

ENGR 4421: Robotics II

Review & Preview

01/12/2023



Outline

- Review
- Preview

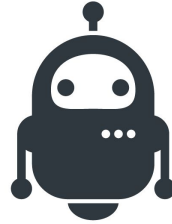
Course Information

- Instructor: Lin Zhang
- Course Materials: https://linzhanguca.github.io/robotics_2-2023
- Location: LSCA105
- Office Hour: 10:00 AM - 12:00 PM, Wednesday @LSCA105 / LSC110 / LSC013
- Laptop: physicsrules

Review

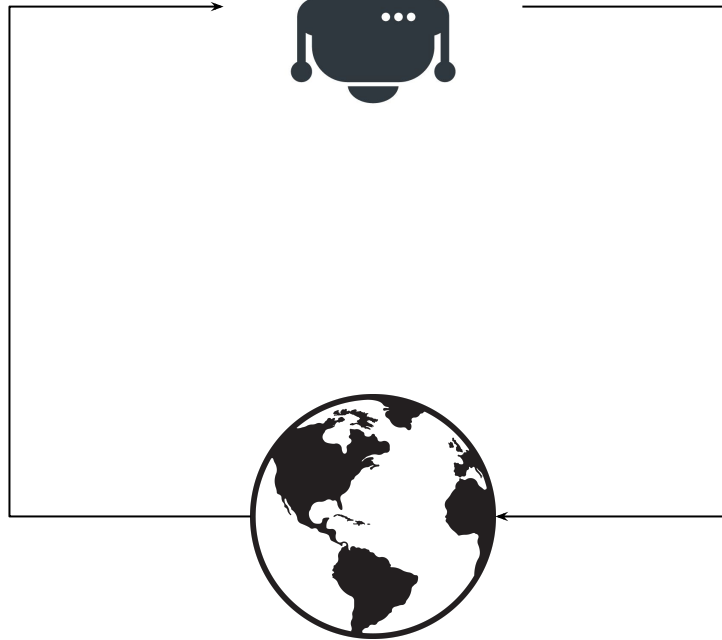
- Ultrasonic Distance Sensor
- LiDAR
- RGB Camera

Perception



Action

- DC Motor
- Servo Motor



Suggestions

- **Safety**
 - Wear protections.
 - Look out for short circuit.
 - We have first-aid kit.
- **Time**
 - Spend time and commit to your project, to your team.
- **Frustration**
 - It's normal. Take a break.
- **Thinking ahead of Doing**
- **Error handling**
 - Check the error message and use the search engine.
- **Break down complicated problems**
 - Write small chunks of code to test simple subsystems.

Preview

- **Build the robot**
 - Design and assemble parts of hardware
 - Linux command line
 - ROS basics (installation, workspace, package, topic, etc.)
- **Model the robot**
 - URDF description
 - Gazebo simulation
- **Control the robot**
 - Kinematics
 - Feedback control
 - `ros2_control`
- **Navigate the robot**
 - Integrate Lidar
 - `Slam_toolbox`
 - `nav2`

Previous Project Repos

- <https://github.com/willward20/the-bot-bros>
- <https://github.com/nadira30/geeks-uca>

