

# Introduction to Control

July 20, 2015

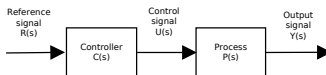
# Outline

## 1 Basics

# An introduction to control

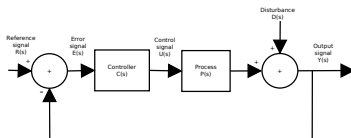
# What is control?

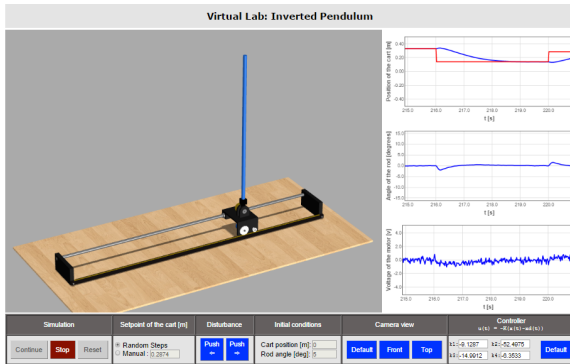
- The goal is to find an input (control signal  $U(s)$ ) such that the process produces the desired output
- Open loop control system: the actual output signal has no effect on the control action



# A general set-up of a closed loop system

- We will focus on closed loop control systems





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Figure: Inverted Pendulum

# Concrete Control

- 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
  - ...