

A coevolutionary multiobjective evolutionary algorithm for game artificial intelligence

Abstract

Recently, the growth of Artificial Intelligence (AI) has provided a set of effective techniques for designing computer-based controllers to perform various tasks autonomously in game area, specifically to produce intelligent optimal game controllers for playing video and computer games. This paper explores the use of the competitive fitness strategy: K Random Opponents (KRO) in a multiobjective approach for evolving Artificial Neural Networks (ANNs) that act as controllers for the Ms. Pac-man agent. The Pareto Archived Evolution Strategy (PAES) algorithm is used to generate a Pareto optimal set of ANNs that optimize the conflicting objectives of maximizing game scores and minimizing neural network complexity. Furthermore, an improved version, namely PAESNet_KRO, is proposed, which incorporates in contrast to its predecessor KRO strategy. The results are compared with PAESNet. From the discussions, it is found that PAESNet_KRO provides better solutions than