

AirMouse and AirWrite Intuitive Digital Interaction

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Abstract: *The primary purpose of this project is to redefine the way people will interact with their systems more easily, and this will be achieved by eliminating the touchpads and keyboards to connect to the computer. This cutting-edge system eliminates the need for a regular mouse or a keyboard, allowing for easier device user-interface adaptation. The implementation of the latest gesture recognition technology lets the system not only pick up and decipher the movements of users' hands but also translate them into wider operations that are similar to those of a mouse and keyboard.*

Central to the design of the metaphoric system is the "virtual mouse," which enables the cursor movement and the performance of various mouse buttons without touching anything physically. So, it is a virtual mouse with an on-the-screen cursor that reacts to hand gestures in real-time. The system utilizes certain hand gestures enough to enable the effortless execution of actions commonly associated with a traditional mouse including left-clicking, right-clicking, and dragging across the screen. The virtual mouse feature is enhanced by the air writing technique, commonly acknowledged as a milestone in input development. This capability precisely reads and decodes the movements developed in the space by the fingertips while conveying them to the screen as written words. The air writing system would predict the characters from the user's gestures, creating a fresh, secure, and user-friendly method that favors the option of air typing rather than relying on a physical keyboard.

This project brings innovation in human-computer interaction when implemented using powerful computer vision and machine learning techniques and promotes accessibility and usability of the system where the traditional inputs become inapplicable. On the other hand, its feasible justifications range from medical uses to pioneering in virtual reality, gaming, and education that drives brilliantly the new options in interaction across various fields.

Keywords: Residual Network, air writing recognition, hand tracking, computer vision

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