IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 10, June 2025
Impact Factor: 7.67

Hand Gesture Based Communication for Military and Patient Application

Kakarla Teja Manoj Kumar[1], Meghashree R S[2], Sahana R[3], Varshitha S[4], S M Jaanaki[5]
[1,2,3,4]UG Scholars, Department of ECE
[5]Assistant Professor, Department of ECE
East Point College of Engineering and Technology, Bangalore

Abstract: *In critical environments such as military operations and healthcare settings, effective communication is paramount, especially when traditional methods become impractical or impossible. This paper presents a hand gesture based communication system designed to facilitate silent and intuitive interaction for military personnel and patients with limited mobility or speech impairments. Using computer vision and machine learning techniques, the proposed system accurately recognizes a set of predefined hand gestures in real-time, translating them into corresponding commands or messages. For military use, the system enables stealth communication in noise-sensitive or high-risk scenarios. In healthcare, it empowers patients—particularly those suffering from paralysis, neurological disorders, or temporary speech loss—to convey essential needs and emotions with simple hand gestures. The model was developed using a combination of image processing and neural network-based classification, ensuring high accuracy and responsiveness. The results demonstrate the feasibility and potential of gesture recognition as an assistive communication tool, contributing to enhanced safety, autonomy, and efficiency in both domains*

Keywords: Hand Gesture Recognition, Human Computer Interaction (HCI), Assistive Technology, Military Communication, Patient Assistance, Gesture Based Interface, Computer Vision, Machine Learning, Real-Time Recognition, Silent Communication, Healthcare Technology, Neural Networks, Image Processing, Smart Communication System

DOI: 10.48175/IJARSCT-28843