Safe First

In: **Wear Eye Protections**

Out: Unplug Batteries

ENGR 4421: Robotics II

Review and Preview

01/14/2025

Outline

- Review
- Preview (Upgrades)

Course Information

- Hours: 10:50 AM – 1:30 PM, Tuesdays & Thursdays
- Location: LSCA 105
- Office Hour: 10:00 AM – 12:00 PM, Wednesdays @ LSCA 105
  - Look for me in LSC 110 / LSC 013 if not in the classroom
- Wifi: BotSpot (physicsrules)

Course Resources

- Course page: https://linzhanguca.github.io/robotics2-2025
- Textbook: https://docs.ros.org/en/jazzy/index.html
- HomeR repository: https://github.com/linzhangUCA/homer
- Simulation tutorial: https://github.com/linzhangUCA/ros2_demo_robot

What is a Robot

A robot is an autonomous machine capable of sensing its environment, carrying out computations to make decisions, and performing actions in the real world.
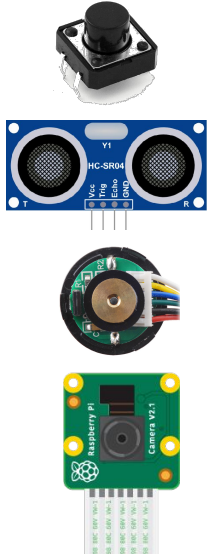
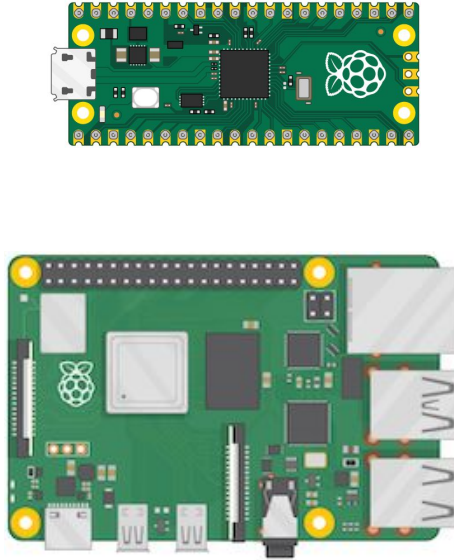Perception

Action
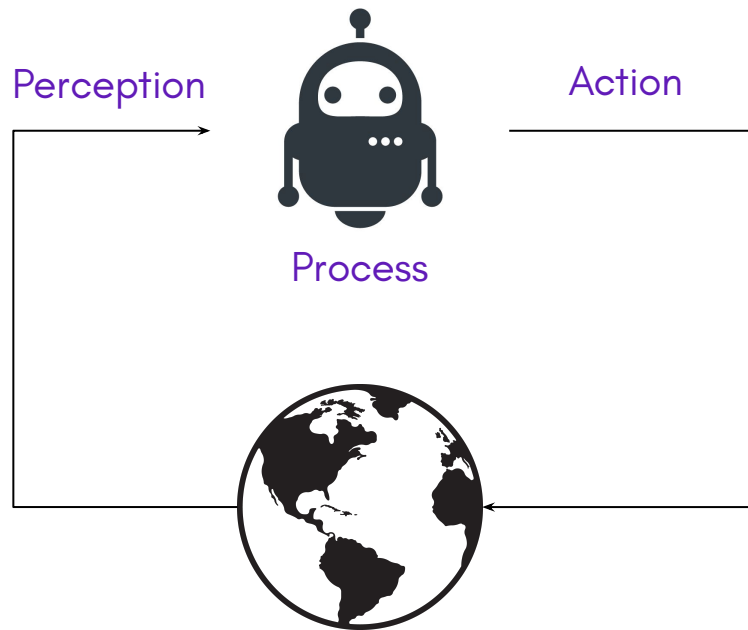
Process

Upgrades

- **Mechanical**: Updated bed design.

- **Electrical**: Printed Circuit Board (PCB).

- **Software**: Ubuntu + Robot Operating System (ROS).

