CAS 741: Problem Statement - PID Controller

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Table 1: Revision History

Date	Developer(s)	Change
21-Sep-2020	Naveen Ganesh Muralidharan	First revision of the PID problem statement

Problem Statement

A Closed Loop control system can be defined as the system where the input to the Power Plant is continuously adjusted by monitoring the feedback from the Power Plant until the expected Set-Point is reached. The Closed Loop control is used in a variety of applications such as cruise control of an automobile, temperature control in a thermostat, and many more. The heart of the control loop is the Proportional, Integral, Derivative (PID) controller which drives the input to the Power Plant in the loop. However, the PID controller in a loop must be tuned before it is deemed ready for use. This involves setting optimal values for the respective Proportional, Integral and Derivative gain constants. Therefore, a model is necessary to simulate the inputs and outputs of a control loop with which the PID gains can be tuned.

The inputs to the model are the Set-Point(numeric), Proportional Gain(numeric), Integral Gain(numeric), Derivative Gain(numeric), total simulation time (numeric) and step time(numeric). The outputs from the model are the Measured Values from the Power Plant(numeric list) and timepoints (numeric list).

Stakeholders

Primary stakeholders of this project are,

- Naveen Ganesh Muralidharan

- Dr. Spencer Smith
- Dr. Jacques Carette
- All contributors of the Drasil Project
- Students of the class CAS 741

Software Environment

The software application in this project is designed to execute on Ubuntu 18.04 Linux and Derivatives, Windows 10 and, macOS 10.13 and greater.