Hand Detection and Conversion Voice to Text for Paralyzed People

Sonawane Anushka Dipak[1], Wandekar Rutuja Tanhaji[2], Varade Shubham Rajendr[3],
Deshmukh Prachi Pravin[4], Prof. Rathod G. G[5]
Students, Department of Electronics &Telecommunication[1,2,3]
Assistant Professor, Department of Electronics & Telecommunication[4]
Amrutvahini Polytechnic, Sangamner, MH, India

Abstract: *This project focuses on developing a gesture recognition and voice conversion (HGRVC) system to aid paralyzed individuals in communication by converting their hand gestures into text and speech. Traditional assistive technologies like eye-tracking systems and brain-computer interfaces are often expensive, invasive, or require extensive training, making them less accessible. The proposed system leverages a webcam-based approach to capture hand movements, process them using gesture recognition algorithms, and translate them into speech and text in real time. This ensures an intuitive and efficient communication bridge between paralyzed individuals and others, reducing their dependence and enhancing their quality of life. The system is designed to be lightweight, shockproof, and free from thermal injuries, ensuring user safety and portability. By minimizing the number of sensors required, the complexity of the system is reduced, making it cost-effective and user-friendly. As technology continues to evolve, integrating artificial intelligence and computer vision into assistive systems can significantly improve accessibility for individuals with disabilities. This research aims to bridge the communication gap for paralyzed individuals by providing an affordable, efficient, and practical solution through gesture recognition and real-time speech conversion.*

Keywords: Gesture Recognition, Voice Conversion, Assistive Technology, Hand Detection, Paralyzed Communication.