Abstract

Driver fatigue is one of the leading causes of traffic accidents. Therefore, the use of assistive systems that monitor a driver’s level of vigilance and alert the driver in case of drowsiness and distraction can be significant in the prevention of accidents. This paper presents morphology based operations in extracting various visual cues like eye, eye brows, mouth and head movement. The parameters used for detecting fatigue are: eye closure duration measured through eye state information, head movement through orientation of head ellipse and yawning analyzed through mouth state information. This system was validated with synthetic data under real-life fatigue conditions with human subjects of different ethnic backgrounds, genders, and ages; and under different illumination conditions. It was found to be reasonably robust, reliable, and accurate in fatigue characterization.

References

Morphology based Facial Feature Extraction and Facial Expression Recognition for Driver Vigilance

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**Index Terms**

Computer Science  
Pattern Recognition

**Keywords**

Template matching  
Top-Hat transformation  
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Sobel edge  
Integration projection

Color Histogram based object Tracker

Ellipse fitting

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