Aditya College of Engineering & Technology

Aditya Nagar, ADB Road, Surampalem - 533437

DEPARTMENT OF INFORMATION TECHNOLOGY

B. Tech 4/4, II-SEMESTER

II Semester 2021-22

VIRTUAL MOUSE AND VOLUME CONTROL USING MEDIAPIPE FRAMEWORK

ABSTRACT

The development technologies in the areas of augmented reality and devices that we use in our daily life, these devices are becoming compact in the form of Bluetooth or wireless technologies. This project makes use of the hand gestures and hand tip detection for performing mouse functions and volume controls in the computer using computer vision. The main objective is to perform computer mouse cursor functions and scroll, volume function using a web camera or a built-in camera in the computer. Hand gesture and hand tip detection by using computer vision is used as a HCI with the computer. We can track the fingertip of the hand gesture by using a built-in camera or web camera and perform the mouse cursor operations and scrolling function and also move the cursor with it. While using a wireless or a Bluetooth mouse, some devices such as the mouse, the dongle to connect to the PC, and also, a battery to power the mouse to operate are used, but in this paper, the user uses his/her built-in camera or a webcam and uses his/her hand gestures to control the computer mouse operations and volume controls. The web camera captures and then processes the frames that have been captured and then recognizes the various hand gestures and hand tip gestures and then performs the particular mouse function. Python programming language is used for developing the project. Python is designed to be highly readable. It uses English keywords frequently where as other languages use punctuation, and it has fewer syntactical constructions than other languages and also, opencv which is the library for computer vision is used. The project makes use of the mediapipe package for the tracking of the hands and for tracking of the tip of the hands, and also, pynput, autopy, and pyautogui packages were used for moving around the window screen of the computer for performing functions such as left click, right click, and scrolling functions and volume controls.

Course Outcomes (COs)

Course Outcomes
After completing this course, the student will be able to:

CO Number	CO Statement	Taxonomy
CO1	Demonstrate the technical knowledge to identify problems in the field of Information Technology and its allied areas.	Understand
CO2	Use literature to identify the objective, scope and the concept of the work.	Apply
CO3	Analyze and formulate technical projects with a comprehensive and systematic approach.	Analyse
CO4	Identify the modern tools to implement technical projects.	Evaluate
CO5	Design engineering solutions for solving complex engineering problems.	Create
CO6	Develop effective communication skills, professional behaviour and team work.	Understand

CO-PO/PSO MATRIX:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	1	2					3	2	2	2	3	2	
CO2	2	1	2	2	1				3	2	2	2	3	3	1
CO3	1	1	3	3	1				3	2	2	2	3	2	1
CO4	3	1	3	2	3				3	2	2	2	2	3	2
CO5	3	2	3	3	3				3	2	3	2	2	1	1
CO6	1	1	1	2	1				2	3	2	2	1	1	2
Course	2.2	1.3	2.2	2.3	1.5				2.8	2.2	2.2	2.0	2.3	2.0	1.2

PO1	Engineering Knowledge	PO7	Environment & Sustainability
PO2	Problem Analysis	PO8	Ethics
PO3	Design / Development of Solutions	PO9	Individual & Team Work
PO4	Conduct Investigations of complex problems	PO10	Communication Skills
PO5	Modern Tool usage	PO11	Project Management & Finance
PO6	Engineer & Society	PO12	Life-long Learning