

ENGR 3421: Robotics I

Introduction

08/24/2023



Outline

- Course related information
- What is a robot
- Github Classroom

Safe First

Wear Protections

Course Information

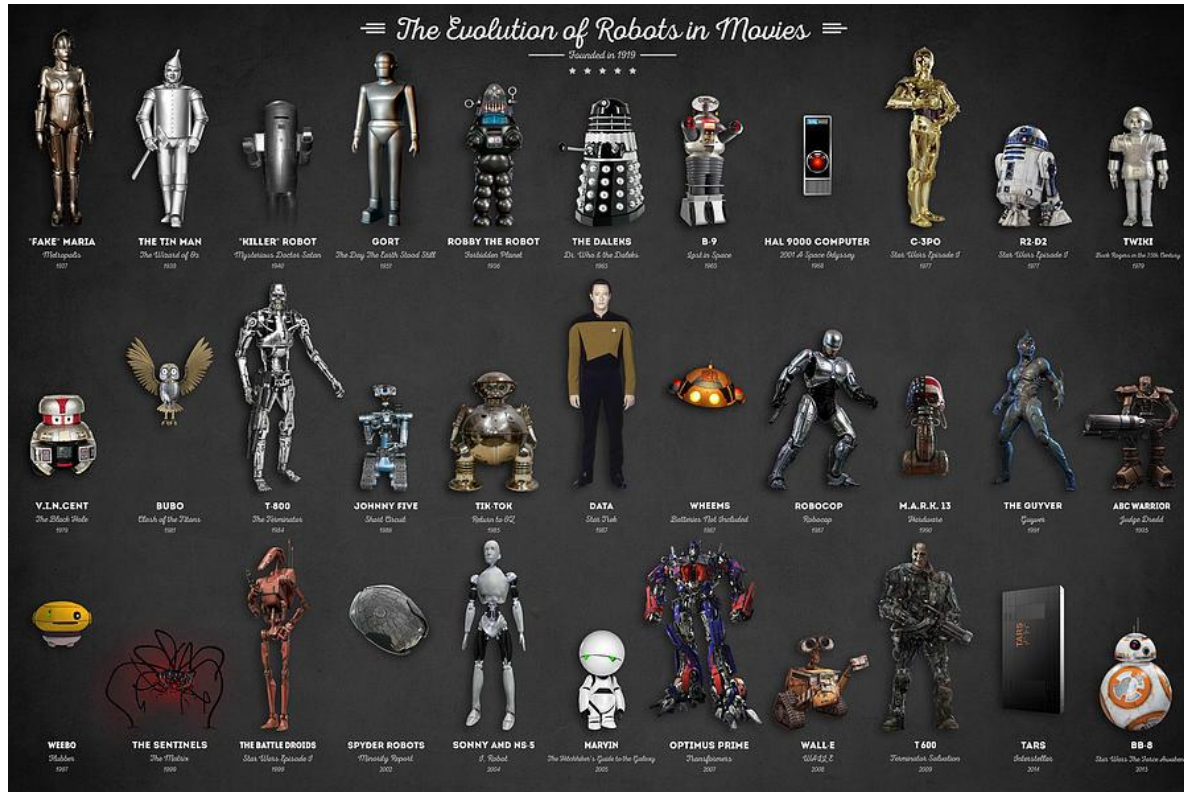
- Eye Protection Always
- Course Materials: https://linzhanguca.github.io/robotics_1-2023
- Hours: 10:50 AM - 1:30 PM, Tuesdays & Thursdays
- Location: LSCA 105
- Wifi: LSCA-105_5G, LSCA-105
- Can Take Home: Laptop, robot
- CANNOT Take Home: Monitor, Keyboard, Mouse

Instructor Information

- Instructor: Lin Zhang
- Office: LSCA 105
- Office Hour: 10:00 AM - 12:00 PM, Wednesdays
 - Also Look for me @ LSC 110 / LSC 013

What is a Robot?