- **Processors**: Raspberry Pi 5 (computer) & Raspberry Pi Pico 2 (microcontroller).

- **Power Management**: Dedicated power supply board for RPi 5.

- **Sensors**: RPLIDAR A1.

Components from Robotics 1

Perception

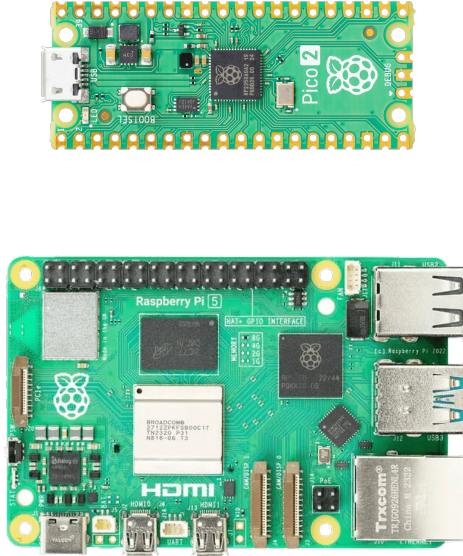**Processing**
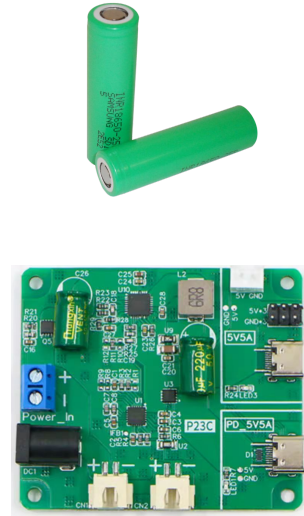
Action

