

## **Abstract**

Calung is a traditional musical instruments from West Java and characteristic of Sundanese culture. To facilitate and attract someone who wants to play traditional musical instruments calung, a virtual 3D objects was made in the form of traditional musical instruments calung that can be played like a traditional musical instrument calung original by using Augmented Reality (AR). From the research that has been done before, the AR is only implemented to rotate and move or move objects that have been traced by hand.

This final project will be developing a system that can catch a movement of hand using Kalman Filter algorithm, and then make it as a marker in AR. Kalman Filter is a recursive algorithm which requires a previous state and current measurements to estimate the current state. Whereas OpenGL will be used as a basic library to rendering objects in AR,. Then performed the interaction between hand and virtual objects in real time.

The test results showed that the lighting and background in a room did not affect the processing time and the performance of the Kalman Filter, able to troubleshoot the problem of the color interference and collisions between other objects, and an error is generated when the user hit calung, its voice did not come out as much as 32 times. The resulting error from this application by 20 users is about 4.57%.

**Keywords: Augmented Reality, Hand Tracking, Kalman Filter, OpenGL, Calung**