The 7th Computer Olympiad

Mark Winands
IKAT, Universiteit Maastricht

From July 5 to 11 2002 the Institute for Knowledge and Agent Technology (IKAT) organised the 7th Computer Olympiad at the Universiteit Maastricht (UM). Together with the Olympiad a Computer-Games workshop was organised. This event took place from July 6 to 8. Both events are described in this report.

The Computer Olympiad

The Computer Olympiad is a multi-games event in which all of the participants are computer programs. The Olympiad is a brainchild of David Levy, who organised this tournament in 1989 (London) for the first time. The next five editions were held in 1990 (London), 1991 (Maastricht), 1992 (London), 2000 (London) and 2001 (Maastricht). This year was the third time that the event was held in Maastricht. IKAT was responsible for the organisation. Similar to last year, Jaap van den Herik was the tournament director. The purpose of the Olympiad is to determine the strongest program for each game. The Olympiad has grown to a social event, as the authors of the programs are not bound to silence during the play as in human tournaments. The event is a reunion where programmers meet, discuss ideas and renew acquaintances. Some teams arrive with the clear goal of winning, some just come to participate, some to test new ideas under tournament conditions. The Olympiad is a truly international event. This year, participants came from all over the world: USA, Canada, Japan, Taiwan, Israel and the European Union. The event was held under the auspices of the ICCA (International Computer Chess Association), which gave it an official status. There were competitions in 12 games: Amazons, Backgammon, Bridge, Chess, Chinese Chess, Dots and Boxes, Draughts, Go 19x19, Go 9x9, Lines of Action (LOA), RoShamBo and Shogi. Except of the Roshambo tournament (reported in BNVKI Newsletter Vol. 19:4), we describe below each of the tournaments.

Chess
Computer chess was the main tournament of the Olympiad. The computer-chess competition had the greatest number of participants, 18. This tournament had a special status since it was the 10th World Computer Chess Championship (WCCC). Due to the high number of participants a Swiss tournament was played consisting of nine rounds. The games were played during the whole day. In the weekend there was a press briefing given by the well-known chess master Hans Böhm. He gave very interesting and amusing comments on the chess games played during the Olympiad. After six days of tough battle JUNIOR (Ban and Bushinsky, Israel) and SHREDDER (Meyer-Kahlen, Germany) tied for the first place in the regular competition. JUNIOR won the tiebreak, consisting of two one-hour-each games, with one win and one draw.

Amazons
A popular new game in the AI community is Amazons. It is a simple board game of occupying and enlarging territory. The game is quite similar to Go. Because of the large branching factor, a brute-force approach, like in chess, is unfeasible in Amazons. Looking at the results it was obvious that the level of the Amazons programs had increased. 8QP (de Koning, the Netherlands), the unbeaten champion of the previous two tournaments, lost surprisingly the first two games. Newcomer AMAZONG (Lieberum, Germany) won the title, 8QP got silver.

Backgammon
It was ten years ago when the last backgammon tournament was played at the Olympiad. Unfortunately, this year only two programs participated: BGBLITZ (Berger, Germany) and GNUBG (Müller, Germany). They played a best-of-five match, which was won by BGBLITZ.

Bridge
The Bridge tournament was held in the weekend. The top two programs, WBRIDGE5 (Costel, France) and JACK (Kuijff, The Netherlands) participated in the event. Surprisingly, the supposedly weaker program WBRIDGE5 won the tournament. But JACK took revenge by wining the World Computer Bridge Championship six weeks later, where WBRIDGE5 came in second.

Chinese Chess
Like last year the Asian programs dominated the Chinese Chess tournament. The battle for the first place was again between ELP (Chen, Taiwan) and SHIGA 8.1 (Yen, Taiwan). Those two programs playing against each other was a derby, since both belong to the same research group. In the end the program ELP won this exciting competition for the second time.

Dots and Boxes
Dots and Boxes was a newcomer at the Olympiad. It is a two-player paper-and-pencil game. The number of participants was only 2. CONTROL FREAK (Fraser, USA) won this small competition convincingly. Second was SEICHO (Iida, Japan).

Draughts
Draughts was the second main tournament of the Olympiad. This competition was played in the weekend. For most of the participants the event was a home match: eight of the nine programs were Dutch. The tournament had a special status since it was the Open Draughts World Championship 2002. DAM 2.2 (Jetten, The Netherlands) won the prestigious title.

Go / 19x19 and 9x9
After the absence of last year Go 19x19 (which is the standard board size) returned as part of the Olympiad. Go is one of the most challenging games for AI researchers. Because of the high branching factor standard search techniques do not work in Go. The play of the current Go programs is still at amateur level. GO4++ (Reiss, UK) won the Go

19x19 competition with a perfect score. The smaller Go 9x9 competition was also won by GO4++.

LOA
The LOA tournament was for the third time present at the Olympiad. LOA is a chess-like connection game, which is getting steadily more attention in the game-playing community. As in the previous two years the LOA tournament was won by YL (Björnsson, Canada). It lost only 1.5 point against its eternal opponent MIA III (Winands, The Netherlands), which finished second.

Shogi
Shogi is the Japanese version of chess. The complexity of this game is higher than that of Western Chess. At the moment computer Shogi tournaments are very popular in Japan. In this country Shogi is also a popular domain for AI research. Despite the travelling distance between Japan and Maastricht, there were still five programs participating. The top program ISSHOGI (Tanase, Japan), which won several big Shogi tournaments, won convincingly the Computer Olympiad Shogi tournament.