Power

Upgraded Components

Perception
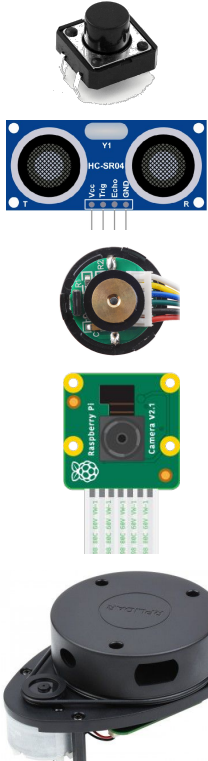
Processing

Action

Power
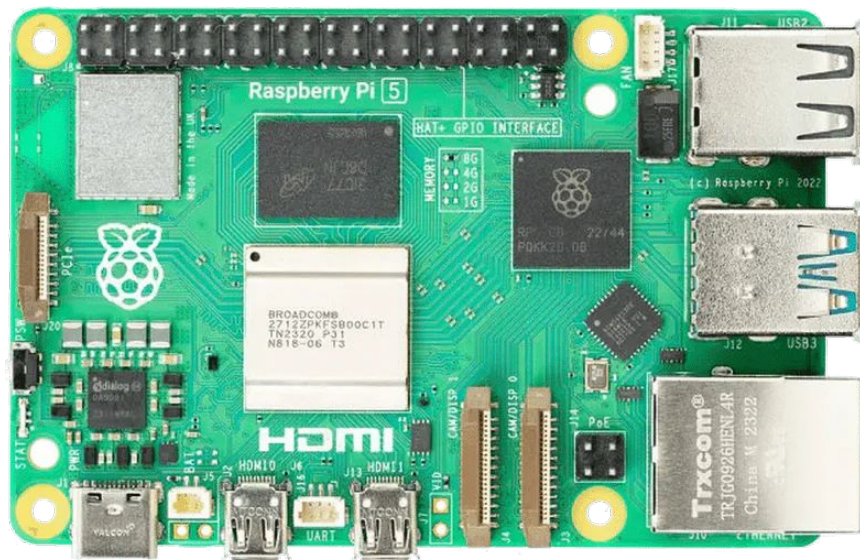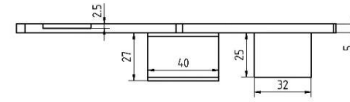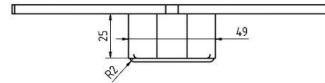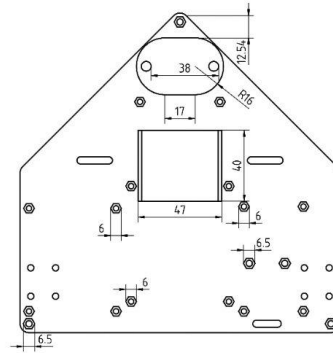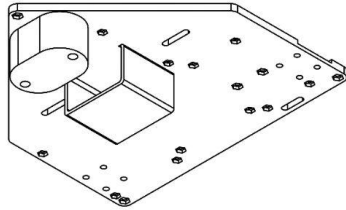
Light Detection And Ranging
