Facial Expression Recognition using Multi-view-based Active Appearance Models

Background

At the cv:hci lab we implemented the simultaneous inverse compositional (SIC) algorithm for fitting and tracking 2D active appearance models (AAM) to human faces. The outputs of the model fitting/tracking have been successfully used for pose-robust face recognition and personality recognition. We are now interested in using the model for recognizing different expression classes such as "happiness", "surprise", "anger", etc. To make the model fitting more reliable against expression and pose changes, we need to improve the model construction and fitting algorithm. The final goal of this thesis is to implement a real-time expression recognition system.

Tasks

- Add 3D shape constraints to the current 2D AAM implementation
- Construct multi-view models for pose robust AAM fitting
- Use the model parameters as features for facial expression recognition
- Collect dataset and conduct experiments for image and video-based expression recognition
- Compare generative and determinative approaches for video-based recognition

Requirements

- Good C++ / Matlab programming skills
- Knowledge and experience in computer vision would be good
- Interest in the topic

Contacts

- Hua Gao  hua.gao@ira.uka.de  0721-608-5333
- Hazim Kemal Ekenel  ekenel@kit.edu  0721-608-5929