View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by UMP Institutional Repository

Autonomous self-exam monitoring for early diabetes detection

Rohana Abdul Karim, Nur Alia Fatiha Azhar, Nurul Wahidah Arshad, Nor Farizan Zakaria, M. Zabri Abu Bakar
Faculty of Electrical and Electronic Engineering, Universiti Malaysia Pahang, Pekan, Malaysia

ABSTRACT
Diabetes can be prevented by early detection. In Malaysia, new case of diabetes is increasing year by year. Insufficient number of physicians tasked to treat a large number of patients will increase their burdens and also make them more stressed. An autonomous self-exam monitoring is developed in order to assist the physicians in identifying diabetes at the early stage. Iris image is used to recognise the early detection of diabetes. Based on iridology theory, the image is evaluated by detecting the presence of broken tissues and change in colour pattern. It can be integrated with computer vision for an accurate identification of abnormality in iris image. This paper focuses on developing an iris imaging system that extracts the presence of orange pigmentation which is the sign of diabetes. This project comprises of three stages which are pre-processing, processing and post processing stage. The designed tool convert an iris image into new picture using image processing algorithms and analyses some changes in colour pattern and lastly diagnose whether it is diabetic or non-diabetic iris. The experimented images in this project are the iris image that was taken from public database UBIRIS.v1. At the end of this project, we discovered whether this system can detect the presence of broken tissues and change in colour pattern of iris or not. The final result shows the accuracy of 80% for detecting the orange pigmentation as the sign for early diabetes detection.

KEYWORDS
Iris diabetes; Image processing; Classification

ACKNOWLEDGEMENT
This research work is supported by research grant funded by Universiti Malaysia Pahang (RDU1703233). The authors also would like to thank the Faculty of Electrical & Electronics Engineering, Universiti Malaysia Pahang for financial support.

ACKNOWLEDGMENT
The authors wish to thank Universiti Malaysia Pahang, Malaysia and Ministry of Education Malaysia for the scholarships given to the first author during the period of his study and a great appreciation also to the Erasmus Mundus STRoNGTiES project for the financial support given during the student mobility period of the first author.