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THE EXTREMES AS A SIDELINE

Extremes always perform a special role in scientific research. On the one hand they set the limits for the researchers. Within these limits the research should take place. On the other hand they formulate in itself challenging tasks. For instance, solving the game of chess or solving the game of Go (9x9, 13x13, 19x19).

In 1997 IBM was able to place a landmark on the research map by developing DEEP BLUE and defeating the World Chess Champion Gary Kasparov. So, by this performance, IBM showed that a great deal of chess knowledge and chess strategies could be captured and incorporated in a computer program.

In February 2011, IBM achieved a second landmark performance by means of WATSON, a program that was indisputably the best in answering difficult questions on art, history, literature, geography, etc. in the TV programme JEOPARDY! After four rounds of play WATSON was a clear winner with (expressed in money) $ 77,147, with human champions Ken Jennings ($ 24,000) and Brad Rutter ($ 21,600) far behind. As in chess, here too, research continues.

For a proper understanding of the lines which the continued research followed, we are offering the idea of answering extreme questions. For instance, how does a computer answer a question like "What was the most boring day in the 20th century?" The program that is able to answer this question is called TRUE KNOWLEDGE. It is fed with some 300 million facts about people, places, business, and events that made the news. TRUE KNOWLEDGE gave an answer: April 11, 1954. Your Editor stumbled onto this extreme example when a Turkish delegation led by Professor Abdullah Atalar visited Tilburg University. Abdullah Atalar is the Rector of Bilkent University, the first private, non-profit University in Turkey. He told me the story, since he was born on April 11, 1954. He gave credit to a Cambridge scientist for the development of TRUE KNOWLEDGE. At home, I found out that this scientist is William Tunstall-Pedoe. I learned that in particular the 1950s Sundays are outstanding in their obscurity.

Tunstall-Pedoe:
"Nobody significant died that day, no major events apparently occurred and, although a typical day in the 20th century has many notable people being born, for some reason that day had only one who might make that claim – Abdullah Atalar, a Turkish academic.

"The irony is, though, that – having done the calculation – the day is interesting for being exceptionally boring. Unless, that is, you are Abdullah Atalar.

"Plans for the coup d'etat in Yanaon, then a small French colony in India, are also believed to have been hatched on the evening of April 11, 1954 but nothing actually happened that night."

Tunstall-Pedoe emphasised that TRUE KNOWLEDGE was not designed solely to search for boring days.

"It is just a sideline," he said.

For our readers it might be interesting to know that William Tunstall-Pedoe (1991) was a member of our community. I thank Petr Baudiš, Abdullah Atalar and William Tunstall-Pedoe for their pieces of inspiration to write this Editorial.

But let us return to the subject of extremes as it applies to computer games.

In a 9-stone handicap game of Go, it is difficult to find the best first move since all moves are winning. This difficulty holds for human Go players equally well as for computer-Go programs. In particular, MCTS-based programs are facing hard times in such positions. Apparently, the surplus of material has a negative influence on the evaluation function. A human top Grand Master who allows the program a 9-stone handicap has analogous problems since all possible moves are losing. So, a special strategy should be applied with the aim first to equalize the game and then try to win. It implies that the characterisation of such a handicap game is different from a normal game with no handicap.

A program that can secure the advantage of the 9 stones adequately may win the game. Its strategy could be as follows. In the moves 1 to 100, try to limit the loss of the advantage to two stones only; for the moves 100-200 set the limit the loss to three stones, for 200-300 it may be three again, and then during the remaining moves with a one-stone advantage the win can be achieved in the endgame. Of course, this is only one of the many possible strategies. However, it shows that in extreme cases the game is totally different from a normal 19x19 Go game. We admit that such extremes are only a sideline of our research, but they are an interesting sideline as can be read in the contribution by Petr Baudiš *Balancing MCTS by Dynamically Adjusting the Komi Value*.

Jaap van den Herik

Reference

Tunstall-Pedoe, W. (1991). Genetic Algorithms Optimising Evaluation Functions. *ICCA Journal*, Vol. 14, No. 3, pp. 119-128.

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