

The Scientific Method

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1 Introduction

- Obviously we're all here to learn about intelligent robotics. Traditionally we'd waste a lecture telling about the structure of the course, and so on. This is all of the website. We're going to spend a little bit of time on this stuff and then get into some real material.
- Notes. Take 'em. My laptop is broken. There are no slides.
- Lecturing at you is boring for all of us. We're going to be interacting a lot.

2 Course Structure

- Robotics is big. We can't cover everything.
- Four primary areas
 - Science!!!!!!
 - Sensing
 - Control
 - Decision making
- Two projects
 - Little warm up project, due beginning of week 4
 - Major project for the rest of time. Integrates all four elements above. Demo and report at the end of the semester.
 - You'll work in a group of three

- Lab Sessions
 - Tues 2-4 or Thurs 3-5. Choose one. We may ask you to move if they are unbalanced.
 - We'll run labs this week to distribute kit, so you can get started next week.
- Kit
 - You are going to spend a lot of time with this kit.
 - Quick rundown of components.
 - You need 60 squids deposit. Pay at the lab. Cheques (preferable) or cash.

3 Course Goals

- The goals of this module, according to the module web page, are:
 - * Give an appreciation of the issues that arise when designing complete, physically embodied autonomous agents.
 - * Introduce some of the most popular methods for controlling autonomous mobile robots.
 - * Give hands on experience of engineering design.
 - * Encourage independent thought on possible cognitive architectures for autonomous agents.
- That might win points for vagueness
- What reusable skills do you think you might get out of Intelligent Robotics? [Group work]
 - Embedded systems
 - Machine learning
 - Knowledge of hardware

4 Science

- How do we come at knowledge? [Discussion time!]
- My list:
 - Appeal to authority

- From first principles (aka axioms)
- From observation (aka science)
- We're wired that way (Suggested by the students)
- What is science? [Discussion time!]
 - Fundamentally about drawing inferences from observations
 - Reproducible and testable, otherwise it is just appeal to authority
 - The experimental method!
 - It has a few (i.e. many) uses
 - The four step process of doing Science:
 - * Formulate hypothesis
 - * Collect data
 - * Evaluate data
 - * State conclusions
 - 1,2,4 don't require special knowledge. 3 requires some knowledge of probability and statistics. That's the next lecture

5 Questions?