Artificial Intelligence Application Development

Introduction

Today's Outline

Course Overview

Administration

Objectives

We will examine current research in Artificial Intelligence (AI), with an emphasis on algorithms and representations that can be put to use in solving practical problems now or in the near future.

Multiple areas of AI will be covered, with a focus on topics not covered during CS 1571.

Course objectives include

- Ability to build simple versions of a few AI applications
- Familiarity with full-scale versions of the same applications
- Application building using paradigms of AI Programming
- Mastery of some AI toolkits for AI applications and rapid prototyping

Major Topics of this Course

Advanced AI Topics

- empirical methods
- agents / embedded AI
- natural language processing
- machine learning
- others tailored to class interests and time

Methodologies, Tools and Languages

- knowledge-based and statistical
- regular expressions, grammars, probability, automata, and more
- online toolkits
- programming languages of your choice

Artificial Intelligence

The field of *Artificial Intelligence (AI)* is primarily concerned with understanding and building intelligent entities.

AI is one of the newest (since 1956) and oldest (since 4000 BC) disciplines.

Studying AI involves studying formal representations, and algorithms for their manipulation.

Sample Pitt Applications

Tutor students in areas such as physics

Detect and adapt to user frustration

Access the web over the telephone

Recognize opinions in the world press

Detect disease outbreaks

Extract forms from medical transcriptions

Demos

Dialogue Systems

- ELIZA (www-ai.ijs.si/eliza/eliza.html)
- JUPITER (1-888-573-TALK)

Question Answering

- AnswerBus (www.answerbus.com/news)
- Opinion Highligher (Pitt)

Summarization

- Newsblaster (www.cs.columbia.edu/nlp/newsblaster)
- NewsInEssence (www.newsinessence.com/nie.cgi)

Machine Translation

- Babelfish (babelfish.altavista.com)

Games

- Tic Tac Toe (http://www.geocities.com/chen_levkovich/tictactoegame.html)

Collaborative Filtering / Recommender Systems (Amazon)

- LIBRA (http://titan.cs.utexas.edu:8090/libra/index.jsp) (cs1573)

Administration

Professor

Textbook

Web page

Requirements

Who should be here

Dr. Diane Litman

Affiliations

- Associate Professor, Computer Science Department
- Research Scientist, LRDC

Contact Information

- 5105 Sennott Square, (412) 624-8838
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Office Hours TBA

Litman, cont.

Background

- 2001-present: University of Pittsburgh
- Previously: AT&T Labs - Research (formerly AT&T Bell Laboratories); Columbia University

Homepage

- http://www.cs.pitt.edu/∼litman

Litman, cont.

Research

- Speech and Natural Language Processing
  - http://www.cs.pitt.edu/∼litman/nlplab.html
- Other Artificial Intelligence
  - machine learning applications
  - user modeling and personalization
  - knowledge representation
  - plan recognition

Teaching Assistant

Beatriz Maeireizo

- Doctoral Student, Computer Science Department

Contact Information

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Office Hours

- TBA

Class

Who are you?

Texts

Artificial Intellignece: A Modern Approach (2nd Editon), by Russell and Norvig

Selections from other textbooks

Course Web Page

URL

- www.cs.pitt.edu/∼litman/courses/cs1573/1573.html

Syllabus

- topics
- readings
- assignments
- lecture notes
- announcements

Requirements

Readings (before class!)

Homeworks (problem sets, writing and using programs)

Midterm and Final Exams

Project (programming, paper, and presentation)

Class Participation

Prerequisites

CS1571, and the ability to write and use programs

For Next Time

(Re)Read Chapter 1 from Artificial Intelligence: A Modern Approach

Get a CSSD account

- you will need to run your programs on unixs.cis.pit.edu
- you will need to access /afs/cs.pitt.edu/projects/nltk/

Send me email for a class mailing list

Assignment

- find an interesting AI application or demo, and be prepared to report back on your findings

Survey

Name:

Email:

Year:

Major:

When took CS1571:

Other Relevant Courses:

Programming Languages (especially Python, Java, Lisp, Perl):

AI Paradigms (state machines, regular expressions, rule systems, grammars, logic, probability, automata, machine learning, etc.):

Operating Systems:

Special Interests: