ABSTRACT

Everyone has a different gait because the gait is influenced by many factors. This gait difference can be observed and analyzed for further research. Various ways are done to observe a person's gait using camera images, motion sensors, color marker methods and others. However, the data processing process takes a long time.

In this final project, a gait reconstruction system is designed using 3 MPU9250 Inertial Measurement Unit (IMU) sensors placed at 3 points, on the right foot above the ankle ,on the left foot above the ankle and on the back hip, the data will be processed in real time. So that the results of the reconstruction can be seen directly. The design is also focused on data acquisition systems and so that the tool sensors are easy to use or are wearable.

In this final project, gait reconstruction is carried out with a distance of 10 meters with 10 repetitions. Reconstruction was performed on 5 men in the age range of 21 to 23 years. From this study, it can be concluded that gait, walking speed, and some gait parameters can be observed using the IMU sensor. Data from 2 sensors on the right foot and left foot will show the length of time and how many steps the foot takes. The fastest time is 8.8 seconds at 1.14 m/s (4.1 km/h) and the longest is 12.6 seconds at 0.79 m/s (2.8 km/h). Meanwhile, the number of steps ranges from 16 to 20 steps.

Keyword : *Gait, Accelerometer, Inertial Measurement Unit, Wearable Sensor*