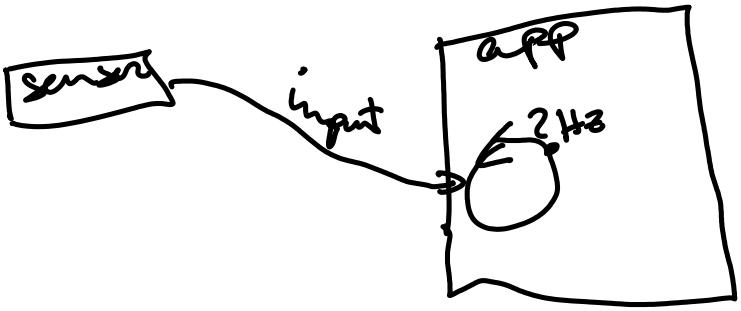
Lecture 12

Wednesday, December 15, 2021 6:34 PM

Processing sensor data

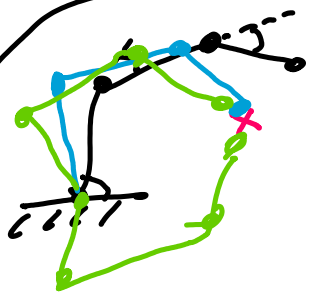
- sensor input is usual



Scratch the surface of control – (what input

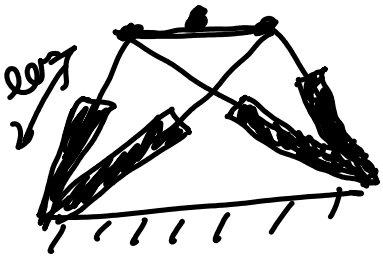
Direct / inverse kinematics

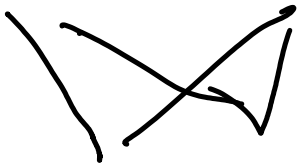
- inverse kinematics: have end-effector position, need
- direct kinematics: have joints positions, need end



DK - easy
IK - hard (ma

- have EF pos, need piston length
- have piston lenghts, need EF pos

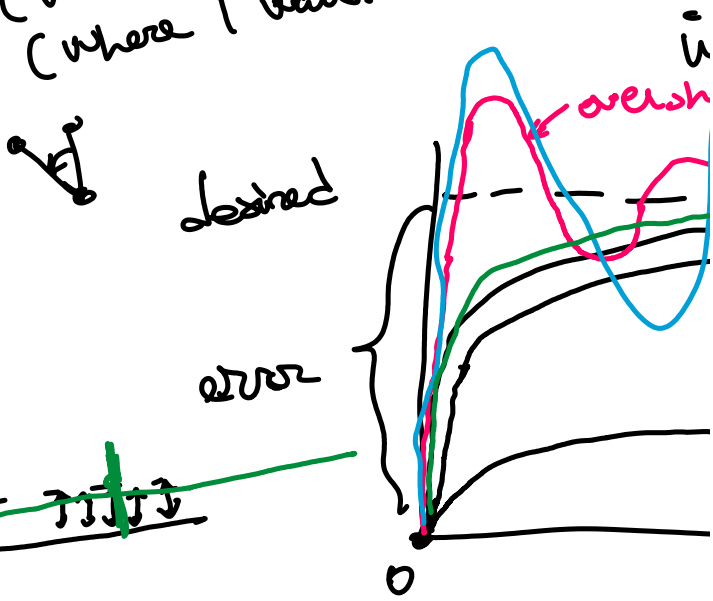




control

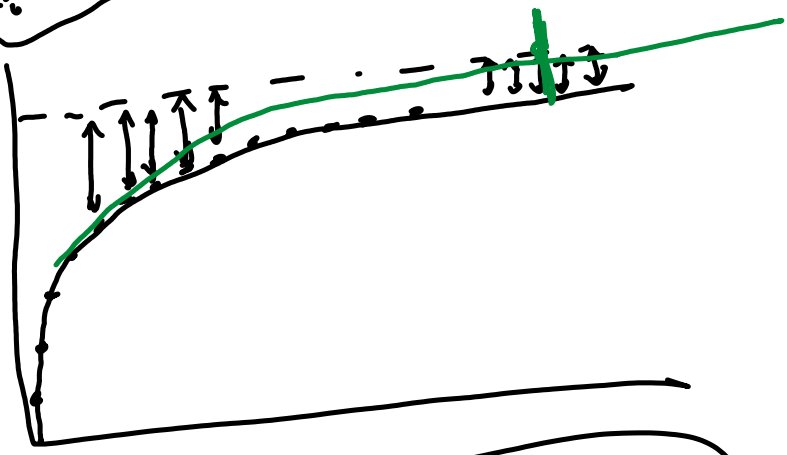
PID
- proportional
- integrative
- derivative

- I know
  - measured pos (where I am)
  - desired pos (where I want to be)



$x = k_p \cdot e$ (proportional)

$x = k_p \cdot e + k_i \cdot \sum e$ (PI)



PID

$$x = k_p \cdot e + k_i \cdot \sum e + k_d \frac{e - e_{prev}}{\Delta t}$$

$\sum e$: $\int e$

$\frac{e - e_{prev}}{\Delta t}$: $\dot{e}$