

## ABSTRACT

*Finite State Machine (FSM) is a control system design that describes the behavior or working principle of the system by using the following three things: State, Event, and Action. In archery sport requires a wide and varied place to do the sport. However, due to limited land and space, the diversity of the training ground becomes minimal. This research was developed to develop an archery simulation application by providing a virtual and randomly created environment with certain rules.*

*Software development in Virtual Reality has greatly increased popularity thanks to the Oculus Rift Development Kit, especially for game applications. To support the implementation of making games that are supported by Unity3D. Unity3D is a cross-platform based game engine and is an integrated tool for creating games, building architecture and simulations used to develop 2D and 3D video games. The method used as randomizing the target object uses the Finite State Machine to randomize the target object from the archery.*

*In this Final Project, the author create a Virtual Reality Game Environment with the original size location in front of Telkom University Tennis Court and simplified it into an open area. as the arena of the game and random targets using the Finite State Machine Algorithm. The results of this research conducted several tests for randomization of the target location points according to the predetermined target location points with a success rate of 100%.*

**Keyword:** *Finite State Machine, Game, Game Engine, Unity, Virtual Reality.*