DROWSINESS DETECTION USING ARTIFICIAL INTELLIGENCE TECHNIQUES

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ABSTRACT

Driver fatigue is one of the major causes of accidents in the world. Detecting the drowsiness of the driver is one of the surest ways of measuring driver fatigue. In this project we aim to develop drowsiness detection system using Fuzzy Logic and Genetic Algorithm, both in Isolation to detect drowsiness .It uses an nonintrusive technique for judging driver alertness. Alertness is detected on the basis of the degree to which the driver's eyes are open or closed. Viola-Jones algorithm has been developed for face detection which then further used by the fuzzy logic and Genetic Algorithm. Fuzzy logic used to determine level of fatigueness and determine output state. Genetic algorithm has been used to make a good performing combination of good indicators. It calculates the degree (%) of eyes and mouth to detect the state of drowsiness. During the analytical study Genetic Algorithms [22, 23] results were found more accurate as compared to Fuzzy

This paper describes how to find the eyes, and determine the status of the eyes are open or closed. An application of Viola Jones algorithm is used for Face detection and tracking. The Haar like feature is developed, which was a primary objective of the project. Haar like feature is a classifier which is trained with a few hundreds of positive and negative examples that are scaled to the same size. The system deals with using information obtained for the binary version of the image to find the edges of the face, which narrows the area of where the eyes may exist..Taking into account the knowledge that eye regions in the face present in uppermost quadrants, we consider extraction of eyes for calculations. Once the eyes are located, we can use various matlab image processing tool to determine whether the eyes are open or closed.

General Terms

Image Processing, Eye Estimation, Haar like Feature, Fuzzy Logic, Genetic Algorithm

KEYWORDS: Viola-Jones Algorithm, Haar Like Feature, Drowsiness Detection