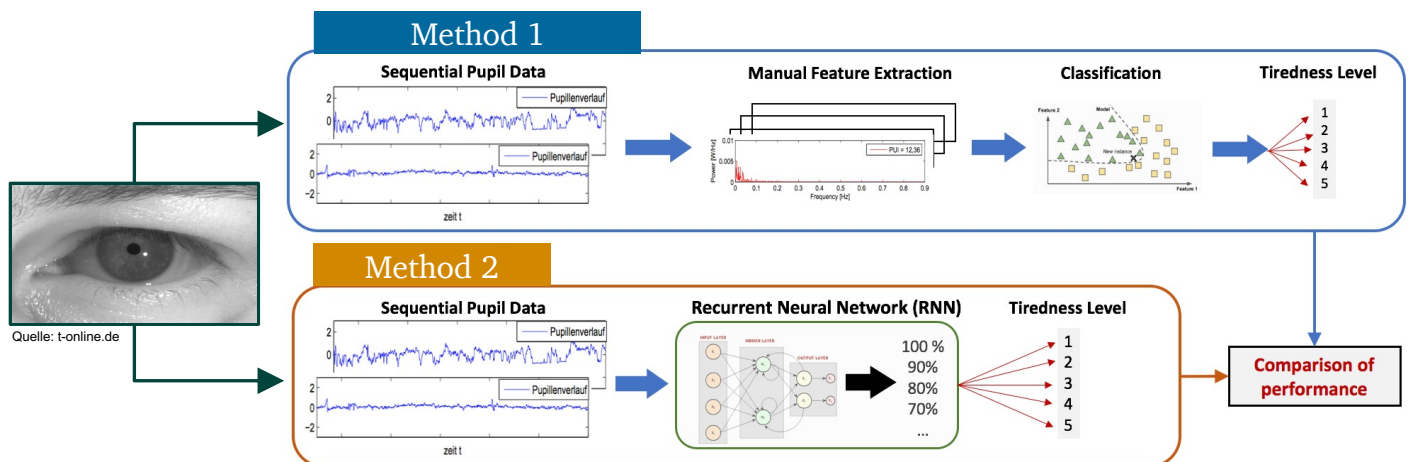




Modelling the human's temporal pupil response using deep neural networks

Pattern recognition with deep learning techniques to predict and label time series data from physiological measurement systems like an eye tracker

The Laboratory of Lighting Technology is currently working on a method to determine the sleepiness level of a person in real-time. In future, the system will be used in the automotive sector or even as a part of a novel intelligent interior lighting system. The temporal behaviour of the pupil can be used as a physiological biomarker for estimating the human's sleepiness level. In our current measurement system, the pupil diameter is tracked with various high-quality eye-tracking systems. With a test arrangement, training and test data can be recorded to correlate the pupil diameter with the subjective sleepiness of an observer.



In this work you will use **Recurrent Neural Networks (RNN)** to model patterns in sequential pupil data. Furthermore it is possible to compare the performance of RNNs with manually feature extracting techniques.

The specific task and the scope of the work can be adapted to the wishes and the professional preferences of the students. With an excellent to very good job, it is possible to publish the results or even work on the project as a student assistant.

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