Readme - Arduino Uno PID

This ReadMe document provides an overview and instructions for setting up and operating the inverted pendulum system using an engine, Arduino Uno, and a PID controller. The objective is to maintain the pendulum in an upright position by adjusting the motion of the engine.

System Setup

Follow these steps to set up the inverted pendulum system:

1. Assemble the mechanical structure as mentioned in the instructions.
2. Connect the Arduino Uno to the computer using an USB cable.
3. Connect the engine to a power supply using the AC power plug.
4. Open the Arduino IDE software on your computer.
5. Upload the provided code to the Arduino Uno board.

Operating the Inverted Pendulum

To operate the inverted pendulum system:

1. Reset the system by pushing the red button placed on the Arduino Uno board while fixing the pendulum on 0 degree.
2. Enter an input through the Arduino IDE software for the goal degree. The input should be an integer between -15 and 15.
3. Push the pendulum's arm to a degree between -45 and 45 and release it.
4. The system will adjust the pendulum arm's degree until it fixes on the goal degree.

Notes

1. Make sure that the necessary libraries (PIDController.h, Encoder.h) are installed in the
   Arduino IDE.
2. Take precautions while handling electronic components and ensure proper connections to prevent damage to the Arduino board or other components.
3. Be careful while pushing the pendulum's arm, it can be dangerous if pushed too hard.