

## ABSTRACT

*Stability is something that must be considered in creating a system. Without stability, a system cannot run as desired. One example for us to know how a system must have stability is to control an inverted pendulum, which is an example of an unstable system.*

*In this final project the focus is on the design of inverted pendulum interface applications from previous studies, namely swing-up controls and stabilization controls. The application will display the value and graph of the reading results of the Rotary Encoder sensor starting from the Swing-Up process to the Stabilization process.*

*The results of this Final Project are able to display the graph and the value of the actual angle and position of the cart from the reading of the Rotary Encoder sensor at the inverted pendulum from the start of the swing-up process to stabilization in real-time.*

**Keywords :** *Inverted Pendulum, Visual Studio, Real-Time, Rotary Encoder, Swing-Up, Stabilization*