

Automatic analysis of in-the-wild mobile eye-tracking experiments using image processing techniques.

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Abstract This PhD research focuses on a novel method for the automatic analysis of mobile eye-tracking data in natural environments. Mobile eye-trackers generate large amounts of data, making manual analysis very time-consuming. Available solutions, such as marker-based analysis minimize the manual labour but require experimental control, making real-life experiments practically unfeasible. The purpose of this PhD research is the realization of an automatic, image-based, analysis scheme for mobile eye-tracking data. This enables the analysis to be performed on the object level rather than the traditionally used coordinate level. To develop our algorithms we recorded a dataset in which 14 participants were recorded while they visited a special exhibition in at Museum M in Leuven(Belgium). This experiment resulted in 630 minutes of video material.

The automatic analysis is build on the combination of object, face- and person detection algorithms. Furthermore we developed a temporal smoothing technique to improve the detection rate and we trained a new detection model for occluded person and face detections. Currently we are investigating the integration of a semi-automatic object detection scheme in which a minimal user-input can improve the detection results significantly.

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