Phoenix: champ chess program

by Greg Halinda

Computers get faster and faster every year, but they still haven't managed to beat a (human) world champion at chess.

"The day we tackle the world champ will be a great day," says U of A computer science professor Jonathan Schaeffer. "It is a day many people anticipate and even fear."

Schaeffer's chess program, named Phoenix, recently tied for first place at the 1986 World Computer Chess Championships held in Cologne, West Germany. This was the first time a Canadian program has achieved the top spot in the World Championships.

Schaeffer, who specializes in artificial intelligence (AI) and in parallel processing, linked 10 microcomputers to meet the challenge of the world's fastest computer, the Cray XMP-48. The Cray was one of three American entrants that tied for first place with Schaeffer's.

Though still relatively slow compared to its competition, Schaeffer's system had the advantage of parallel processing — each of his 20 computers would be given a piece of work to do, and would attack their jobs in a parallel fashion (simultaneously). The competition's supercomputers (like the Cray) could only do one thing at a time, but at speeds up to 10 times that of Schaeffer's system.

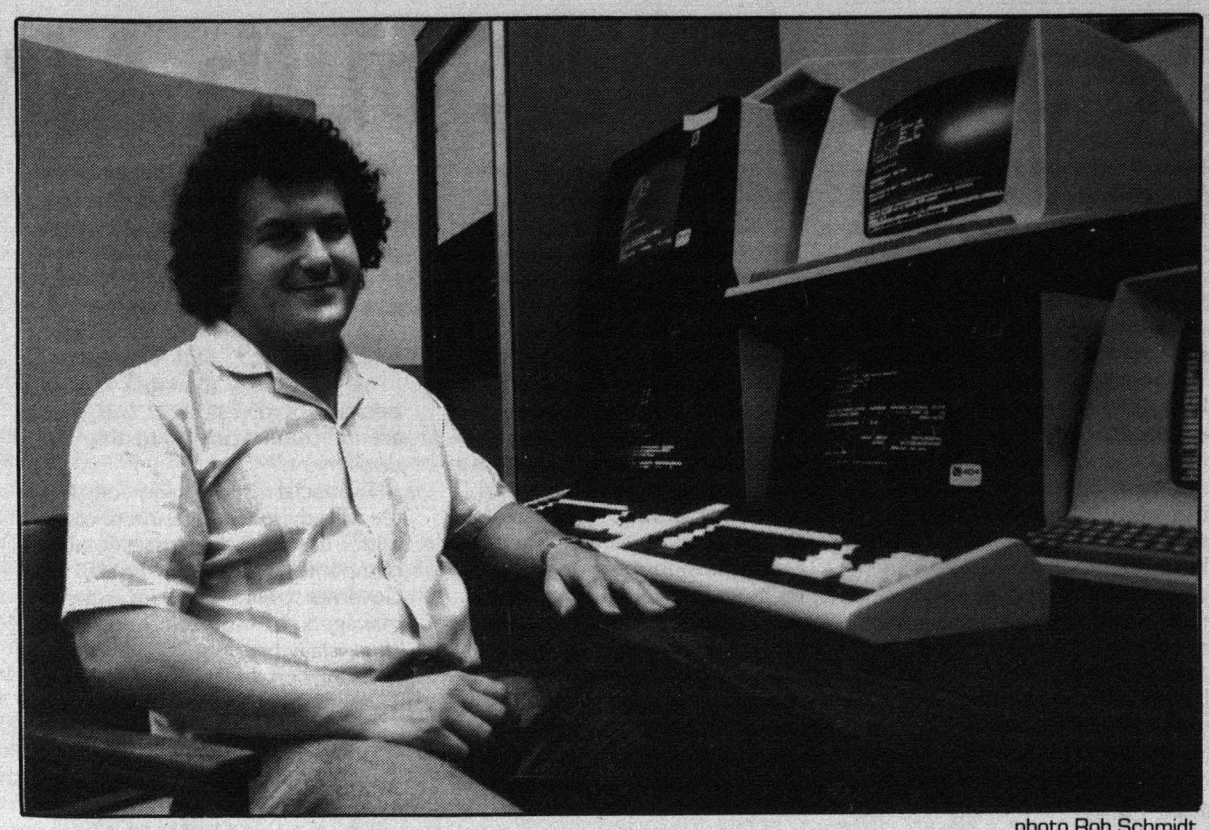
"At such rates of computer speed, it is the computer software (in this case, the chess program itself) that makes the difference between the winner and the losers," says Schaeffer.

