Master Thesis

Face detection and Head Pose Estimation in the Wild

Automatic detection and recognition of faces in images is a useful feature for numerous applications such as image classification, person identification or age, gender of mood estimation. A prerequisite is that the faces in an image are found, independently on the head pose. While robust methods exists for the simple subtask of identifying frontal faces, the case of highly varying head pose is still unsolved. The goal of the thesis is to study approaches for face detection, both for frontal faces and general poses. After a review of existing techniques, the most promising ones will be implemented in C++ with the aim of high speed detection. In addition, a classifier for head poses will be implemented in order to find a coarse estimate of the head pose. Possibilities for improvements of existing techniques will be discussed, and eventually implemented and evaluated.

Tasks

- Design and implementation of different face detectors
- Focus on real-time methods (possibly using GPU programming)
- Evaluation of the resulting algorithm and discussion on possible improvements

Requirements

- Good C++ skills
- Good mathematical understanding

References

- P. Viola and M. Jones „Rapid Object Detection using a Boosted Cascade of Simple Features“, Computer Vision and Pattern Recognition (CVPR), 2001

Alain Pagani
Augmented Vision Lab
DFKI GmbH
Trippstadter Straße 122
D-67663 Kaiserslautern
Phone:  +49 (0)631 20 575 3530
Email:  alain.pagani@dfki.de
ags.cs.uni-kl.de

19.02.2014