

Control and RL

Control

- Examples
- Goals

Toy control example

Goal: arrive at $(x,v)=(d,0)$

(1) minimal time objective

(2) minimal energy objective

(3) time-energy compromise

Challenges for control

CS view

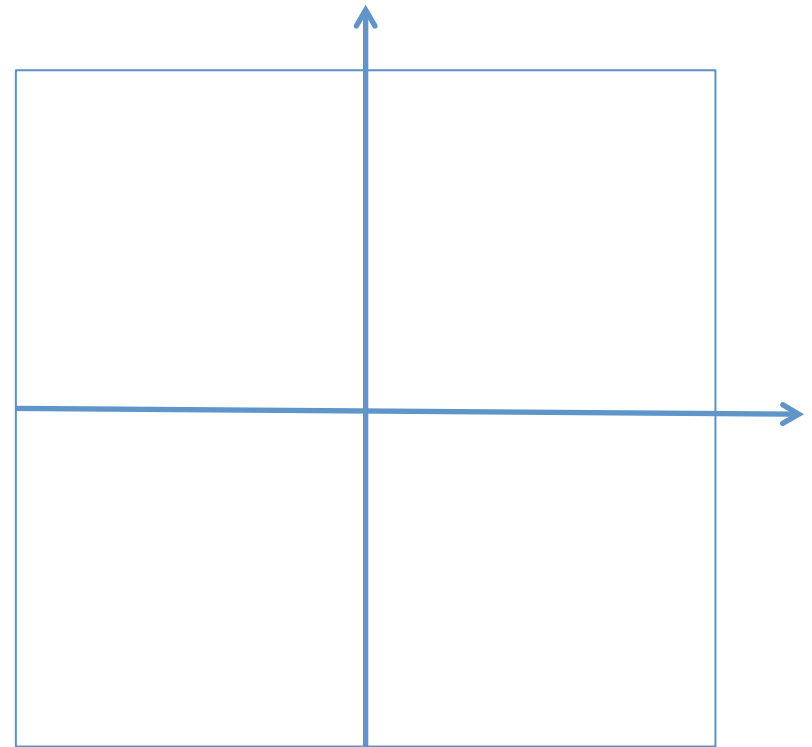
Engineering view

Markov Property

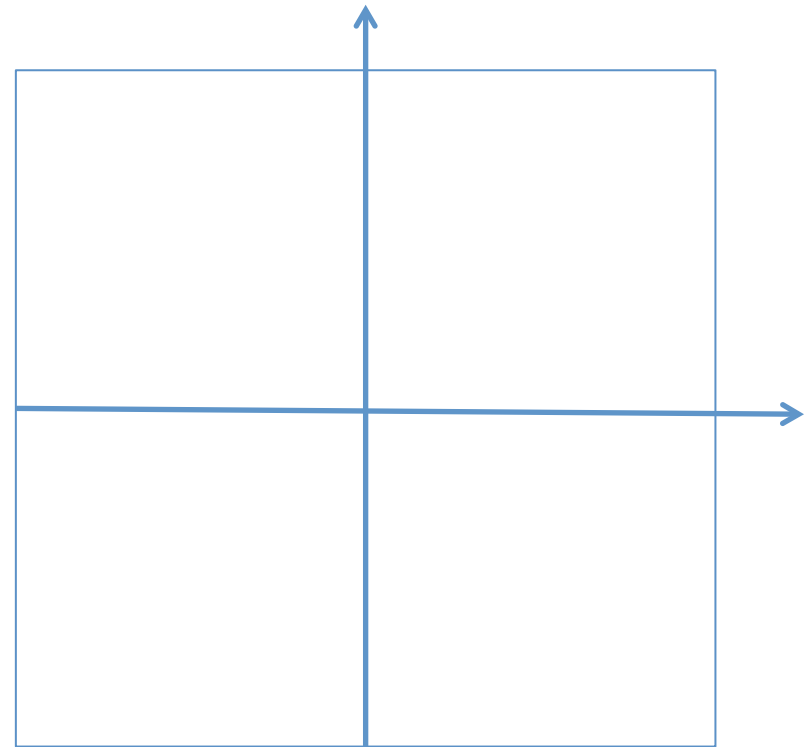
