

## ABSTRACT

Security is a matter that should not be ruled out in every design entry in a company or organization that proper attention to the identity of each member / client on its inside, in this case is in the library. Each entry needs to be an accurate detection system in finding out whether a person is a person who registered on the database of members or other people who are not interested. In fact, the opposite security with the convenience, but with the detection system, the security access in the library can be maintained.

QR Code or Quick Response Code is a type of matrix code or two-dimensional bar code with the main function of the easily readable by QR scanners are intended to convey information quickly and get a faster response. QR Code can hold more information than a barcode that measures just one-dimensional. Because of these advantages, today became one of the QR Code in the evolution and multi-functional universal code that is widely used in various fields.

The purpose of this final project is to implement a detection system with the idea of using QR Code system that tries to Face Recognition provides double security on the identity of the member with the detection method of Reed Solomon and PCA. This system works with a student database name, NIM, and the facial image is converted into a QR Code that can be detected by the application using the webcam. When detection process be held, the application will reveal the identity of the name, NIM, and also will identify by webcam, face of student with the existing database.

From the results of the testing system, reading QR Code version 1 with four scenarios, including noise of stains, scratches, and rotation to obtain an average accuracy of 94.223%, and 84.333% of face recognition with variations reaching distance. Achieved overall accuracy of the system up to 89.749% with an average of 7.673 second overall computing time for reading the QR Code with face recognition. System using Reed Solomon Error Correction, PCA, and k-NN classification.

**Keywords:** QR Code, PCA, Reed Solomon, k-NN.