Abstract

This paper describes a technique of real time head gesture recognition system. The method includes Gaussian mixture model (GMM) accompanied by optical flow algorithm which provided us the required information regarding head movement. The proposed model can be implemented in various control system. We are also presenting the result and implementation of both mentioned method.

References

- Prateem Chakraborty, Prashant Sarawgi, Ankit Mehrotra, Gaurav Agarwal, Ratika Pradhan "Hand Gesture Recognition: A Comparative Study," Proceedings of the International MultiConference of Engineers and Computer Scientists 2008 Vol I IMECS 2008, 19-21 March, 2008, Hong Kong.
- Kazumoto TANAKA "Gesture Recognition with a Focus on Important Actions by Using a Path Searching Method in Weighted Graph," IJCSI International Journal of Computer Science Issues, Vol. 6, No. 2, 2009.
- Sujitha Martin, Cuong Tran, Ashish Tawari, Jade Kwan and Mohan Trivedi "Optical
flow based Head Movement and Gesture Analysis in Automotive Environment"; 2012 15th International IEEE Conference on Intelligent Transportation Systems Anchorage, Alaska, USA, September 16-19, 2012.

- Siddharth S. Rautaray, Anupam Agrawal, "Real time hand gesture recognition System for dynamic applications"; International Journal of UbiComp (IJU), Vol. 3, No. 1, January 2012.
- Hee-Deok Yang, A-Yeon Park and Seong-Whan Lee "Gesture Spotting and Recognition for Human–Robot Interaction"; IEEE Transactions On Robotics, Vol. 23, No. 2, April 2007.
- Thanarat Horprasert, David Harwood, and Larry S. Davis, "A Statistical Approach for Real-time Robust Background Subtraction and Shadow Detection"; Human Pose Estimation and Activity Recognition From Multi-View Videos: Comparative Explorations of Recent Developments; IEEE Journal Of Selected Topics In Signal Processing, Vol. 6, No. 5, September 2012
- C. Lodato, and S. Lopes "An Optical Flow Based Segmentation Method for Objects Extraction"; International Journal of Engineering and Applied Sciences 1:4: 2005
- Miss. Shweta K. Yewale, Prof. Pankaj K. Bharne "Artificial Neural Network Approach For Hand Gesture Recognition"; International Journal of Engineering Science and Technology (IJEST).
- Sushmita Mitra, And Tinku Acharya, "Gesture Recognition: A Survey"; IEEE Transactions on Systems, Man, And Cybernetics—Part C: Applications And Reviews, Vol. 37, No. 3, May 2007.
- Tushar Agrawal Subhasis Chaudhuri "gesture recognition using position and appearance features";
- Berthold K. P. Horn and Brian G. Rhunck, "Determining Optical Flow"; Artificial Intelligence 17 (198 I ) 18. 5-203
- Anubhav Srivastava, Pranshi Agarwal, Swati Agarwal & Usha Sharma "Gesture Recognition System"; International Journal Of Electronics Signals And Systems (Ijess) Issn: 2231- 5969, Vol-1 Iss-4, 2012
- Darun Kesrarat and Vorapoj Patanavijit "Tutorial of Motion Estimation Based on Horn-Schunk Optical Flow Algorithm in MATLAB"; Review Article
- Oleksiy Busaryev, John Doolittle "Gesture Recognition with Applications"; CSE 634 Class Project Report
- J. Barron, "Incorporating Optical Flow into Tinatoo"; I. , Tina Memo 2004-013.
- Carman Neustaedter "An Evaluation of Optical Flow using Lucas and Kanade";s Algorithm"; Neustaedter, 2002
- Qing Chen, Nicolas D. Geororganas, Emil M. Petriu, "Real-Time Vision-Based Hand Gesture Recognition Using Haar-Like Features"; Instrumentation and Measurement Technology Conference – IMTC 2007
- Rafael A. B. de Queiroz, Gilson A. Giraldi, Pablo J. Blanco, Raúl A. Feijóo, "Determining Optical Flow using a Modified Horn and Schunck's Algorithm"; IWSSIP 2010 - 17th International Conference on Systems, Signals and Image Processing.
- Louis-Philippe Morency, Trevor Darrell "Head Gesture Recognition in Intelligent Interfaces The Role of Context in Improving Recognition";
- Qing Chen, Nicolas D. Georganas, Emil M. Petriu Real-time Vision-based Hand Gesture Recognition Using Haar-like Features; Instrumentation and Measurement Technology Conference – IMTC 2007
- Miss. Shweta K. Yewale, Mr. Pankaj K. Bharne, &quot;Artificial neural network Approach for hand gesture Recognition;&quot; International Journal of Engineering Science and Technology (IJEST)
- E. Kollorz and J. Hornegger, &quot;Gesture recognition with a time-of-flight camera;&quot;, Workshop in Conjunction with DAGM'07
- Sebastian Loehmann, &quot;Sneaking Interaction Techniques into Electric Vehicles;&quot;, AutomotiveUI'12, October 17-19, Portsmouth, NH, USA
- Chris Stauffer, W. E. I. Grimson, &quot;Adaptive background mixture models for real-time tracking;&quot;, The Artificial Intelligence Laboratory Massachusetts Institute of Technology
- Subra Mukherjee, Karen Das, &quot;An adaptive gmm approach to background subtraction for application in real time surveillance;&quot;, ISSN: 2319 - 1163 Volume: 2 Issue: 1 25 – 29

**Index Terms**

Computer Science

Artificial Intelligence

**Keywords**

Head gesture  GMM  background subtraction  optical flow