Roomba Wars (Or something)
Project Goals

- Learn project and team management
- Learn resource allocation
- Build something cool
- Have fun
Equipment

- What’s fun?
  - Robots
  - Video cameras
  - Lasers?
Equipment

- What’s not fun?
  - Fixing broken hardware

- This is a system design class, not a hardware building class
  - We’ll use mostly off-the-shelf hardware (This doesn’t mean it will work as advertised.)
  - You have to understand and integrate it

- Possibility of adding Lego robots if you want to build…
Resources

- **Constraints**
  - Force creativity
  - Realistic

- **You’ll have budgets**
  - Purchasing
  - Power
  - Time

- **Course goal: balance costs such that there are multiple different solutions**
  - We’ll need help with this
  - You’ll do a great job of exploiting imbalances
Example: Budgets

- **Purchasing**
  - How much does each item “cost”?
    - Servo-cam vs. static cam?
    - Fast processor vs. slow processor?
  - What are the right items to use?
    - Which camera?
    - Which CPU?

- **Power**
  - How much power does each item use?
  - How much power do you have?
  - How do you want to use it?
  - How do we measure it in real-time?

- **Time**
  - Competition at the end
Setup

- **Arena**
  - 6m x 6m (?)
  - 3D obstacles (tunnels, walls, ramps)
  - Designed for computer vision
  - You’ll be designing and building this too…

- **Competition**
  - 2 robots per team
  - Individual (time) and group competition
  - Point score
  - Energy-efficiency score (points/J)
Challenge

1: Soccer
- Pushing balls to a goal
- Defending your goal

2: Hunter-gather
- Each team has 1 hunter and 1 gatherer
- The hunter has a laser it can use to temporarily disable other robots (someone needs to build this…)
- Your score is based on how many items you gather

3: Other ideas?
Your Roles

- Participate in your group
  - Complete the course
  - Have fun
  - Get frustrated
  - Learn
  - Get frustrated
  - Learn
  - …

- Help develop the course
  - Give feedback
  - Some of your responsibilities will be course-development oriented
Summary

- Huge potential for very cool, very interesting projects (robot+camera+laser)
- Lots of flexibility
- A few constraints (power+budget)
- Lots of unknowns

- Goal: learning how to manage a project
Questions?