

EENG307: Course Introduction¹

Lecture 1

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²Developed and edited by Tyrone Vincent and Kathryn Johnson, Colorado School of Mines, with contributions from Salman Mohagheghi, Chris Coulston, Kevin Moore, CSM and Matt Kupilik, University of Alaska, Anchorage < >

Feedback Control Overview

Let's take a look at a feedback control system for a set of solar panels tracking the sun as it moves across the sky:

<https://www.youtube.com/watch?v=bE179wgm164>

Some definitions

The subject of this course is **feedback control** of **dynamic systems**.

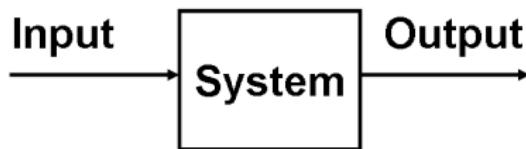
What are systems?

- A **system** is an interconnected subset of the universe!
- Example Systems:



Input and Output *Signals*

- By definition, we have to separate a system from the rest of the world
 - Input signals: connection variables that we will determine
 - Output signals: connection variables that we will observe, whether by predicting (using mathematical models) or measuring

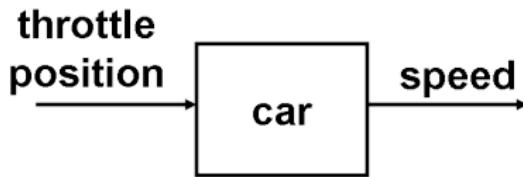


Static vs. Dynamic Systems

- Static System



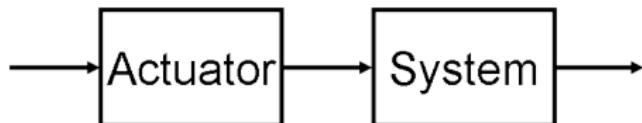
- Dynamic System



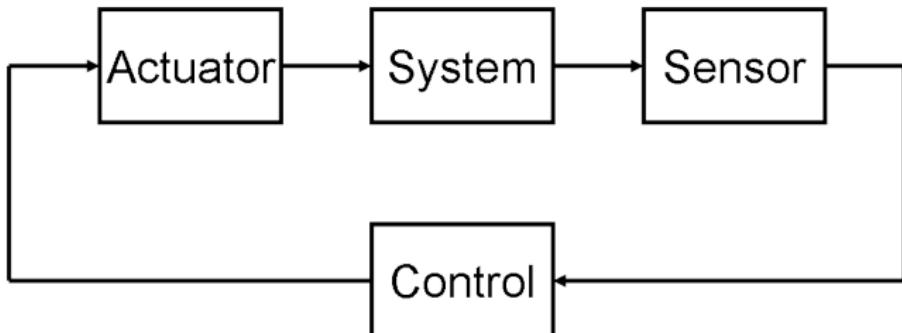
- What is the difference?

Open vs. Closed-Loop Control Systems

- Open Loop System



- Closed Loop Control (Feedback Control)



Feedback Control Elements

