

Hand Gestures Recognition For Virtual Mouse And Keyboard :A Novel Human- Computer Interaction Approach

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Abstract: *Today's computer vision technology is so good that a machine can recognize its owner by using a simple picture-processing programme.. People use this vision in many parts of daily life in the current technological age, including face recognition, color detection, autonomous vehicles, etc. The One of the marvels of Human-Computer Interaction (HCI) technology is the mouse. Since a wireless mouse or Bluetooth mouse still need a battery for power and a dongle to connect it to the PC, they are not entirely device-free at this time. This study suggests an interactive computer system that converts handmotions into a virtual keyboard and mouse using computer vision. To carry out the task, we can use an internal camera or an external camera. To operate the mouse and keyboard, we can use a built-in camera or an external camera. The computer's camera will scan the image of various hand gestures made by a person, and in accordance with the motions, the mouse pointer will move and even carry out various functions using various gestures. Other motions can also be used to access the keyboard's features. It will work as a virtual mouse and keyboard in the absence of any wiring or other hardware. The project's webcam is the only piece of hardware, and Python is used for all development on the PyCharm platform. Modern machine learning and computer vision techniques are used in this research to recognize hand gestures, and they operate without the need for any additional hardware.*

Keywords: Machine Learning, MediaPipe, Mouse, OpenCV.

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