

Gesture Virtual Mouse and Voice Assistant using Machine Learning

Prof. Saranya Raj¹, Aman Nautiyal², Pratham Sharma³, Nishant Sharma⁴
^{1,2,3,4}Computer Science and Engineering

Dronacharya Group of Institutions, Greater Noida, India.

Abstract: *By controlling cursor movement with a real-time camera and microphone, this project advances the Human Computer Interaction (HCI) paradigm in the field of computer science. The hand movement and speech is the most effortless and primitive way of communication. It's a replacement for the present ways, which entail manually moving a physical computer mouse or pressing buttons. Instead, the system controls and performs numerous mouse activities using a camera for computer vision technology and a microphone for speech recognition and processing. It can perform all functions that a physical mouse can. The Virtual Mouse continuously gathers real-time visuals and voice commands, which are then filtered and converted in a number of steps. When the procedure is completed, the programme uses image processing and natural language processing to extract the valid command needed to complete the task. Specially abled people with hand problems can use this virtual mouse to control the computer's mouse functionalities.*

Keywords: *Virtual Mouse , Voice Assistant , OpenCV , MediaPipe , Python*

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