

Template Matching Analysis using Neural Network for Mobile Iris Recognition System

Anis Farihan Mat Raffei, Siti Zulaikha Dzul kifli and Nur Shamsiah Abdul Rahman

Faculty of Computer Systems & Software Engineering,
Universiti Malaysia Pahang, Malaysia
Corresponding Email: anisfarihan@ump.edu.my

Abstract:

Today, the use of mobile phone among individuals with an advanced technology, acquisition and computation resources is crucial in securing personal data and services as well as in identifying a person. Recently, there has been growing interest of researchers in iris recognition using mobile as an acquisition device to capture an eye image in a non-cooperative environment (static motion and at different distances). However, the use of mobile as an acquisition device still facing some noise factors because the quality of image captured in this environmental condition is low compared to a camera device. Besides, low awareness of user in handling the mobile devices and lack technical experiences in capturing iris images with this environmental condition is generally uncontrolled contribute to producing unpredictable low quality of eye images. Due to these issues, it led to incorrect segmentation of iris boundaries and subsequently lowered the ability to match the iris features. Hence, this condition contributes to performance degradation of iris recognition system. Therefore, to improve the ability to match the iris features in mobile iris recognition system, a combination with neural network is proposed. The iris database used to test against these methods is CASIA-Iris-M1-S2. The proposed method, a combination of Hamming distance and neural network has achieved a better result which 98.77% in term of accuracy for mobile iris recognition under non-cooperative environment.

Keywords: Mobile Iris; Template Matching; Neural Network; Non-Cooperative Environment

Acknowledgement

The authors would like to express their appreciation to the Institute of Automation, Chinese Academy of Sciences which provided CASIA-Iris-M1-S2 dataset. This research was funded by the UMP Research Grant Scheme (RDU180378).