



UMass Lowell Computer Science Colloquium Announcement

Speaker: Dr. Jordan B. Pollack
Brandeis University, <http://www.demo.cs.brandeis.edu>
Date & Time: March 13, 2003. 3:00pm-4:00pm
Place: Olsen 311. Refreshments are served at 2:45pm

Beyond Competition: Towards a principle for self-organization and continuous learning

How does life progress to such complexity as to eventually achieve cognition? The biological matrix dissipates energy from the sun leading to a local reversal of entropy which results in ever more complex order. Mechanisms of astonishing beauty emerge from interactions between replicating forms in a non-cognitive process of open-ended knowledge discovery.

For the past decade my students and I have been studying "artificial coevolution" as a computational approach to self-organization and automatic design. Coevolution is easiest envisioned as a population of game-playing agents who learn better and better strategies simply by playing the game (Self-learning).

We have had many successes in optimization, language, games, problem solving, and - most publically - robotics. Yet these systems -organized using Darwinian notions of competition - always seem to run out of steam. The agents discover collusive equilibria which halt progress. They disengage into winners and losers who cannot learn from each other. They engage in boom and bust cycles.

Achieving a fundamental understanding of why co-evolution stalls had led to discovery of a new principle of self-organization, which is neither competitive nor altruistic. It may have numerous applications, including peer-to-peer educational technology.

BIO: After a early career in the software industry Jordan B. Pollack received the Ph.D from University of Illinois in 1987. He taught at Ohio State University from 1988-1994 prior to moving to Brandeis University in 1994 where he is on the faculties of computer science and complex systems. He was named one of MIT Technology Review's "TR 10" in 2001.

Jordan has advised many Ph.D's and Postdoc's who have contributed to a broad range of different fields including neural networks, dynamical systems, evolution, machine learning, cognitive science, artificial life, robotics, and educational technology. His lab, the "Dynamical and Evolutionary Machine Organization" (DEMO) has been partially funded by ONR, NSF, DOE, and DARPA. Beyond academics, <http://jordanpollack.com> is a prolific inventor, founded a company called Thinmail, advises startups, incubators, and VC's, develops new theories of intellectual property and works for world peace.

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