Abstract

This paper gives the efficient model of the process of detecting the object and analyzing the gesture of an object using the machine learning and computer vision for decision making after surveying various research in the field of pattern recognition. It is based on the objects behavioural activities, Gesture recognition is very essential for making a decision. This research paper deals with Human-Computer Interaction (HCI). The object is may be hand, face, vehicle etc. In our research work we will extract 3D information about the captured image and calculate the distance of an object from the camera, detect the object gesture further we perform edge detection and then apply vision based and data based object gesture recognition. The implementation of the methodology will be done on the MATLAB tool.

References

1. D. Wu, M. Tanaku, R. Chen, L. Olorenshaw, M. Amador and X Menendez-Pidal, A
ROBUST SPEECH DETECTION ALGORITHM FOR SPEECH ACTIVATED HANDS-FREE APPLICATIONS Spoken Language Technology, Sony US Research Laboratories 3300 Zanker Road, San Jose, CA 95134, USA.

2. Motoyuki Sato, Kazunori Takahashi, Jun Fujiwara, Hand held dual sensor ALIS and its evaluation test in Cambodia, Center for Northeast Asian Studies Tohoku University Sendai, Japan.

3. Oinam Robita Chanu1, Anushree Pillai2, Spandan Sinha3, Piyanka Das4, Comparative Study for Vision Based and Data Based Hand Gesture Recognition Technique, Department of Biomedical Engineering SRM University, Kattankulathur, Chennai, India, 2017 International Conference on Intelligent Communication and Computational Techniques (ICCT) Manipal University Jaipur, Dec 22-23, 2017.

4. Rytis Augustauskas, Arunas Lipnickas, Robust Hand Detection using Arm Segmentation from Depth Data and Static Palm Gesture Recognition, Kaunas University of Technology, Studentu 48, Kaunas 51367, Lithuania, The 9th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications 21-23 September, 2017, Bucharest, Romania.

5. M’onica F. Bugallo†, Helio Taka†, Michael Marx†, David Bynum and John Hover, Brook University, Stony Brook, NY 11794 Brookhaven National Laboratories, Upton, NY 11973.

6. Javier Burgues, Julian Fierrez, Daniel Ramos, Maria Puertas, Javier Ortega-Garcia, Detecting Invalid Samples in Hand Geometry Verification Through Geometric Measurements, Biometric Recognition Group - ATV, EPS - Univ. Autonoma de Madrid C/ Francisco Tomas y Valiente, 11 - Campus de Cantoblanco - 28049 Madrid, Spain {javier.burgues, julian.fierrez, daniel.ramos, maria.puertas.

7. M. Caris, W. Johannes, S. Sieger, V. Port, S. Stanko, Detection of Small UAS with W-band Radar, Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR Fraunhoferstr. 20, 53343 Wachtberg, GERMANY.

8. Mahesh CHANDRA Consumer Products Division STMicroelectronics Pvt. Ltd. Greater Noida, Uttar Pradesh, India, Brijesh LALL Electrical Engineering Department Indian Institute of Technology Delhi, India, A Novel Method for Low Power Hand Gesture Recognition in Smart Consumer Applications.

9. Ananya Choudhury Dept. of Electronics and Communication Engineering Gauhati University Guwahati-14, Assam, India, Anjan Kumar Talukdar Dept. of Electronics and Communication Engineering Gauhati University Guwahati-14, Assam, India, Kandarpa Kumar Sarma Dept. of Electronics and Communication Engineering Gauhati University Guwahati-14, Assam, India, A Novel Hand Segmentation Method for Multiple-Hand Gesture Recognition System under complex background.

10. Nasser H. Dardas and Nicolas D. Georganas, Fellow, IEEE, Real-Time Hand Gesture Detection and Recognition Using Bag-of-Features and Support Vector Machine Techniques, IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT, VOL. 60, NO. 11, NOVEMBER 2011.

11. Ahmad Yahya Dawod Faculty of Information Technology, Multimedia University, Cyberjaya, Malaysia, Junaidi Abdullah Faculty of Information Technology, Multimedia University, Cyberjaya, Malaysia, Md.Jahangir Alam Faculty of Information Technology, Multimedia University, Cyberjaya, Malaysia, Adaptive Skin Color Model for Hand Segmentation, 2010 International Conference on Computer Applications and Industrial Electronics (ICCAIE 2010), December 5-7, 2010, Kuala Lumpur, Malaysia.
12. Samruddhi Deshpande Department of Instrumentation and Control Cummins College of Engineering For Women Karvenagar, Pune , Ms. Revati Shriram Department of Instrumentation and Control Cummins College of Engineering For Women Karvenagar, Pune, Real Time Text Detection and Recognition on Hand Held Objects to Assist Blind People., 2016 International Conference on Automatic Control and Dynamic Optimization Techniques (ICACDOT) International Institute of Information Technology (I²IT), Pune.

13. Gerard Edwin#1, Iping Supriana#2 #School of Electrical and Informatics Engineering, Institut Teknologi Bandung Jl. Ganesha 10 Bandung 40132, Indonesia, Hand Detection for Virtual Touchpad, 2011 International Conference on Electrical Engineering and Informatics 17-19 July 2011, Bandung, Indonesia.

14. Koichi Kurita, Noncontact Hand Motion Classification Technique for Application to Human–Machine Interfaces, IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS, VOL. 50, NO. 3, MAY/JUNE 2014.

15. Chung-Ju Liao, Shun-Feng Su, Ming-Chang Chen Department of Electrical Engineering National Taiwan University of Science and Technology Taipei, Taiwan, Vision-based Hand Gesture Recognition System for a Dynamic and Complicated Environment, 2015 IEEE International Conference on Systems, Man, and Cybernetics.

16. Subham Mukherjee Institute of Engineering & Management, Kolkata ,Sumalya Saha Institute of Engineering & Management, Kolkata, Sounak Lahiri Institute of Engineering & Management, Kolkata, Ayan Das Institute of Engineering & Management, Kolkata, Ayan Kumar Bhunia Institute of Engineering & Management, Kolkata, Aishik Konwer Institute of Engineering & Management, Kolkata, Arindam Chakraborty Institute of Engineering & Management, Kolkata, Kolkata, Convolutional Neural Network based Face detection.

17. Jagdish Lal Raheja, Radhey Shyam, Umesh Kumar, P Bhanu Prasad Digital Systems Group Central Electronics Engineering Research Institute (CEERI)/Council of Scientific & Industrial Research (CSIR) Pilani – 333031, Rajasthan India, Real-Time Robotic Hand Control using Hand Gestures, 2010 Second International Conference on Machine Learning and Computing.

18. Sunthorn Rungruangbaiyok, Rakkrit Duangsoithong, Kanadit Chetpattananonth Department of Electrical Engineering, Faculty of Engineering Prince of Songkla University, Hat Yai, Songkhla, 90112, Thailand, Ensemble Threshold Segmentation for Hand Detection.

19. Kjeldsen and Kendersi, devised a technique for doing skin-tone segmentation in HSV space, based on the premise that skin tone in images occupies a connected volume in HSV space.

20. Etsuko Ueda and Yoshio Matsumoto presented a novel technique a hand-pose estimation that can be used Fig 1.2 VPL data glove 7 for vision-based human interfaces, in this method, the hand regions are extracted from multiple images obtained by a multiviewpoint camera system, and constructing the “voxel Model.” Hand pose is estimated.

**Index Terms**

Computer Science  
Artificial Intelligence
Keywords

Object Gesture, Hand Gestures, Arduino, Ultrasonic Sensors, Human Computer Interaction (HCI), edge tracking.