV, is a field of study that seeks to develop techniques to help computers "see" and understand the content of digital images such as photographs and videos. With the help of computer vision, we are going to develop a system which recognizes colors and helps us to scroll through documents, pdf, etc. With similarly astounding feats by AI with computer vision technology becoming increasingly common in different industries, the future of computer vision appears to be full of promise and unimaginable outcomes.

Keywords- Computer vision, AI etc.

I. INTRODUCTION

In this fast-moving generation, the present study proposes the newer concept of computer vision that scroll the screen by detection of a particular color. We need to develop a program with particular packages which has the ability to detect the object by the selected particular color. After detecting the object, the screen wil start scrolling by the movements shown by the user. The most famous and common gadget developed by Doug Engelbart is the "wired mouse" which helps the end user to communicate end user computer/laptop with motion and action on the screen.

Computer Vision to Control Documents project is mainly based on detecting coloured object and motion tracking. By coding step by step, we will train our system to detect the object clearly. After that, we are going to specify the configuration and the correct code to the desired colour to the system. Next, we will set up the web cam (height, width). The system should be able to detect any object of the colour we have entered in our code. The system will be able to detect the object; when the object is detected the system starts scrolling immediately.

This will help in faster accessing of the study material like documents. There will be no need to find the cursor position or the actual mouse, the object will do it immediately. Same kind of application but a developed version of it was created by John Markoff & Sol Sherr is the "Wireless mouse" which uses radio frequency. But these applications mostly work with either wire or receiver. But our Proposed System has capability to work without wire or receiver. In Computer Vision to control documents we have used colored object to perform action of scrolling the documents. This method mainly focuses on the use of a Web Camera to develop a virtual human computer interaction device in
a cost-effective manner.

II.METHODOLOGIES

In this project we build such a system that can scroll the document/pdf without touching their system. This became possible only due to computer vision. Process to train the camera by making changes at specific steps in program code for clear detection of object:

- When in the initial step the object is shown, it is detected by the system but there are black dots that appear on the screen which makes the object blur and not accessible.
- During the second step the object is still detected but this time there are no black dots on the screen but the object is not completely clear.
- On the third step the object is detected and there is a square that borders the object as we make the movements. This time the object is clear.
- On the fourth step the object is detected and there are no borders for the object, the object appears crystal clear.

Process after training the system for clearly detecting the object:

- We will essentially have a colored object in our hand. The video of the motion of our palm has been captured by the web-camera which acts as a sensor.
- The colored objects are tracked and using their motion, the scrolling of the mouse is controlled. In order for it to work, we will simply show the within the viewing area of the camera.
- The colored objects should be placed in
the Region of Interest(ROI).

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- The video generated by the camera is detected and analyzed using image processing and the computer cursor moves or displays its events according to color movements.
- The object is detected and appears crystal clear. Mouse handling activities are by PyAutoGUI which is the python GUI module.

III. FUTURE SCOPE

Computer vision is a field of artificial intelligence (AI). If AI enables computers to think, computer vision enables them to see,observe and understand. Computer vision works much the same as human vision.The proposed system architecture will completely change the way people would use the computer system. This is all because of the magic that the computer vision provides us with and we are only beginning to understand how they will be integrated into all of our activities in the years to come. This project eliminated the need for a mouse or any physical device for cursor control. The use of object detection and pyautogui for the implementation of our proposed work proved to be successful and it has achieved with the high precision accuracy.

This also led to better humans -computer interaction(HCL). Report after report is predicting computer mvision will soar and that means the technologies behind these devices are shaping the internet of skills. We are talking about the next generation of tools to spark growth in retail, logistics, healthcare, smart cities, manufacturing, and autonomous vehicles, among many others. Computer vision is used in industries ranging from energy and utilities to manufacturing and automotive – and the market is continuing to grow. It is expected to reach usd 48.6 billion by 2022.

IV.CONCLUSION

This paper surveys that this system has the capability to challenge traditional method for scrolling the document. This project will be an excellent example for people to interact wit digital world. This paper surveys a visual basedpointing method which allows users to scroll the document without touching mouse or any other physical device using camera. Thism project makes the user to have an interactive environment with digital world. This work can further improved by including voice like siri, alexa. It can be a unique feature that resemble real creativity software.

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