# Lecture 09a

## Lab 3: Waldo

# Agenda

00. Stuff
01. Lab 3 Waldo: description

**Lecture 09b** Prototyping

# Lab 2 is Due Today

2.3 and 2.4 easier to have two separate filters than one combined one.

- Some overhead lights do not emit IR (so your IR phototransistor will not pickup 60 (120) Hz
- Easier to filter the op-amp output than the op-amp input.

- Ambient light will change the conditions in which your circuits work.
- Lab 2 submissions between today and Tuesday 23 will be counted as being 1 day late.
- Focus on getting the Lab 3 components due Monday 22.
- We will add one late day to your allotment.
- It might be useful to have a real oscilloscope…You can borrow one of the ten and do the oscilloscope assignment too…
- Glue guns will be arriving soon to be added to your kit (watch piazza for note to pickup)

# Lab 3 Schedule

- Feb 19 - Friday 3:00PM – **3.1.1a** Design Review @ recitation
  - Present your idea about what you want to do for your waldo (get feedback from TA/Coach)
- Feb 22 - Monday 1:30PM – **3.1.1b** Submit CAD files to be manufactured by RPL (3D printing and Laser cutting)
- Mar 1 - Monday 1:30PM – **3.1** Waldo Input due
- Mar 8 – Monday 1:30PM – **3.2** Waldo Input / Output due

01

# Lab 3 Waldo Examples

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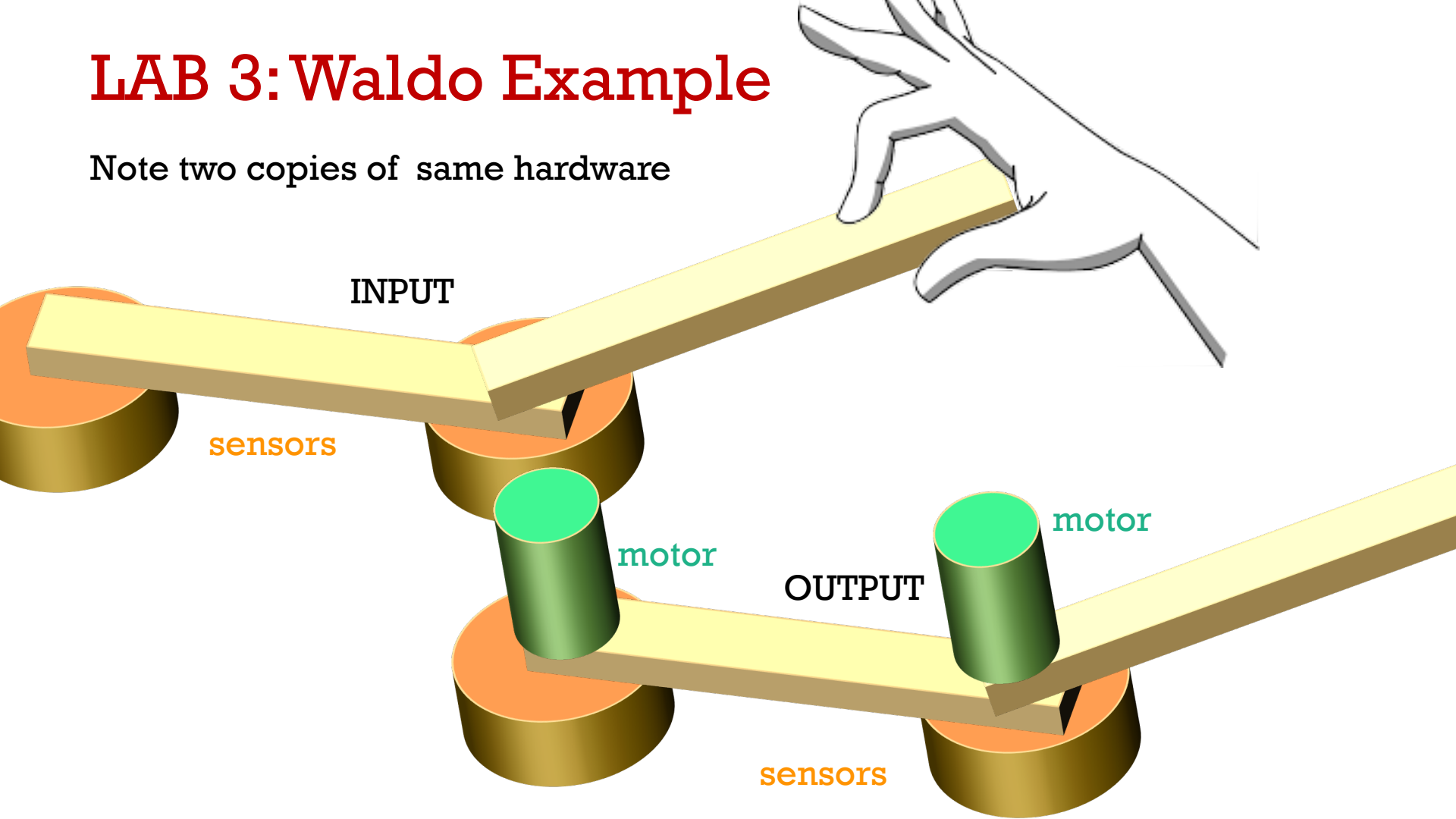
# LAB 3: Waldo Simple Example

The simplest route:

- Make a revolute planar device (slide on a table – no gravity)
- Use potentiometer for sensing joint angles on waldo
- Use pot shaft as axle.
- Laser cut links.
- Hot-glue  mounts.

# LAB 3: Waldo Example

Note two copies of same hardware



# LAB 3: Waldo Example

Slightly more complex options:

- Make a non-planar device
  - Motors will need to compensate for gravity
- 3D print linkages (takes time)
- Use something other than potentiometer for sensing for joint angles on Waldo

# Fabrication Materials

- For the full semester you will be allocated 1 laser bed sheet of 1/8" MDF (you may purchase more later if needed).
- You may 3D print up to a 4hour job. Dependence on 3D printing is discouraged as our 3D printers are not that reliable.
- You will design and submit files for the RPL staff and TA staff to create for you.