Abstract

At the leading edge of Artificial Intelligence, machine learning game applications use a combination of various algorithms and different types of information. Searching the large space of solutions in depth leads to better solution. In checker board game next move of disc is important to defeat the opponent. Different selection strategy can be employed to select best next move. In this paper, we present comparative performance of roulette wheel selection and tournament selection method. The focus of this paper is to incorporate systematic game playing approach by analyzing game of checkers. Expert game players reveal three major playing
strategies to make game winning moves. The game moves are divided into three stages
opening game, middle stage and endgame. An evolutionary program plays game of checkers
with an intention to build resilient middle stage and a set of predefined rules are incorporated to
make calculated moves in an endgame. The paper is organized into the sections of
Introduction, Introduction to Checkers, Game Complexity and Genetic Algorithm. The last three
sections are Implementation, Result Analysis, Conclusion and references.

Reference

Evolutionary Computation, volume 1, pages 634–638, Piscataway, NJ. IEEE.
3. S.M.Shah, C.S. Thaker and Dr. Dham Singh ” Performance Improvement in Game
Playing using Evolutionary Computation by Large Search Space Exploration ” at International
Conference on ETNCC 2011 at MPUAT, Udaipur on 22-24 April 2011 Xplore Digital Object
Identifier:10.1109/ETNCC.2011.5958504)
4. History of Checkers or Draughts, available at
http://www.indepthinfo.com/checkers/history.shtml
5. Checkers Varieties Make the Game Exciting – Different Types of Checkers, available at
http://www.checkerslounge.com/varieties.html
6. Osman, D. Mańdziuk, J.: Comparison of Tdleaf(λ) and Td(λ) Learning In Game Playing
Volume 3316 of INCX, SPRINGER (2004) 549 {554
7. Osman, D., Ma¶ndziuk, J.: TD-GAC: Machine Learning experiment with give-away
checkers. In Drami¶nski, M., Grzegorzewski, P., Trojanowski, K., Zadro_zny, S., eds.: Issues in
92{98
9. Play FREE and COMPLETE in Board, card and Arcade Games of Skill, available at
http://www.playjava.com/checkers_game_online.html
through evolutionary game learning ,Emerging Trends in Networks and Computer
Communications (ETNCC), 2011 International Conference on Publication Year: 2011 , Page(s):
164 - 168
11. 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,
12. Chisholm, K.J.; Bradbeer, P.V.G.; Machine learning using a genetic algorithm to
optimize a draughts program board evaluation function Evolutionary Computation, 1997. IEEE
International Conference on Publication Year: 1997, Page(s): 715 – 720

13. Adriana Elena Chis, Vane a Chiprianov and Daniel Cernea 3C Checkers Expert System


Index Terms

Computer Science
Communications

Key words

Checkers
Evolutionary Algorithm

Genetic Algorithm

Fitness

Roulette Wheel Selection