# ABSTRACT

Augmented Reality (AR) is a technology that collects two-dimensional and three-dimensional virtual objects into a real three-dimensional environment and then projects these virtual objects into real time. Communication Systems Laboratory is a very important tool to support practicum learning, practicum specialists in communication systems courses that on average require signal visualization such as in digital ASK modulation, FSK and BPSK that can help improve transportation on practicum tools used and must find a way out .

In this final project an application based on augmented reality technology is created using Unity3D software that can be installed on an android smartphone. This application can display the form of objects that emit ASK, FSK, BPSK modulation signals created using Adobe Illustrator software, and a communication system practicum model kit with code 2807 made using Blender software, by using markers that have used cameras on Android smartphones . With a marker camera, the system in the application will render and match the marker with the update object. Disables output objects that can be opened for applications that can be opened by objects with different groups.

Based on the test results, all functions are 100% running well. With an average MOS value obtained 3,553 for AR applications, MOS value 3,510 for AR applications and MOS value 3,595 for the benefits of AR applications. The system releases release objects in the form of ASK, FSK, BPSK modulation signals from each of the 11001010 bits and 10010011 bits by displaying the values Vmax = 5 and Vmin = -5. Recording markers by the system can be done at a distance of 6 - 100 cm for marker sizes 10 x 10 cm. In the light intensity of a bright state the recording process of the marker becomes optimal k, in the black light intensity the system cannot dispute the marker. As an angle to allow a good marker to show 45˚. On the slope of the 90˚ marker the signal object results have occurred a 180˚ phase change which means it shows the wrong result. AR application is able to work well on Android smartphones. From testing the delay by the AR application produces an average overall delay of 1.935 seconds. This can be proven through the results of various delay tests, from 0.50 to 5.00 seconds.

*Keywords*: Augmented Reality, Digital Modulation, Practicum Kit Digital Modulation.