ABSTRACT

For decreasing level of car incident purpose, beside by increasing security level of traffic, also there is a need of car security system. Because the car incident can be caused by bad gaze behavior of the driver such as behavior of sleepy driver, behaviors of the driver, and other reasons. In this research will implements the device for detecting bad gaze behavior of car driver which is eye close during 6 seconds.

Microcontroller will receives raw digital data as input from camera, therefore will needed microcontroller with large amount of RAM which can stores the image data. Therefore, microcontroller ARM Cortex-M3 is used in the system as the 32-bit microprocessor which has enough SRAM for image signal processing. Next will applied preprocessing in aiming to reduces computation process before next to applied fuzzy-geometric method. Fuzzy-geometric method was choosen because it needs light computation of image data to detect face and able to models uncertainty of information about facial feature. Then will applied segmentation process to extract eyes from the face image.

Following initial center point localization of eye object,a fast eye tracking procedure is done utilizing the normalized coefficient correlation. From the result of the performed test, eye detection accuracy at initial frame is 70.83%. With time require is about 4 seconds. Eye tracking utilizing coefficient correlation is done about 12 frame per second.

Keywords: Microcontroller, RAM, Preprocessing, Fuzzy Geometric