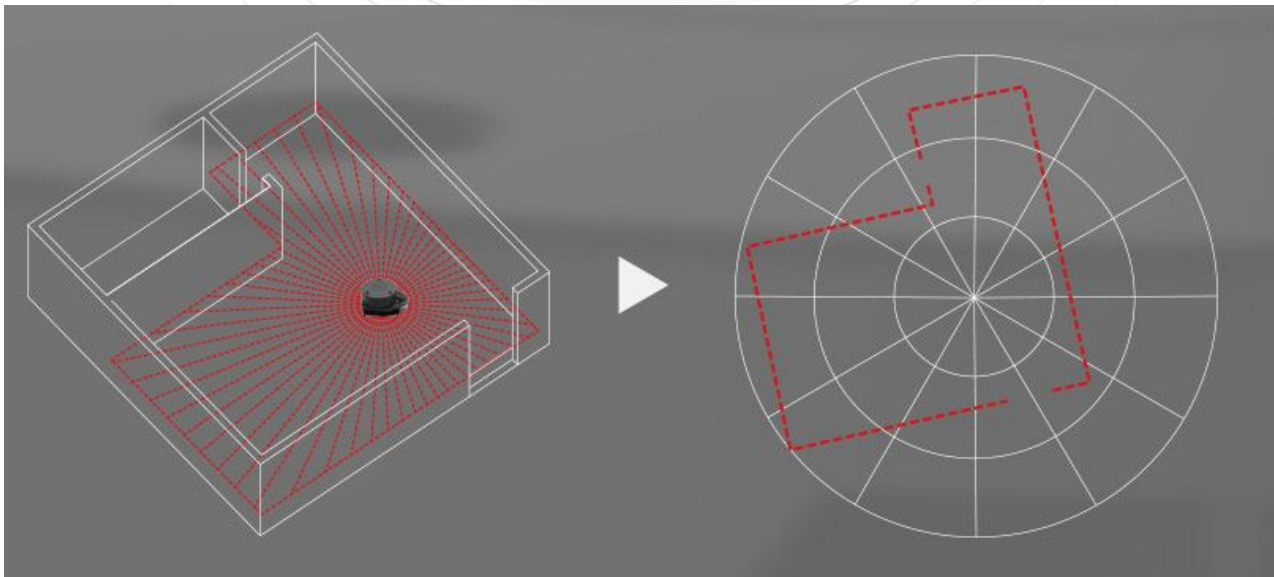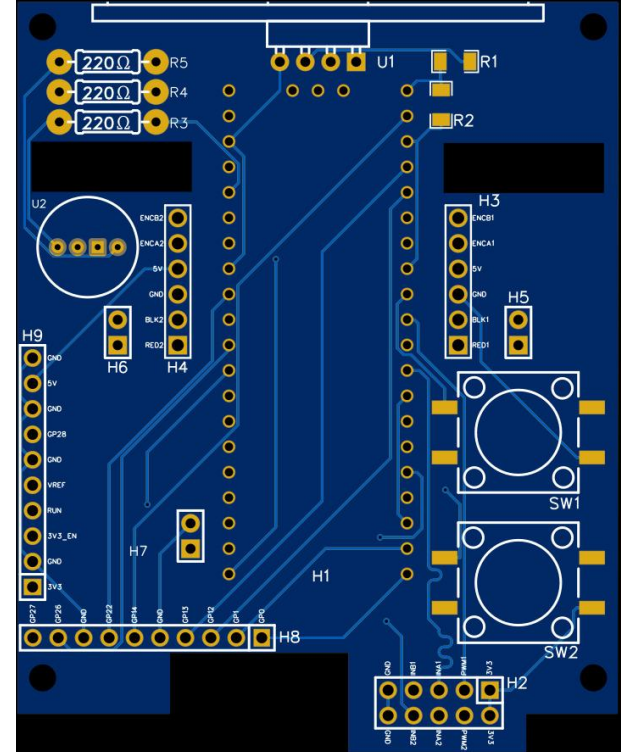
New Raspberry Pi Products
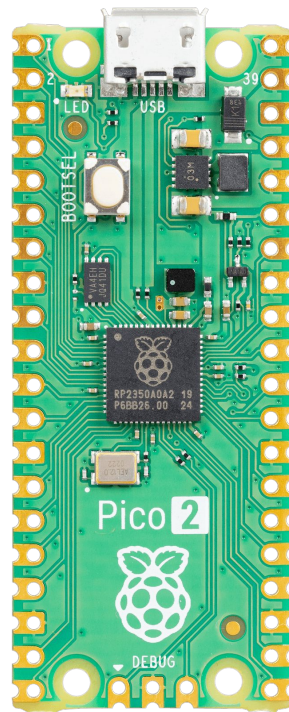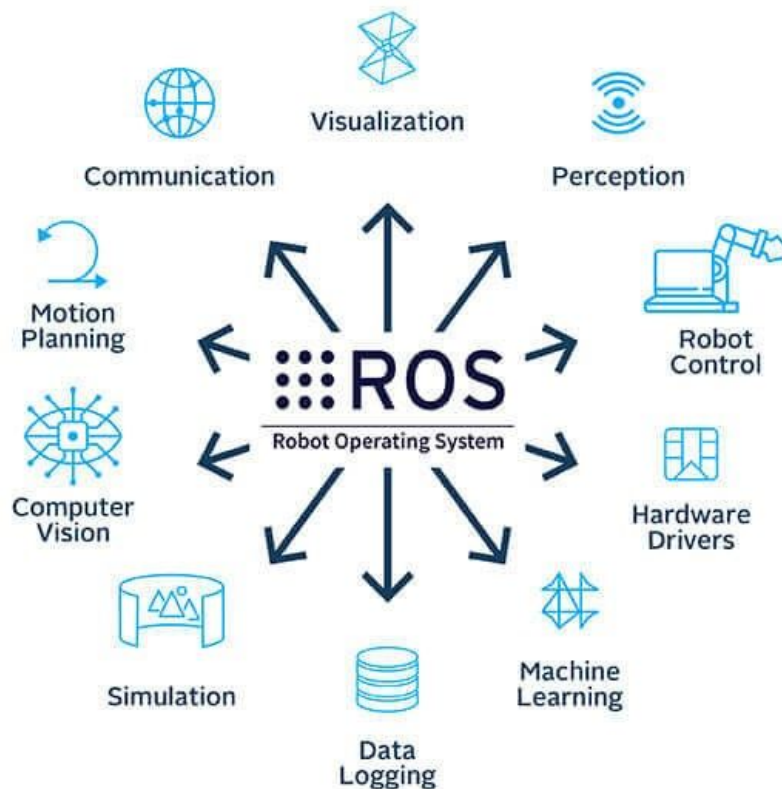
Base Layout
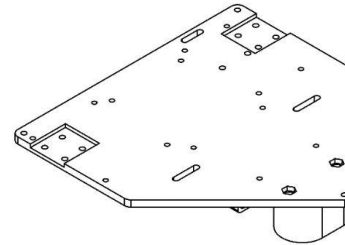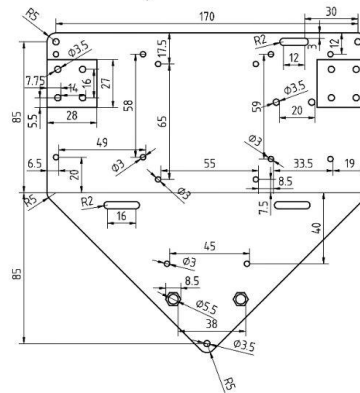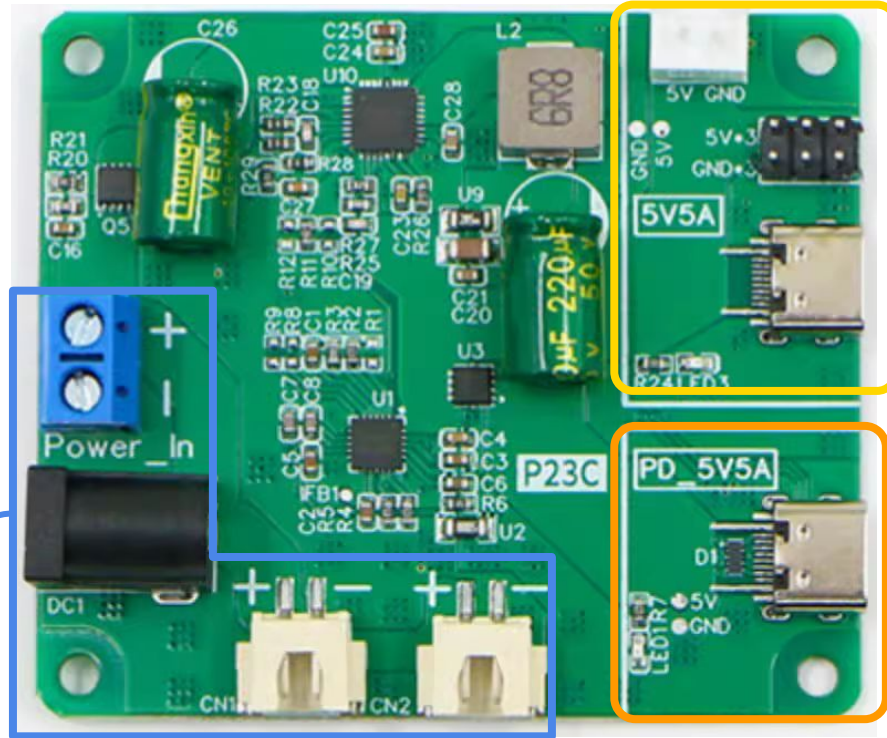
PCB