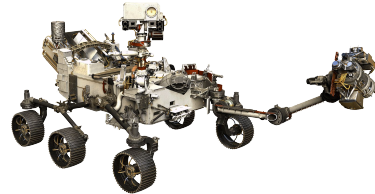
In Popular Culture



In Real World

Robots may be constructed to evoke human form, but most robots are task-performing machines, designed with an emphasis on stark functionality, rather than expressive aesthetics.

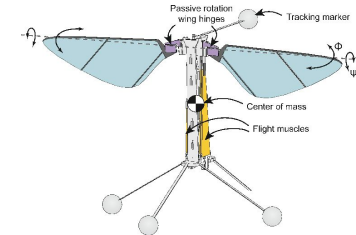
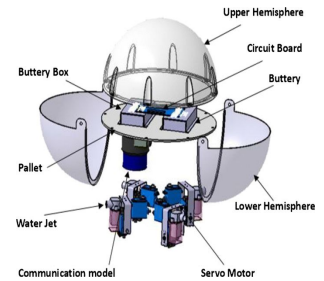
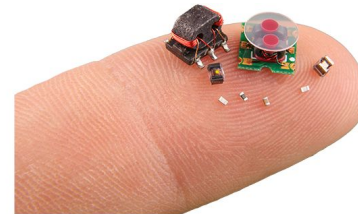
- Factory robot
- Housekeeping robot
- Warehouse robot
- Agricultural robot
- Survey robot
- Entertainment robot



In Scientific Research

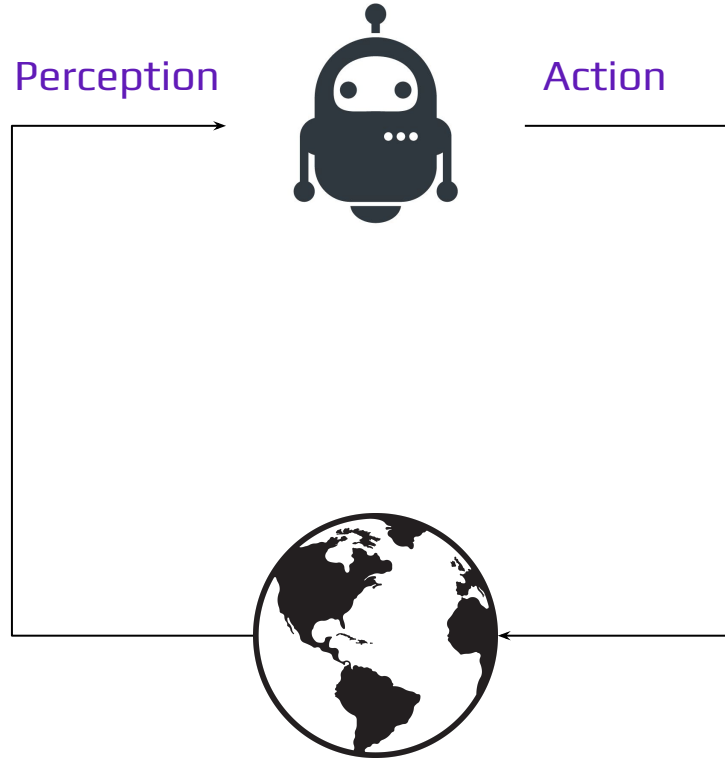
A robot is a machine—especially one programmable by a computer—capable of carrying out a complex series of actions automatically.

- Humanoid
- Quadrupedal robot
- Spherical robot
- Winged robot
- Quadrotor
- Underwater robot
- Soft robot
- Extra-terrestrial robot
- ...



What Is A Robot?

A robot carries out a series of actions **autonomously** according to perceived environment changes.



Mobile Robot

A.k.a. automated guided vehicle, Autonomous ground vehicle (AGV), unmanned ground vehicle (UGV).

- Self-driving car
- Delivery robot
- Warehouse robot



What to Expect

- Coding: Python
- Micro-Controller: Raspberry Pi Pico
- SBC: Raspberry Pi
- Linux
- Robotic circuits
- Lots of frustration
- Aha moments

Build it, break it, fix it

Github Classroom

1. Create a Github account
2. Accept assignment
3. Update repository

Let's Build a Robot Base

