3.31 Gaze Estimation and Non-Verbal Behavior Extraction from consumer cameras

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Functional description

We have developed softwares for and a long-standing experience with the automatic analysis of a variety of real-life human (non-verbal) behaviors in interaction modeling (attention, head gestures, addressee, engagement,...). Using RGBD sensors, we have developed precise eye gaze estimation systems comprising the fitting of personalized 3D mesh face models, a real-time estimation head pose tracker, and gaze estimation modules. When relying on RGB cameras only (typically at further distance from the sensor), multiperson real-time head pose trackers have been developed.

In both domains, software have been developed to infer the attention of people towards visual targets (people, objects or scene regions), and recognize head gestures.

Innovative aspects

– No user restriction (non-intrusive system)
– Generic or personalized head and eye gaze models
– Handles gaze tracking under head pose changes
– 3D reasoning (not only for screen-based applications)
– Works under low-resolution eye imaging

Commercial application examples

– Attention modeling (e.g. consumer preference analysis)
– User studies, eg in sociology (NVB and gaze coding: dyadic and group interactions analysis)

More information


Software and IPR status

– RGBD simplified version - http://www.idiap.ch/scientific-research/resources/hg3d)