

DARKKNIGHT WINS CHINESE DARK CHESS TOURNAMENT

Shi-Jim Yen¹, Jr-Chang Chen², Bo-Nian Chen³, and Wen-Jie Tseng⁴

The 17th Computer Olympiad took place from August 12 to 18 in Yokohama, Japan. Nine teams from Taiwan and one from France joined the Chinese dark chess tournament. Table 1 lists the participants. In the 2013 tournament, the double round-robin rule was adopted. That is, each program played nine rounds with all other programs. Each round contained two games where each of the two programs played the first move once. The time constraint was that each program had to complete all of its moves within 15 minutes. A game was judged as a draw, if there were no pieces captured or revealed within 180 plies, or if the same position repeated three times, known as the threefold repetition rule.

Programs	Abbr.	Author(s)	Operator	Country
DARKCHESSER	DCH	H.-J. Chang	H.-J. Chang	Taiwan
DARKKNIGHT	DKN	W.-J. Tseng and I.-C. Wu	W.-J. Tseng	Taiwan
DARKNESS	DAR	K.-H. Chan	K.-H. Chan	Taiwan
DIABLO	DIA	C.-W. Chou and S.-J. Yen	C.-W. Chou	Taiwan
FLIPPER	FLI	B.-N. Chen and T.-s. Hsu	B.-N. Chen	Taiwan
HOMERE	HOM	N., Jouandea, et al.	Abdallah Saffidine	France
MARTIS	MAT	C.-R. Tseng, H.-Y. Gau, C.-W. Chang, T.-F. Liao, and I.-C. Wu	T.-F. Liao	Taiwan
RAINBOW	RAI	G.-Y. Fan and J.-C. Chen	J.-C. Chen	Taiwan
TUXEDOCAT	TUX	T. Lao and C.-H. Chen	K.-H. Chan	Taiwan
YAHARI	YAH	Y.-C. Syu	H.-J. Chang	Taiwan

Table 1: The participants.

In this tournament, the games were played automatically through a network game-playing system provided by Jr-Chang Chen. The game-playing system allows programs to connect as a client and find their opponents. When the games start, the server is responsible for randomizing the unrevealed pieces on the board, deciding the type of revealed pieces, and judging the results of these games as well as collecting all of the game records.

ID	DCH	DKN	DAR	DIA	FLI	HOM	MAT	RAI	TUX	YAH	Total Score	Rank
DCH	-	0.5	2	0.5	0.5	1	1	1	2	0.5	9	6
DKN	1.5	-	1.5	1.5	1	1	1.5	2	2	1.5	13.5	1
DAR	0	0.5	-	2	0	2	1	2	1.5	1	10	5
DIA	1.5	0.5	0	-	2	2	1	2	1.5	2	12.5	2
FLI	1.5	1	2	0	-	1.5	1	2	1.5	0.5	11	4
HOM	1	1	0	0	0.5	-	2	1	2	0.5	8	7
MAT	1	0.5	1	1	1	0	-	0.5	0	0	5	9
RAI	1	0	0	0	0	1	1.5	-	0.5	0.5	4.5	10
TUX	0	0	0.5	0.5	0.5	0	2	1.5	-	0.5	5.5	8
YAH	1.5	0.5	1	0	1.5	1.5	2	1.5	1.5	-	11	3

Table 2: The detailed scores and the final ranks.

After nine rounds of games, DARKKNIGHT had obtained 13.5 points and won the gold medal. The silver medal was taken by DIABLO, which achieved 12.5 points. Both YAHARI and FLIPPER landed at 11 points. In the fast games (to decide the third place), the result was 1:1 in the first round. In the second round, YAHARI obtained 2 points and won the third prize. Among the best three programs, DARKKNIGHT and DIABLO are both based on Monte-Carlo tree search, while YAHARI is based on alpha-beta search. The final ranks and the detailed scores are shown in Table 2.

SELECTED GAMES

These abbreviations of dark chess are as follows. The letter k stands for king, the letter g for guard, the letter m for minister, the letter r for rook, the letter n for knight, the letter c for cannon, and the letter p for pawn. The uppercase and lowercase letters represent red and black pieces, respectively (cf. Yen et al., 2004). The letter in the parenthesis is the type of piece after it is flipped (cf. Chen et al., 2010).

¹ Department of Computer Science and Information Engineering, National Dong Hwa University, Taiwan. Email: sjyen@mail.ndhu.edu.tw

² Department of Applied Mathematics, Chung Yuan Christian University, Taiwan. Email: jcchen@cycu.edu.tw

³ Institute of Information Science, Academia Sinica, Taiwan. Email: brain@iis.sinica.edu.tw

⁴ Dept. of Computer Science, National Chiao Tung University, Hsinchu, Taiwan. E-mail: wenjie0729@gmail.com

