

# Program Chairs' Introduction to the 2004 IEEE Workshop on Real-Time Vision for Human-Computer Interaction at the 2004 IEEE CVPR Conference, Washington, D.C.

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## Motivation

As computers become prevalent in many aspects of human lives, the need for natural and effective Human-Computer Interaction (HCI) becomes more important than ever. Computer vision and pattern recognition remain to play an important role in the HCI field. However, pervasiveness of computer vision methods in the field is often hindered by the lack of real-time, robust algorithms as well as novel and convincing applications.

This RTV4HCI Workshop is an opportunity for researchers and practitioners in the fields of computer vision, pattern recognition and HCI to present their real-time algorithms and applications, learn about what others are doing, and together identify new challenges.

## About Papers

Our call for papers produced 21 submissions. Based on recommendations of the Program Committee we selected 10 papers for presentation at the Workshop. These papers reflect the state-of-the-art in the field and include applications in hand and finger tracking and gesture recognition, face expression and head gesture recognition, gaze-based interfaces, and assisted machine learning. We believe the emphasis on the real-time issues will be of interest to both researchers and practitioners in the HCI field and we invite you to see the following papers in the RTV4HCI Workshop at the 2004 IEEE CVPR Conference in Washington, D.C.:

- A. M. Arsenio builds 3D scene descriptions using the cues provided by a human actor in "Map Building from Human-Computer Interactions."
- S. Chandran and A. Sawa consider sign language alphabet recognition where gestures are made with protruded fingers and propose a classification algorithm based on 2D projection of Euler angles in "Real-Time

Detection and Understanding of Isolated Protruded Fingers."

- F. Dornaika, F. Davoine, and M. Dang describe two frameworks for head and facial animation tracking: one based on a particle-filter tracker and the other based on an appearance-adaptive tracker, in "Head and Facial Animation Tracking by Appearance-Adaptive Models and Particle Filters."
- R. El Kaliouby and P. Robinson infer complex mental states from video of facial expressions and head gestures using a multilevel dynamic Bayesian network classifier in "Real-Time Inference of Complex Mental States from Facial Expressions and Head Gestures."
- R. Feris, M. Turk, R. Raskar, K. H. Tan, and G. Ohashi explain their automatic fingerspelling recognition based on a multi-flash camera allowing efficient and accurate hand shape extraction in "Exploiting Depth Discontinuities for Vision-Based Fingerspelling Recognition."
- A. Kale, K. Kwan, and C. Jaynes discuss tracking and recognition of gestures in a projected immersive environment in "Epipolar Constrained User Pushbutton Selection in Projected Interfaces."
- M. Kölsch and M. Turk introduce "Flocks of Features," a method for tracking non-rigid and highly articulated objects such as hands in their paper "Fast 2D Hand Tracking with Flocks of Features and Multi-Cue Integration."
- J. J. Magee, M. R. Scott, B. N. Waber, and M. Betke present a system for helping disabled interface with various programs and computer games in their paper "EyeKeys: A Real-Time Vision Interface Based on Gaze Detection from a Low-grade Video Camera."

- G. Ye, J. J. Corso, and G. D. Hager describe a 3D hand gesture recognition system that combines the 3D appearance and the motion dynamics of the gesture in “Gesture Recognition Using 3D Appearance and Motion Features.”
- H. Zhou, D. J. Lin, and T. S. Huang describe local orientation histograms as fast and reliable features useful for hand gesture recognition in “Static Hand Gesture Recognition based on Local Orientation Histogram Feature Distribution Model.”

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