Fully actuated system

Underactuated system

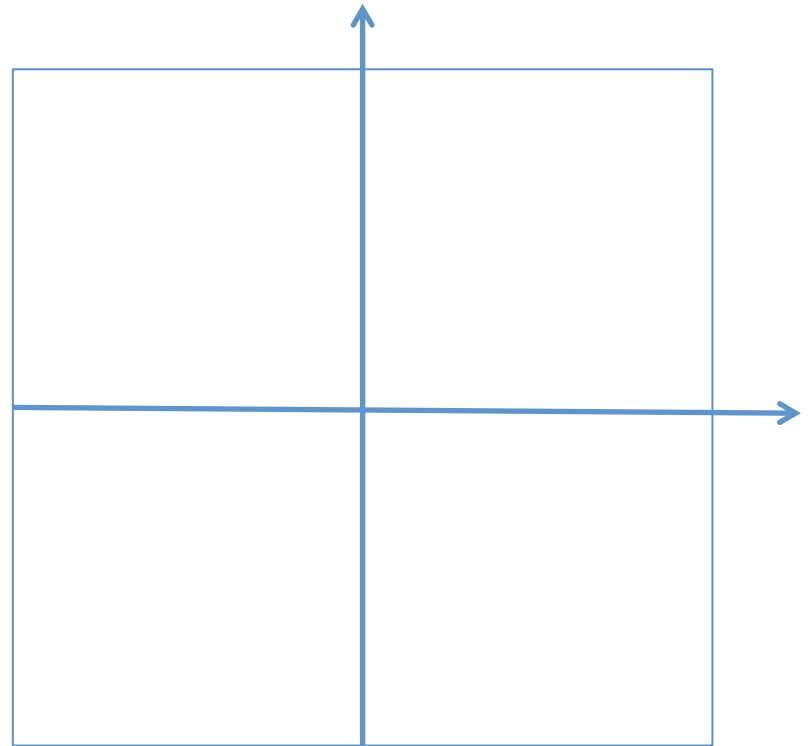
Linear Dynamical Systems



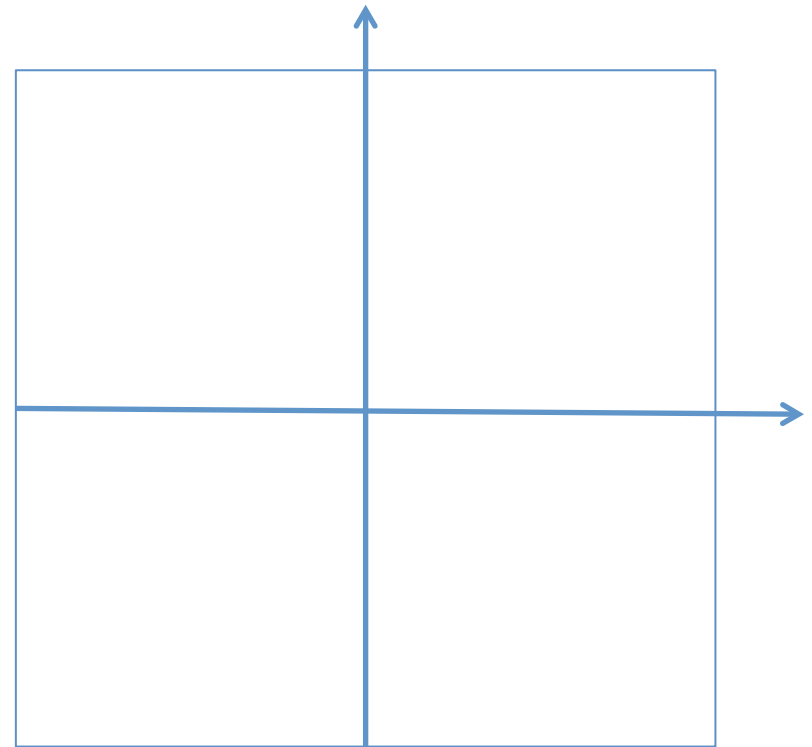
Frictionless cart



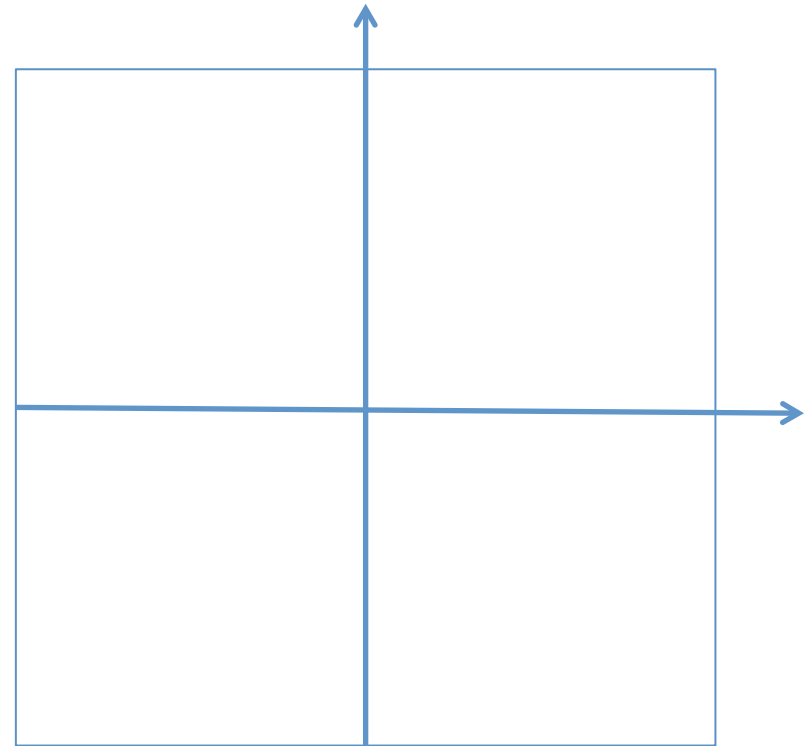
Cart with damper



Cart with spring



Cart with spring + damper



PD control

Motion from PD control

LQR control