



Robotics: Integrated Systems Design

Mechanics, Electronics, Computation, & Integration

Spring 2004

CS 490, ECE 492, IME 492, ME 492

Time & Place: Monday & Wednesday 3 p.m. – 4:15 p.m., EB 1012

Professors:

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Objectives:

1. To learn about integrated system design that includes mechanical, electrical, and computational components.
2. To study the mechanical mechanisms necessary for robot movement and actions.
3. To study the electrical mechanisms of sensor sampling and signal processing.
4. To study the computational mechanisms of autonomous robotics including deliberative and reactive architectures.
5. To study the computational mechanisms necessary for sensory perception.
6. To provide a hands-on experience to practical robotics.
7. To learn to work in a cross-functional team with people from different disciplines.
8. To learn about group dynamics and teamwork.

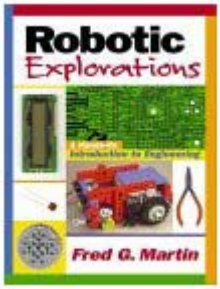




Required Textbook:

Robotic Explorations: An Introduction to Engineering through Design by Fred Martin

Additional reading material will be assigned.



Suggested Reading:

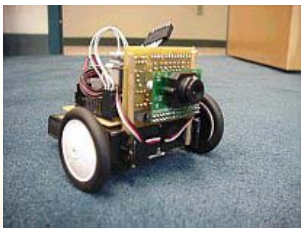
Introduction to AI Robotics by Robin Muphy
Computational Principles of Mobile Robotics by G. Dudek & M. Jenkin
Mobile Robotics a Practical Introduction by Ulrich Nehmzow
AI Topics Website: www.aaai.org/AITopics/html/robots.html

Course Website: www.cs.siue.edu/robotics/integratedsystems

Building & Programming:

Student teams will build robots using the Handy Board Microcontroller (www.handyboard.com). The Handy Board is programmed in Interactive C.

Students will also build and use a variety of sensors including CMU color camera (http://www-2.cs.cmu.edu/~cmucam/).

Organization:

- The course will consist of lectures, team assignments, and individual assignments.
- Each class member will participate in a team project. Teams will consist of 3 or 4 students from different disciplines.
- Graduate students will be required to do 1 to 2 additional writing assignments.

Grading:

Assignments	25%
Quizzes	25%
Final Exam	20%
Final Project	30%

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