ABSTRACT

The development of Augmented Reality (AR) technology is an innovative breakthrough that is used to combine the real world with the virtual world in real-time by adding virtual objects in 3D. AR technology has two methods, namely marker and markerless. One of the methods used in markerless-based AR is the feature matching method based on local features. However, this method gives less than optimal results in matching the color or orientation, so that the feature detection results are less efficient.

In this final project, AR system has been designed using the Natural Feature Tracking method based on the FAST Corner Detection algorithm as feature detector, so that the system built can detect natural features on the image target and recognize them in various conditions. This experiment using Vuforia to combine AR technology and smartphones. The result of this system is an AR simulation application that can used to scan a movie poster as an input (image target) and display a video trailer of the movie as the output.

In the analysis, this dataset that consist of 20 movie poster data as a target that stored in a database and 100 data tests. From the test results, the system was successfully implemented with 84.7% system accuracy of performance parameters. The results of testing the condition of the image target affect the system in detecting features appropriately, so that the image target has keypoints to match with the dataset. The system can detect the feature optimally at a distance of 30 - 100 cm with a tilt angle of the camera from 15˚ to 90˚. The average computation time is 5.11 seconds. The test results show that the system with the Natural Feature Tracking method based on FAST Corner Detection works well in real-time for AR technology.

Keywords: *Augmented reality), Natural Fetaure Tracking, FAST Corner Detection, Vuforia, Keypoints*