

1023-49-1187

Michael C. Fu* (mfu@rhsmith.umd.edu), **Hyeong Soo Chang, Jiaqiao Hu** and **Steven Marcus**. *Population-Based Evolutionary Approaches for Solving Markov Decision Processes*.

We present algorithms for solving infinite horizon discounted reward Markov Decision Process (MDP) problems that are based on evolving a population of policies, in contrast to the usual policy iteration approach, which updates a single policy. The computational complexity of the algorithms is polynomial in the size of the state space, and is insensitive to the size of the action space; thus the algorithms should be effective for problems with large or uncountable action spaces. Rigorous convergence is established under appropriate conditions. Numerical studies are carried out to illustrate the algorithm. (Received September 25, 2006)