

## Assignment #6

**Total Points:** 100

**Office location:** CAED 210H

### Instructions

**Collaboration Policy:** For "Individual assignments," Collaboration is expected within the limits of discussing concepts and problems. However, each student must produce his/her own solution to the problems. For "Group assignments," each student should have specific contributions to the homework –by default, the instructor assumes equal contributions; if any disagreement between team members about the contributions of individuals, please talk to the instructor to initiate a peer evaluation process.

**ChatGPT Policy:** In general, please be transparent if you use ChatGPT and highlight the parts of the homework generated by ChatGPT. When you choose to use ChatGPT to provide some answers, please *1) use an online document to save the ChatGPT sessions that helped you produce the answer; 2) critically review the answers generated by ChatGPT, highlight the parts that you found that ChatGPT's answer needs improvements.*

### General Expectations and Requirements for Homework:

- Please use considerable and uniform font sizes throughout the document to maintain consistency of the document. You may choose to highlight subheadings with either a bold or underlined feature.
- Please use bullet points wherever possible to make the answers clear and easy to follow by an educated reader.
- Please do not forget to reference additional data, hyperlinks or literature used as evidence or background information to support your claims and solutions in the document. Please list those references below your answer or at the end of the document.
- Please refer to the textbook and provide descriptive answers wherever possible.
- Please communicate with the instructor to clarify questions about the homework description BEFORE the submission; after the homework submission deadline, the students are responsible for the point losses due to different ways of interpreting the homework requirements.

All homework submissions should be submitted electronically on Canvas.

# Imagine a Simple Robot for Architecture or Construction

**Group Work Option:** You can work in groups of **up to 3**. If working in a group, include a note describing each person's contribution. The grading will be consider the **number of team members and teamworks!**

## Overview

In this assignment, you will use what we've learned in class to imagine and describe a simple robot that can help solve a common achitecture /construction problem.

## Objectives

- Identify a Practical Problem in architecture /construction: Choose one challenge that happens on construction sites (for example, lifting heavy materials, cleaning up debris, or improving worker safety).
- Imagine a Robotic Helper: Think of a simple robot that could help solve this problem.
- Draw Your Idea: Create a simple sketch or diagram of your robot with labels.

## Assignment Instructions

- **Describe the Problem**
  - *What's the Issue?* Write about a common problem you observe or imagine on a construction site.
  - *Why It Matters:* Explain why solving this problem would help the construction process (think about safety, time, or cost).
- **Your Robotic Idea**
  - *What Does Your Robot Do?* Describe a simple robot that could address the problem. For example, you might describe a robot that carries heavy materials or cleans up debris.
  - *How It Works:* Explain in basic terms how the robot would perform its task. Use simple comparisons (like comparing a sensor to human eyes) if needed.
- **Illustration/Sketch:**
  - *Draw Your Robot:* Create a simple drawing or diagram of your idea. You can draw on paper and take a picture or use a digital tool.
  - *Label the Parts:* Add labels to explain the parts of your robot (like "sensor" for the robot's "eye" or "arm" for lifting).
  - *Explain Your Drawing:* Write a short description of what your drawing shows.
- **Discuss Benefits & Challenges**
  - *Benefits:* Explain how your robot could make construction work easier, safer, or faster.
  - *Challenges:* Think of one or two simple challenges (for example, cost or the need for maintenance) and suggest ideas on how these might be managed.