

Analysis of Unclean Hand System Detection Using Template Matching Technique

¹Faradila Naim, Tuan Nur Amalia Tuan Arifien and Rosyati Hamid, Nurul Wahidah Arshad, Nurulfadzilah Hassan, Kamarul Hawari Ghazali

¹ Fakulti Kejuruteraan Elektrik & Elektronik, Univeristi Malaysia Pahang, 26600 Pekan, Pahang, Malaysia
faradilan@ump.edu.my

Abstract—The aim of this project is to audit the handwashing technique of hospital staff that may cause infection to the patients. This project is to detect unclean washed hands using image processing technique specifically template matching. The detection and recognition of palm in images is the key methodology of this paper. Prototype used for capturing hand images is a dark box with UV light and a camera. Target will need to apply Glogerm on their hands to imitate bacteria. Hence, when they wash their hands inappropriately, Glogerm can be seen in the captured images under the UV light as the unwanted stain on washed hands, the target handwashing technique need to be improved. Templates of missed area of washed hands is used to compare the correctness of hand washed techniques by the target. Data of 100 images were taken results are: 100% accuracy of the hand image without Glogerm, 56.67% of image that did not wash using water after applying the Glogerm and 45.45% accurate when user wash their hand by using water after applying Glogerm. The overall efficiency of the system in detecting the missed part is 51% accuracy As summary, this project accurately detects stain percentage that represent the missed part when apply the template matching technique.

Index Terms—hand detection; hand washing detection; stain detection; image processing; template matching