Reserved for the picture of Caleb's circuit

Robot Operating System (ROS)
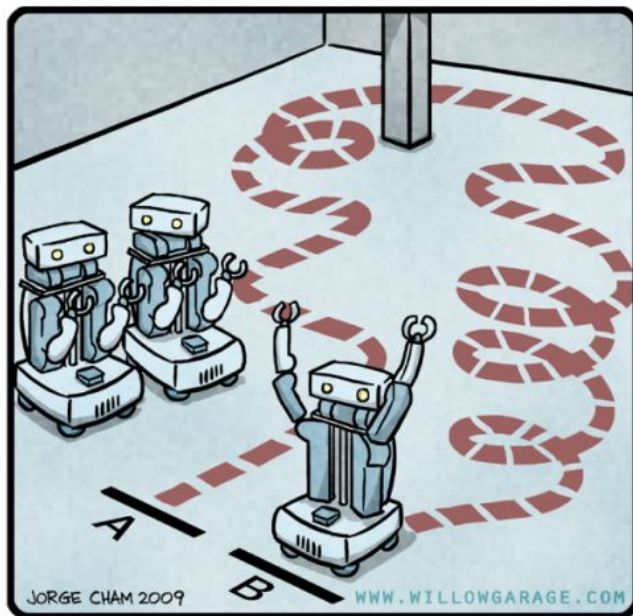
Power Management

Inputs: 6 - 40V

Outputs: 5V

Dedicated to RPi 5

Goal of semester: Autonomous Navigation

"HIS PATH-PLANNING MAY BE SUB-OPTIMAL, BUT IT'S GOT FLAIR."