

*SOCRATES 2.0 BEATS GRANDMASTER SAGALCHIK

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In an exciting chess game that lasted over seven hours, International Grandmaster Gennady Sagalchik (USCF rating 2568 – 35th-highest ranked player in USA) had to eat his words when he lost to a machine in 56 moves. Only one month earlier, he had predicted that ‘it is unlikely that any computer will defeat a grandmaster this year.’ [February 18, 1995, at a simultaneous chess exhibition at the University of Maryland Baltimore County]

The victor was *SOCRATES 2.0, searching over two million positions per second. The 1824-node Intel Paragon supercomputer used in the match was made available, via telephone link, by Sandia National Laboratories in Albuquerque, New Mexico. *SOCRATES 2.0, originally based on Heuristic Software’s Socrates program, employs the Jamboree search algorithm, a massively-parallel search technique developed at the MIT Laboratory for Computer Science for the StarTech program (Kuzmaul, 1995). The lead programmers for *Socrates are Don Dailey and Christopher F. Joerg, and the project team also includes Robert D. Blumofe, Matteo Frigo, I.M. Larry Kaufman, Dr. Bradley C. Kuzmaul, Prof. Charles E. Leiserson (project leader), Keith Randall, Rolf Riesen (Sandia National Labs), and Dr. Yuli Zhou.

The match took place March 24, 1995, at the University of Maryland Baltimore County (UMBC), where Dailey moved the black pieces on behalf of the computer. Over two hundred chess enthusiasts throughout the world kibitzed in cyberspace – setting a new record – as each move was broadcast on the Internet Chess Club. More than 500 spectators also watched a camera image of the match displayed through the World Wide Web, a network of informational resources spanning the planet. The world-wide-web page for the match can be found at http://www.cs.umbc.edu/conferences/mtd95/mm_match/

Meanwhile, approximately one hundred researchers and chess-players converged at UMBC for the Man vs. Machine Chess Match, which was part of the 12th Maryland Theoretical Computer Science Day organized by computer science Professors Richard Chang and Alan Sherman. Financial support for the conference was provided by the National Security Agency, with additional support for the Man vs. Machine Chess Match provided by the Intel Corporation.

Although Sagalchik secured an early lead, *SOCRATES later gained a psychological advantage after several machine crashes, delaying the game by a total of about 100 minutes, which rattled the Grandmaster. Barely completing the first forty moves within the required two hours, Sagalchik lost shortly after *SOCRATES promoted its b-Pawn to a second Queen.

Immediately after this slow game, an informal game was played at twenty minutes each, in which Sagalchik lost again, playing the white pieces.

Game scores

Sagalchik - *SOCRATES (Keycode: NI 18.4.1)

Game 1 (40 moves / 2hrs; thereafter 20 moves / 2hrs)

1. d4 Nf6 2. c4 e6 3. Nc3 Bb4 4. a3 Bxc3+ 5. bxc3 d5 6. f3 0-0 7. cxd5 exd5 8. e3 Bf5 9. Ne2 c5 10. Ng3 Bg6 11. Bd3 Qa5 12. Bxg6 hxg6 13. Bd2 Re8 14. 0-0 Qc7 15. Qa4 Nc6 16. Rae1 Rad8 17. Bc1 a6 18. Kh1 b5 19. Qd1 Qa7 20. Qd3 Qb7 21. Bb2 Qb6 22. Rd1 c4 23. Qe2 a5 24. Rb1 Rb8 25. e4 b4 26. Ba1 b3 27. e5 Qd8 28. f4 Rb7 29. a4 Nh7 30. f5 Ne7 31. fxg6 Nxc6 32. Bb2 Nh4 33. Qg4 Nf8 34. Ba3 Ne6 35. Bc1 Qe7 36. Rf2 Rb6 37. Kg1 Ra8 38. Bh6 Rb7 39. Bc1 Ra6 40. Bh6 Rab6 41. Nh5 Ng6 42. Bxc7 Nxc7 43. Nf6+ Rxf6 44. exf6 Qe6 45. Qf3 Ne8 46. Re2 Qc6 47. Rf2 Rb6 48. Rbf1 Qb7 49. h4 Nxf6 50. h5 Nh8 51. Qg3+ Kh7 52. Qe5 Ne4 53. Qf5+ Kg8 54. Rf4 b2 55. Qe5 b1Q 56. Rg4+ Rg6 White forfeits on time (in lost position) 0-1

Sagalchik - *SOCRATES (Keycode: KP 4.2)

Game 2 (Game in 20 minutes)

1. e4 e5 2. d4 exd4 3. Qxd4 Nc6 4. Qe3 Nf6 5. Nc3 Bb4 6. Bd2 0-0 7. 0-0-0 Re8 8. Qg3 Rxe4 (last book move by *SOCRATES) 9. a3 Bd6 10. f4 Re8 11. Bd3 Bc5 12. Nf3 d5 13. Rhe1 Re7 14. Ne5 Nd4 15. Qh4 Bf5 16. Rf1 c6 17. g4 Bxd3 18. Nxd3 Bd6 19. f5 Ne4 20. g5 Nxc3 21. Bxc3 Ne2+ 22. Kd2 Re4 23. Qh5 Nf4 24. Nxf4 Bxf4+ 25. Rxf4 Rxf4 26. g6 fxg6 27. fxg6 h6 28. Qe5 Rf6 29. Kc1 Rxc6 30. Kb1 Qd7 31. Re1 c5 32. h4 Rf8 33. h5 Rg5 34. Qe2 Q7 35. Bd2 Rxb5 36. b3 Kh7 37. Rg1 Kh8 38. Ka2 Rf5 39. Kb2 g5 40. Rh1 Kg8 41. Bc3 d4 42. Be1 Re8 43. Qh2 h5 44. Qd6 Rd5 45. Qh6 Re6 46. Qxh5 Qxh5 47. Rxb5 Rxe1 48. a4 Rf5 49. b4 Re2 50. Rh3 c4 51. b5 d3 52. Kc3 Rxc2+ 53. Kb4 d2 0-1

Reference

Kuzmaul, B.C. (1995). The StarTech Massively-Parallel Chess Program. *ICCA Journal*, Vol. 18, No. 1, pp. 3-19.

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