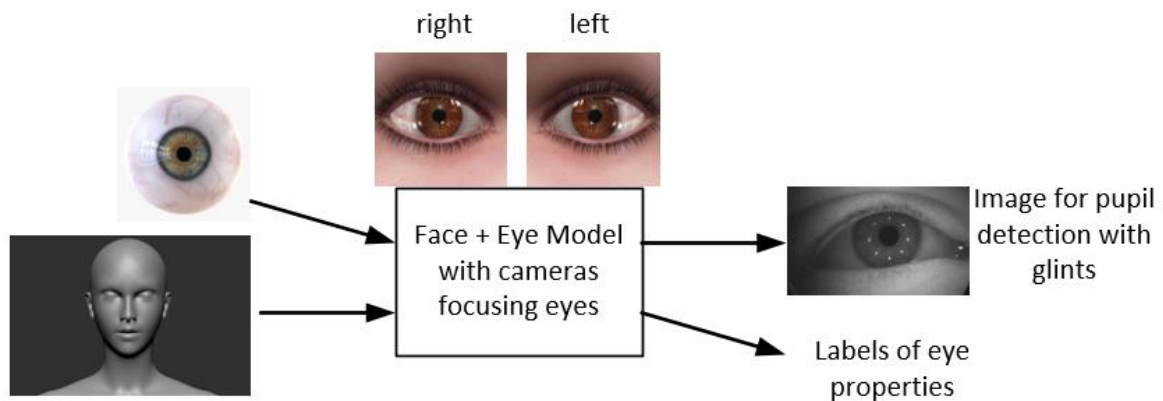


Bachelor/Master Thesis

Embedded image processing and analysis close to the image sensor is gaining more and more momentum since it allows to reduce required communication bandwidth to the next layer of the processing hierarchy. This saves energy and enables significant efficiency improvement for different use cases. Image processing on a smart image sensor not only comes with benefits but also includes technical challenges.

The focus of this thesis is on the automatic generation of training data for neural networks for pupil detection. Therefore, a 3D-Face Model for eye tracking should be designed with tunable parameters to create synthetic training data. The tunable parameters should include, the camera, the eyes, skin tone, texture of the iris, eye lids, pupil size, different number of glints, reflections and blur. The application should create images with labels of eye properties (e.g. gaze vector, pupil center, glint center positions...).



Student Target Groups:

- Target of this thesis is the development of a 3D-eye model for automatically creating synthetic training data for neural networks for pupil detection. Students of ICE/Telematics, Informatics

Thesis Type:

- Bachelor/Master Thesis

Required Prior Knowledge:

- Good programming skills (Python)
- Good 3D-modelling skills (Blender)
- Basic knowledge of computer vision/graphics

Goals and Tasks:

- Design and Implementation of a 3D-Face model for eye-tracking.
- Automatically creation of training data with eye property labels and 2D eye images

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