Contact Information

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Web


Class Meetings

Tuesdays and Thursdays, 11:00-12:15

On lecture days (most Tuesdays), we will meet in Olsen 402. On lab days (most Thursdays), we will meet in Olsen 302. See the schedule on the last page of this syllabus for the planned meeting location for each day.

Office Hours

Tuesdays  12:30  to  2:00
Thursdays  9:00  to  10:30
and by appointment

Course Description

In this course, you will learn about robotics, with a focus on autonomous mobile robots. There will be lectures (held in Olsen 402) and labs (held in Olsen 302). In the labs, you will build and program your own robots. After the initial set of labs, you will build and program a robot for a term project. Public demonstration of the projects will be held at the end of the term.

Readings

Readings will be distributed in class. Many will not be available on the course web site due to copyright issues. If you miss a class, you are responsible for getting a copy of the handout from a classmate or from me during office hours.

Grading

Homework and Labs  40%
Midterm Exam  20%
Project:  40%
Collaboration Policy

Labs will be done in groups of two students each. You may choose your own partners, but I reserve the right to regroup people as the term progresses. For the labs, I expect that each person will do his or her own equal share of the work. To learn, you'll need to actually build and program the robots, not watch another person do it.

You should write your own homework assignments as well as any written components of the labs. You may discuss the questions with your classmates, but you must write them up individually.

Exams are also to be an individual proposition.

Robots

In the lab, you'll be building and programming robots. We will be using the CBC robot controller. Our robot bases will be built out of Lego (and anything else you'd like). Each two person team will be given a robot kit with the processing boards, sensors, and motors for use during the term; the lab contains large bins of Lego as well as a variety of other parts such as Vex and K'Nex.

Lab

The lab is in Olsen 302. Each group will have their own area with a computer on it for building and programming their robots.

The door has an ID lock, so you will have 24 hour access to the lab (ID access should be live by Thursday 1/23). While some time in class is set aside for working on your robot, you should expect to spend additional time in the lab to work on your labs and project.

Please try to keep your workspace and the lab neat. Do not leave trash lying around. You may eat in the lab, but this policy will be changed if people do not clean up after themselves.
Schedule

On lecture days, go to Olsen 402. On lab days, go to Olsen 302.

T 1/21 Lecture: Class overview and a brief history of robotics
Th 1/23 Lab: Intro to the robot kit; building your first robot platform
T 1/28 Lecture: Sensors, motors and robot morphologies
Th 1/30 Lab: Sense and avoid
T 2/4 Lecture: Braitenburg vehicles
Th 2/6 Lab: Braitenburg vehicles
T 2/8 Lecture: Robot control architectures
Th 2/13 Lab: Wall following
T 2/18 No class: Monday schedule
Th 2/20 Lab: Servo motors and sonars
T 2/25 Lecture: SLAM and path planning; Project meetings
Th 2/27 Lecture: Computer vision
T 3/4 Lab: Vision I
Th 3/6 Lab: Vision II; Project proposals due
T 3/11 Lecture: Robot learning
Th 3/13 Lab: Vision challenge
T 3/18 Spring Break
Th 3/20 Spring Break
T 3/25 Lab: Project
Th 3/27 Lecture: Multi-agent robotics
T 4/1 Lecture: Human-robot interaction
Th 4/3 Lab: Project
T 4/8 Lecture: Autonomy
Th 4/10 Lab: Project
F 4/11 Botball set up (volunteer opportunity)
S 4/12 Botball tournament and Botfest exhibition (volunteer opportunity)
T 4/15 Exam (in lecture room); covers material through 4/8
Th 4/17 Lab: Project
T 4/22 Student presentations: Cool robot applications
Th 4/24 Lab: Project
T 4/29 Lecture: On the horizon
Th 5/1 Lab: Final project presentations
T 5/6 Project reports due