Abstract

Game playing has been the area of research in Artificial intelligence. Particularly, board game playing programs are often described as being a combination of search and knowledge. Board Games, due to its very nature, provide dynamic environments that make them ideal area of computational intelligence theories, architectures, and algorithms. In board games, it has always been the challenging task to build a quality evaluation function. The goodness or badness of the evaluation function is determined by its accuracy, relevance, cost and outcome. All of these parameters must be addressed and the weighed results are added to an evaluation
function experimentally. Evolutionary algorithms such as Genetic algorithm are applied to the
game playing because of the very large state space of the problem. While following the natural
evolution, the fitness of an individual is defined with respect to its competitors and collaborators,
as well as to the environment. Evolutionary algorithms follow the same path to evolve game
playing programs. Among all computer board games, Go-moku, which is a variant of a Game of
GO. This paper mainly highlights how genetic algorithm can be applied to game of Go-Moku.

Reference

Evolutionary Computation, volume 1, pages 634–638, Piscataway, NJ. IEEE.
3. Jörg Denzinger, Kevin Loose, Darryl Gates, and John Buchanan. Dealing with
parameterized actions in behavior testing of commercial computer games. In Proceedings of the
IEEE 2005 Symposium on Computational Intelligence and Games (CIG), pages 37–43, 2005.
4. Matt Gilgenbach. Fun game AI design for beginners. In Steve Rabin, editor, AI Game
5. S. Schiffel and M. Thielscher. A multiagent semantics for the game description language.
Playing Approach for Fast Processor Allocation in Hypercube Systems using Veitch diagram
65-72.
difference learning for acquiring position evaluation in small-board go. IEEE Transactions on
Evolutionary Computation, volume 1, pages 986–993, Piscataway, NJ. IEEE.
10. P. Aksenov. Genetic algorithms for optimising chess position scoring. Master’s Thesis,
University of Joensuu, Finland, 2004. Y. Björnsson and T.A. Marsland. Multi-cut
Computers and Games CG 2004, eds. H.J. van den Herik, Y. Björnsson, and N.S. Netanyahu,
12. A. Hauptman and M. Sipper. Using genetic programming to evolve chess endgame
Optimizing Fitness Function for the Game of Go-Moku


13. G. Kendall and G. Whitwell. An evolutionary approach for the tuning of a chess
evaluation function using population dynamics. In Proceedings of the 2001 Congress on
Evolutionary Computation, pages 995–1002. IEEE Press, World Trade Center, Seoul, Korea,

Analysis with Applications to Biology, Control and Artificial Intelligence. Ann Arbor, MI:
University of Michigan Press.


John wiley & Sons


20. Sanjay M Shah, Chirag S Thaker, Dharm Singh Multimedia Based Fitness Function
Optimization Through Evolutionary Game Learning at International Conference on ETNCC 2011
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Key words

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Chromosome

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