ABSTRACT

Augmented Reality (AR) is a technology that combines the two and three dimensional virtual objects into a real three-dimensional environment and then project the virtual objects into real time. Optical communications systems Laboratory is the laboratoriuam which is engaged in the field of education which has some content that requires some visualization so you can understand it particularly material about measuring instrument i.e. OPM, OTDR, Fusion Splicer, Connector, splitter because it's hard enough to be able to understand and learn the measuring instrument related to the limitations of existing tools.

In this Final Project, an augmented reality-based application will be made by using Unity software that can be installed on android smartphone. This application is created to help the learning of optical communication system in the Faculty of Applied Science. This application can display various measuring instruments i.e. OPM, OTDR, and Fusion Splicer in a three dimensional form that has been conducted using Blender application by recording a marker that has been specified using the camera on android smartphone. When the camera records the marker, the system will render the application and match the right marker with the 3D object. On the 3D Object, there are several buttons that can be pressed, so the application can display the video function of the buttons and how those work on the tool.

From the test results, all of the content and application of the system of hard-running as expected, Virtual Laboratory applications can run well on the optimal shooting distance Marker at a distance of 10-40 cm and tilt angle optimal shooting Marker at an angle of 0° and less than 45°. On the conditions indoors, the smallest delay on average are at 0.624 s, whereas in outdoor conditions an average delay of the smallest are at 0.62 s. Survey benefit application results of MOS best value of 4.65 While the Survey benefits the worker level applications for MOS best value of 4.59.

Keywords: Augmented Reality, virtual, Learning, Optical Communication System Laboratory.