The Robot Doctor
Episode 102: Sense, Plan, Act Framework

Review:

Sense, Plan, Act – the cycle a robot must perform to accomplish its tasks

Sense – gathering information:

- Determine where the robot is
- Determine what is nearby
- Determine if the job is complete

Plan – determining what and how to perform next:

- Generating a path to follow
- Determining which task to perform next from a sequence of tasks
- Figure out how to avoid obstacles
- Determine what action is "best" depends on what the robot is trying to accomplish
  - "best" can be defined in terms of the least energy or time, the highest level of comfort or safety, or a combination of many elements

Act – Executing the plans

- A controller runs the motors and actuators to carry out the plan
- The performance is sensed to provide feedback and correct for errors thus repeating the cycle

Challenge Questions

For these questions, think about what the SENSE-PLAN-ACT steps are for each robot:

1) Imagine you have a robot surveying an orchard – looking for ripe fruit to pick. What are the sense, plan, and act steps for this robot? What should it sense? What plans does it need to make? What are its actions?

2) Now imagine you have a robot vacuum cleaner. What are the sense, plan, act steps for this robot? What would it need to sense, what kind of plans would it need to make, and what are its actions?

3) Then look at which steps are the same between the two robots? Which steps are different? why?

4) How does the plan change if the criteria for "best" is using the least amount of energy instead of the fastest time?