

3.30 Real-time Multiple face and head pose tracking

Keywords

Computer Vision, Face tracking, Head orientation

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Functional description

Idiap has developed a real-time system that can track continuously from 1 to 5 faces, which in addition can extract for each detected face the head orientation, providing some hint on where the person is looking at. The technology does not only rely on face detection but also tracking, since due to the large variety of head poses that people can take (e.g. when looking down at paper, or in some profile views) face detection is rapidly insufficient when a person does not look straight at the camera.

Innovative aspects

- Robust to background noise and illumination variability can tolerate camera motion
- Track faces even when they are not frontal
- Provide head pose cue, and visual focus of attention cues (e.g. are people looking at the camera)
- Robust track creation and deletion mechanisms for lower false alarm rates.

Commercial application examples

Tracking people faces is a prerequisite in many applications before further behavior analysis, e.g. when interacting implicitly (e.g. in the remote conferencing systems) or explicitly (e.g. with a robot) with a device.

- HCI application with one-to-many interactions
- Communication systems (e.g. webcam) that can exploit behavior cues for communication improvement (e.g. zooming on individuals)
- Behavior analysis study systems.

More information

S. Duffner and J.-M. Odobez. A Track Creation and Deletion Framework for Long-Term Online Multi-Face Tracking. IEEE Transaction on Image Processing, March 2013.

S. Ba and J.-M. Odobez. Recognizing Visual Focus of Attention from Head Pose in Natural Meetings. IEEE Trans. on System, Man and Cybernetics: part B, Cybernetics, Vol. 39. No. 1. Feb 2009.

Software & IPR status

A demonstration software is available.