Autonomous Multiagent Systems

Peter Stone

Week 7, Tuesday (10/8)

Midterm Surveys

- 14 received so far
- I'll stop bugging you now

Any Questions?

Final Projects

Proposal (10/17): 3+ pages

- What you're going to do; graded on writing

Progress Report (11/14): 5+ pages + binaries + logs

- What you've been doing; graded on writing

Team (12/3): source + binaries

- The tournament entry; make sure it runs!

Final Report (12/5): 8+ pages

- A term paper; the main component of your grade

Tournament (12/17): nothing due

- Eat donuts

Due at beginning of classes

Overview of the Readings

Sahota: **Reactive deliberation**

AT Humboldt: Forward planning, **recomputed every cycle**

Luke, Darwin: 2 **genetic programming** approaches

CMUnited99: Teammate, **opponent modeling**; layered disclosure

Riedmiller: **Learned action success rates** (NN)

Kok: Optimal scoring; **learned** prob. of ball on goal $\times$ prob. of passing goalie

Reactive Deliberation

- A hybrid approach
- Executor: carry out reactive behaviors
- Deliberator: evaluate possible high-level schema with parameters; generate bids
- Deliberator takes time, but something keeps happening always.
- In effect: deliberator commits to schema for some time

Department of Computer Sciences
The University of Texas at Austin

Evolutionary Computation

- Motivated by biological evolution: GA, GP
- Search through a space
  - Need a **representation, fitness function**
  - Probabilistically apply search operators to set of points in search space
- Randomized, parallel hill-climbing through space
- Learning is an optimization problem (fitness)

Some slides from *Machine Learning* [Mitchell, 1997]

Next Week's Readings – Swarms

- 3 ant-based papers
  - Many, simple agents

Department of Computer Sciences
The University of Texas at Austin