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Human hand motion recognition using an extended particle filter

(Conference Paper)

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Abstract

 View references

This paper presents a method to recognize hand motion using an extended particle filter in real-time. We integrate a deterministic clustering algorithm and particle filter together. The skin color of a human hand is firstly segmented by using a Bayesian classifier. Next, during online process, the adaptive algorithm is used to calculate skin color probabilities. By using the online adaptation, this method is able to cope extremely well with luminance changes. After that, we determine the probabilities of the fingertips by using semicircle models for fitting curves to fingertips. Following this, the deterministic clustering algorithm is utilized to search for regions of interest (ROIs), and then the standard particle filter is also performed for motion recognition robustly. Representative experimental results, even when occlusion exists, have been included. © 2014 Springer International Publishing.

Author keywords

Extended Particle Filter; Finger Recognition; Human Hand; Luminance; Motion Recognition; Online Adaptive; Real-time

Indexed keywords

Engineering controlled terms: Adaptive algorithms; Clustering algorithms; Curve fitting; Deformation; Luminance; Motion estimation

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