

## ABSTRACT

The use of CAPTCHA aims to improve the security of a website from *spambots* threat. But in reality, there are several types of CAPTCHA which has a low level of security, so they can be bypassed by an automated computer program by means of image processing. This is certainly very dangerous, considering the very important role of CAPTCHA for both owners and users of the website. Therefore, it is necessary to make a CAPTCHA reader program to analyze the level of security of a concerned CAPTCHA and to encourage developers to improve its CAPTCHA security.

In making system that can read CAPTCHA text based on digital image processing, there are four steps that must be done. The first stage is the *Pre-Processing* stage to eliminate background noise in the CAPTCHA. The second stage is the *Segmentation* stage to divide CAPTCHA into several single character. The third stage is the *Feature Extraction* stage for taking feature of character segmentation results. And the last stage is the *Classification* stage to identify the feature extraction results.

From the simulation results obtained *pre-processing* success rate of 95.9459% for Test Data 1 and 94.5652% for Test Data 2. While the *segmentation* success rate of 58.3893% for Test Data 1 and 77.1739% for Test Data 2. The maximum level of system accuracy is obtained by using the method of *feature extraction* sum per block (*square sum*) with the image size is 15x15 and 3x3 block size, that is equal to 42.3019% (per character) and 10.0671% (per CAPTCHA) with an average computation time of 0.0797 seconds for Test Data 1. As for Test Data 2, the level of system accuracy of 46.2651% (per character) and 15.2174% (per CAPTCHA) with an average computation time of 0.0787 seconds. If referring to the statement contained in the journal [12] and website [13], it can be said that Embossed Text RainCaptcha is unfavorable.

Keywords: CAPTCHA, *Pre-Processing*, *Segmentation*, *Feature Extraction*, *Classification*.