

Introduction to Control

July 20, 2015

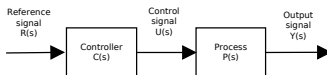
Outline

1 Basics

An introduction to control

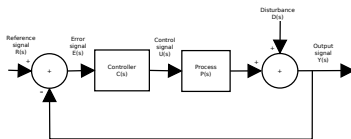
What is control?

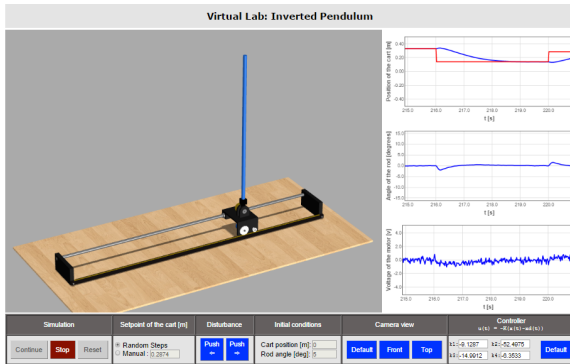
- The goal is to find an input (control signal $U(s)$) such that the process produces the desired output
- Open loop control system: the actual output signal has no effect on the control action



A general set-up of a closed loop system

- We will focus on closed loop control systems





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Figure: Inverted Pendulum

- On-off controller
 - Thermostate at home
- **PID controllers, Lead and lag compensators (this course)**
 - Cruise-control in your car
- More advanced controllers
 - STATE-space feedback controllers
 - Model Predictive Controller (MPC)
 - Fuzzy Control
 - Neuro-fuzzy Control
 - ...