Midterm Review

Bookkeeping

- Today:
  - Quick midterm review
  - A little more on projects
  - Survey to fill out: tiny.cc/robotics-survey (by March 15th)
  - Manipulation: configuration and grasping
- Upcoming:
  - Last of manipulation (or maybe kinematics)
  - Hardware build day
- If you aren't part of a 2-4 person team or would like more members, you **must** solve it by Thursday

Midterm

- Thursday after break, in class (2 weeks from today)
- Covers **through** manipulation
  - Concepts
  - Mobility
  - Sensing   Straight from
  - Uncertainty   the schedule
  - Manipulation
- Material includes **all** readings

What Will It Be Like?

- Basic idea: you need to **understand the ideas** behind the material and be **able to apply them** to problems
  - Goal of all this: be able to solve problems in robotics!
- Show **conceptual** grasp of the material
- Show **detailed** grasp of how to apply material
- Go from concepts ⇆ algorithms and implementations
  - Go from **problem description** to a **solution** or back

What Kind of Questions?

- First page: define terms
  - Not arbitrarily, but you need to be able to communicate
- T/F, multiple choice, fill in the blank
- Work through an {algorithm|solution type|problem}
  - In Python
  - Usually 1 coding problem
- Write a **short** answer to English questions
  - E.g.: What sensors would you put on your mail delivery robot? Why?

Scoring

- Read and follow directions.
- We start with a perfect score, mark down for mistakes
  - If I ask for 2 examples, and you give 3, one of which is wrong, it's $-\frac{1}{2}$, not $-\frac{1}{3}$
- Read carefully.
  - You have time.
  - ~~"I didn't see the part that said…"~~ ☹
- Ask for clarification

What Will It Be Like?

- Common problems:
  - Not expecting to define terms
  - Not looking at directions
  - Not looking at points
    - Don't spend 20 minutes on a 5-point question
  - Panicking

- I **don't** give the easiest exams, but I **do** curve (heavily)

- So **don't panic**!

Topics

- Mobility
  - Wheels
  - Legs
  - Wings
- Manipulation
  - Configuration
  - Grasping
  - Actuation
- Uncertainty
  - Error
  - Error propagation

- Sensing
  - Characterization
  - Localization
  - Line/plane extraction
  - RANSAC
- Types of sensing
  - Motion
  - Vision
  - Distance