CS378 Autonomous Multiagent Systems Spring 2005

Prof: Peter Stone TA: Nate Kohl

Department or Computer Sciences The University of Texas at Austin

Week 6b: Thursday, February 23rd

Good Afternoon, Colleagues

Are there any questions?



Good Afternoon, Colleagues

Are there any questions?

- How did Darwin United do?
- Darwin fitness function why ordered in that way?
- Should we use human positional notions?
 - Can skills affect positioning decisions?



Logistics

• Project partners?



Logistics

- Project partners?
- Teams to compete against



Logistics

- Project partners?
- Teams to compete against
- Example projects
 - Plays: give and goes
 - Communication: what and when?
 - Offside trap: coordination
 - Coordination graphs
 - Simple ant-like rules
 - Evolve a team
 - Learn a goalie
 - Everything it takes to win



• Motivated by biological evolution: GA, GP



- Motivated by biological evolution: GA, GP
- Search through a space



- 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



- 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



- 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)



- 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)



• More ambitious follow-up to Luke, 97 (made 2nd round)



- More ambitious follow-up to Luke, 97 (made 2nd round)
- Motivated in part by my detailed team construction



- More ambitious follow-up to Luke, 97 (made 2nd round)
- Motivated in part by my detailed team construction
- Evolves whole teams lexicographic fitness function



- More ambitious follow-up to Luke, 97 (made 2nd round)
- Motivated in part by my detailed team construction
- Evolves whole teams lexicographic fitness function
- Evolved on huge (at the time) hypercube



- More ambitious follow-up to Luke, 97 (made 2nd round)
- Motivated in part by my detailed team construction
- Evolves whole teams lexicographic fitness function
- Evolved on huge (at the time) hypercube
- Lots of spinning, but figured out dribbling, offsides



- More ambitious follow-up to Luke, 97 (made 2nd round)
- Motivated in part by my detailed team construction
- Evolves whole teams lexicographic fitness function
- Evolved on huge (at the time) hypercube
- Lots of spinning, but figured out dribbling, offsides
- 1-1-1 record. Tied a good team, but didn't advance



- More ambitious follow-up to Luke, 97 (made 2nd round)
- Motivated in part by my detailed team construction
- Evolves whole teams lexicographic fitness function
- Evolved on huge (at the time) hypercube
- Lots of spinning, but figured out dribbling, offsides
- 1-1-1 record. Tied a good team, but didn't advance
- Success of the method, but not pursued



Laura Massey on when GP is useful

