

ABSTRACT

The development of increasingly advanced technology causes some industry fields to innovate to create something that can attract attention, one of which is virtual reality-based games. Virtual reality is a technology that allows users to interact with virtual worlds simulated by computers by combining 3D objects in it. Marbles games are one of the traditional games that are now increasingly lost among children who prefer to play using smartphones.

In this final task researcher are designed a traditional game of marble racing based virtual reality using Kalman Filter algorithm that is useful to know the vibration and position when marbles fall using sensor mpu6050. Unity3D is used to create an environmental simulation model using C# as the programming language that is implemented into the game using parameters with a certain level, namely level 1, level 2, level 3.

In this research, contains two tests pitch and roll each produced a standard deviation at an angle of 60 degrees. The pitch test using a filter is 0.010954 while without a filter is 0.140327 and the roll test uses a filter that is 0.008367, while without a filter is 0.663378.

Keywords: *Kalman Filter, virtual reality, Unity3D*