"Computer chess programs typically consist of two parts. The first part analyzes all possible moves and responses to these moves. This is called the search part. The second part determines whether or not you've landed in a good position. This is called the program's chess knowledge."

Schaeffer thinks Phoenix has good chess knowledge. Combined with the power of parallel processing, this led Phoenix to its good showing in Cologne in June 1986.

Behind Schaeffer's chess program lies logic which tries to simulate the way humans think, that is, parallelism. People can often process more than one thought at a time. One computer can process one thought at a time. AI researchers use parallelism to create the illusion of intelligence through speed.

Schaeffer says, "A lot of research is dry. With chess, you can see the results of your research. It's fun to watch your baby compete and win. This isn't games."



Jonathon Schaeffer with a small version of his computer chess system.

photo Rob Schmidt

"The audience often laughs at bad moves..."

Humans hunch over board

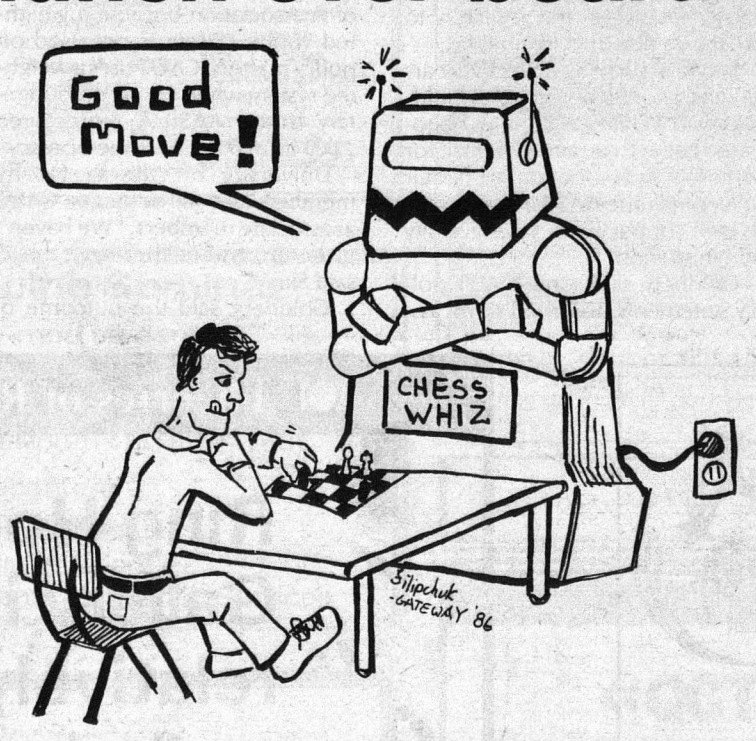
by Greg Halinda

Despite the lifeless machines behind them, computer chess tournaments still retain the human element. Jonathan Schaeffer, who entered his chess program in the World Computer Chess Championships last June, says, "You still have humans hunched over the chess board, but they are only the babysitters. There is a computer beside each."

In some cases, the actual computers are thousands of miles away. Schaeffer communicated over the phone lines from Germany to access his computers, which happened to be in California at Sun Microsystems.

Schaeffer says that audiences are usually composed of computer specialists and not chess experts. There is noise, cigar smoke, and discussion in the audience. Even the competitors will chat while facing each other in competition.

"The audience often laughs at bad moves and 'ooh' and 'ahh' the good ones," says Schaeffer. "Each move takes about three minutes and an average game lasts four hours."



There is a trust fund to be awarded to the first programming team to beat the world human chess champion with their computer. The prize fund, started at $100,000, has been accumulating for years.

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