Invited Speakers

Single-Agent Monte-Carlo Tree Search

Tristan Cazenave

Monte-Carlo methods have been applied with great success to two-player games such as *Go.* In this talk we focus on single-agent applications. A successful algorithm for single-agent Monte-Carlo tree search is nested Monte-Carlo search. It has been applied to puzzles such as *Morpion Solitaire* and *SameGame* and to difficult combinatorial optimization problems such as the traveling salesman with time windows. Nested Monte-Carlo search can also be used to discover complex formulas in various domains. The algorithm will be presented as well as its applications and its developments.

Tristan Cazenave is a professor of computer science at LAMSADE, Universite Paris-Dauphine. He holds a PhD from Universite Paris 6. His interests are in search algorithms and computer games. He has written programs for multiple board games and has authored more than one hundred scientific papers on artificial intelligence in games.

Heuristic or Blind Search?

Stefan Edelkamp

I will first open my and Stefan Schroedl's book on heuristic search. Starting with specialized solvers, I will show how general inputs can be solved efficiently. In the search I will employ lower bounds, perfect hash function, efficient priority queues and methods adopted from machine learning. I will also address symbolic representations and (SS & HD) disks to overcome limitations in RAM as well as parallel processes (on the CPU and GPU) to speed-up calculations. After closing the book, I will turn to recent surprises in optimal planning, where blind search could beat A* with state-of-the-art heuristics.

Stefan Edelkamp is a professor in the Artificial Intelligence Group of the Faculty of Computer Science and Mathematics at the University of Bremen. He earned his Ph.D. from Freiburg University and has lead a junior research group at Technical University of Dortmund. His scientific interests are centered around algorithmic intelligence and include such areas as heuristic search, action planning, game playing, machine learning, multiagent simulation, model checking, external-memory agorithms, parallel and distributed computing, algorithm engineering, computational biology, decision diagrams, priority queues, navigation systems, network wecurity, and intrusion detection. Stefan Edelkamp has organized successful workshops (MOCHART-06, SPIN-07), conferences (KI-11, ICAPS-11) as well as Dagstuhl seminars (Directed Model Checking and on Graph Search Engineering) and won several performance awards at international planning competitions. Together with Stefan Schroedl he is a coauthor of *Heuristic Search — Theory and Applications.*