

# General Game Playing

Prof. Michael Thielscher and Stephan Schiffel

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## Exercise 6.1

Download the game rules for Zhadu2 from the course web-page. Measure how many states you can search using a fixed search strategy without randomness in a fixed time (e.g., 5 minutes). Try to optimize the rules using rule reordering, conjunct reordering and other methods described in the lecture to make reasoning faster. You may do this by hand, but an automatic solution would be better. Take care that you do not change the game! Only do transformations that do not change the semantics of the rules. In particular the game must have the same initial state, legal moves, successor states, terminal states, and goal values. Compare the performance with the original version.

Send me an email by 10.01.2010 with

- the improved game rules (unless you have an automatic solution and your program is not able to output the transformed game rules),
- a short description of which optimizations you used, and
- your experimental results, e.g., number of expanded states in 5 minutes with and without the different optimizations.

## Exercise 6.2

Improve your player further by using meta gaming techniques, e.g.:

- factoring of games,
- symmetry detection,
- rule optimization (rule ordering, conjunct ordering, ...),
- better evaluation functions (goal distance, combining different heuristics, ...).