Demonstration games
Besides the regular computer tournaments there were demonstration games of computer programs against (top) human players. At Saturday Brian Sheppard's program MAVEN played four demonstration games. MAVEN is originally an English Scrabble program. A day before the games Sheppard successfully defended the MAVEN results in a ceremony, which earned him the doctor's title. For the Olympiad he had built a Dutch version. The top human players were outplayed by MAVEN. At Sunday the Bridge programs competed against the local human champions. Moreover, Jeroen Donkers demonstrated the game of Bao (a kind of Awari) to a large audience. He showed the strength of his Bao program by defeating the top Dutch Bao players (De Voogt and Nierse). On Wednesday the Amazons Exhibition tournament with human and computer-teams was played. A team consisting of arbitrarily many humans and computers was allowed to make its decision in arbitrary ways. Four teams participated in this knockout tournament, which was won by the team of Lorentz (USA).

At the last day of the Olympiad a social dinner was organised for the authors of the participating programs. This was a good moment for the programmers to discuss the performance of their machines at the Olympiad with each other. Between the courses the medals and prizes were handed to the winners of each tournament. At this occasion several authors thanked the organisation for the success of the Olympiad.

The Computer-Games Workshop

As a successor of last year's Computer-Games Workshop at the Sixth Computer Olympiad, Jos Uiterwijk (IKAT) again organised a three-day workshop in the evening, from July 6 to 8. The workshop focused on the latest developments in games programming. Each evening, the workshop attracted an audience of some 30 people, from all over the world. The event consisted of three invited lectures, thanks to a grant

from NWO, and eleven regular presentations. Each day started with an invited lecture (45 minutes) followed by three or four presentations (25 minutes each).

At the first day, the invited lecture of the workshop was given by Brian Sheppard (USA) and was entitled *An Overview of Computer Play of Scrabble*. In this lecture he described the methods that have contributed to the superhuman strength of his Scrabble program MAVEN. This lecture was not only inspiring for those building Scrabble programs, but also for human Scrabble players. Next, Hiroyuki Iida (Shizuoka University, Japan) presented a talk entitled *Dynamic-Information Games*. He introduced a new class of chess-like games with dynamic information. Subsequently, Mark Winands (UM, The Netherlands) talked about *Learning in Lines of Action*. He showed how two components of his LOA playing program, the evaluation function and the move ordering, were improved by using learning methods. Finally, Rémi Coulom (France) gave a presentation named *Treemaps for Search-Tree Visualization*. He described how treemaps could be applied to visualise the large trees generated by game-playing programs.

At the second day, Jonathan Schaeffer (University of Alberta, Canada), with the topic *Solving the Games People Play*, presented the second invited lecture of the workshop. He discussed the progress on "solving" Checkers and Poker at the University of Alberta. Next, Jeroen Donkers (UM, The Netherlands) went into some details of *Programming Bao*. He explained the rules and the game properties of Bao too. Subsequently, Jun Nagashima presented *Realization-Probability Search: Its application to Shogi and LOA*. He discussed the research question in applying the realization-probability search into a game (LOA) where existing expertise is not available. The last talk of the day was given by Richard Lorentz (California State University, USA), presenting *Finding Territory in Amazons*. He reported which territory-detecting technique in an Amazons-playing program was most beneficial.

The invited lecture of the final day was given by Eugène Nalimov (Microsoft, USA), who talked about *Chess Endgame Tablebases*. Eugène Nalimov was the Guest of Honour of the WCCC. In the lecture he explained the lessons he learned when he built his tables. He ended with predicting future research. Then Erik van der Werf (UM, The Netherlands) showed results of *Solving Ponnuki-Go on Small Boards*. He discussed his search engine, which performed well on solving Ponnuki-Go positions. Next, Ingo Althöfer (Friedrich Schiller University Jena, Germany) gave an overview of *Inventing Game Variants with Computer Help*. He demonstrated how automatic invention and evaluation of games may be done. Guy Haworth (UK) gave two talks: *Self-play: Statistical Significance* and *Reference Fallible Play*. In his presentation he talked about some advanced topics in computer game playing. Yngvi Björnsson (University of Alberta, Canada) revealed some secrets in his talk *The Game Programmer's Toolbox*. He discussed several tools he developed over the years to assist him with the development of board games.

Final Remarks

The Olympiad was even a bigger success than last year. The number of competitions increased (12 this year, 6 last year) and also the number of participants (70 this year, 33

last year). Last year the press ignored the event, this year the event was covered by several newspapers, magazines, the provincial radio and television. Moreover, the workshop was well received by the participants. It was an interesting workshop, where many refreshing ideas were exposed. Despite this success, the organisation had problems in finding sponsors. The major sponsor CMG, who promised to support the event for three more years, backed out two months before the Olympiad started. Still the organisation managed to find a number of small sponsors (e.g., BNVKI and SIKS) this year. The future of the event is not prosperous: at the moment nobody has been found willing to organise or sponsor the tournament next year. Potential organisers and sponsors are kindly invited to send an email to info@icga.org.

The detailed results and game scores of the several competitions can be found at the website http://www.cs.unimaas.nl/olympiad2002.