

# Fun and games for Comp Sci prof

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He's had calls from some of the largest newspapers in North America. He's been accosted by journalists and computer geeks alike. He's quickly become an international celebrity by the Internet's fast-paced standards. He's made an unprecedented contribution to the field of artificial intelligence.

The man of the minute is University of Alberta Computer Scientist Jonathan Schaeffer, and he's interested in having computers master tasks that you and I think require the intelligence of a human being.

This April, Schaeffer proved what many gaming experts have been claiming for years: that the game checkers, when played perfectly, will always end in a draw. But when Schaeffer first created a computer program that used artificial intelligence to try to "solve" Checkers in 1989, he was unaware that almost 20 years and two programs later, he would finally have his wish.

Such a grand accomplishment didn't come easy, though. Rewinding more than 30 years to when he was a seventh-grader struggling with his marks, Schaeffer says that his precarious love affair with games first started with chess, which improved his thinking skills dramatically.

"[Chess] gets your concentration up; it's very analytical and serves as an excellent medium for students to acquire thinking skills," he says.

Needless to say, soon after his grade-seven year, Schaeffer became a chess and computer whiz. Like many individuals who find both success and happiness in life, Schaeffer truly developed a passion for his craft, being easily able to find art in it. And even though he admits he's a gaming addict, Schaeffer is none too pleased with the games kids occupy themselves with nowadays, claiming they don't stimulate critical thought.



PHOTO ILLUSTRATION: PHIL HEAD

**KING ME, MEAT BAG** Solving checkers was a 20-year endeavour for Dr Schaeffer.

"I like playing games where I can create beauty on the board. What's disappointing is that recently, a culture change has emerged where people and youths are playing on shooter [video] games more frequently than card or board games, which makes their attention span much less," he warns.

After graduating from the University of Toronto with a degree in computing science, Schaeffer headed to grad school at the University of Waterloo in 1979 to work on his baby: a program aimed at chess domination. A decade later, Schaeffer was persuaded into checkers after his program crashed and burned in 1989. And so his affair with another eight-by-eight board began.

"When I started out, people would say, 'who's that nut doing games?' But it wasn't silly because games are an excellent test bed for artificial intelligence," he explains.

He created a computer program, which he dubbed "Chinook," to try to analyze the game, while still making sure to annihilate any human checkers players that crossed its path. The program was active every waking moment since its inception, basically trying to find a needle in a haystack by analyzing each of the 500 billion billion positions in the game before

making the best available move. Schaeffer admits that after the program won against the best human in a 1994 championship and garnered him a spot in the Guinness Book of World Records, he was obsessed.

"Anyone who works on a program like this has to be a little obsessed," he admits. "No one has done this before because no one was foolhardy enough to tackle something this ridiculously large."

One could imagine how euphoric Schaeffer felt on 29 April at 6:03pm, when his checkers program continuously flashed one word: "draw."

Schaeffer said he was in stunned disbelief when he realized he'd done it. And even though he says bragging rights are good, Schaeffer insists that the fact that these seemingly unsolvable problems are being solved before our very own eyes is the real accomplishment.

Now that he has three weeks of much-needed vacation time to soak up the fame—all the while entertaining his other interests such as family, polar exploration, and history—Schaeffer can find comfort in his monumental discovery.

"I dream of my technology improving the quality of people's lives, knowing I have made a contribution to the state of the art."

# 3-D adds depth to teleconferencing

SCOTT FENWICK  
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Teleconferencing with holograms using the living-room TV may soon be as routine as using the phone, according to a local product developer working with the University of Alberta.

Research consortium TR Labs is working with the U of A computer science department to bring a different type of videoconferencing—tele-immersion, where people meet in a virtual space—to life.

David Antoniuk, the business development director of TR Labs, said it will give people a richer experience while getting in touch with others.

"You [will] see the person so life-like, they're almost there," he explained.

Tele-immersion is the next step from tele-presence, the state-of-the-art technology where people feel like they're in the same room. Multiple screens and cameras are used, where people feel like they're talking through windows that are actually TV screens.

Jacques-André Boulay, a PhD candidate in computer science, is working on combining tele-presence and tele-immersion, in a project named iTRANSE. The idea is to have a system

where people around the world can feel as if they're in the same room to view and discuss holograms of models in real time.

"The main objective is to create ... the illusion of being there together," said Boulay. "It gives you the impression you're in another world because everything is in 3-D."

Combining the two technologies involves placing the hologram spots either in front of the TV screens, or at an angle between the room's chairs and the screens. However, the TV screens used will be different from the ones already on the market: they will project a 3-D holographic image when viewed from a certain angle.

In applying the technology to business, Boulay said it can be used in product development. For example, he said, "many people from different sides [of a company] can meet and speak together about the design of a car," adding that this virtual car could even be taken apart to look at its pieces.

The new 3-D TVs to be used in Boulay's project also bring the opportunity to allow teleconferencing through people's living rooms. Antoniuk said that answering a TV teleconference call will be like using a phone.

"You [won't] pick up the hand set anymore. You'll pick up the remote control, and then ... you could see [the caller] in life size," he said. "The idea is that you can bring life-size video conferencing to the home, and that's what our goal is."

Antoniuk stated that combining the technologies has potential in training medical students, to name one of many possibilities. "They could be anywhere in the world via videoconferencing, looking at the operation as if they were there."

Boulay also notes the potential in undergraduate classes that use complex diagrams or schematics.

"Some concepts can be hard to understand because most of the time, you look at the manual, and the drawings are in 2-D," Boulay explained. "If you could see this stuff in 3-D, it could be easier to learn."

With the growing public attention tele-immersion has received, many have compared it to the Holodeck on the TV show *Star Trek*, where crew members could enter holographic computer-simulated environments.

Antoniuk downplays the comparison, but notes that this is the "next-generation" of communicating.

"Visualization is going to be the next big wave of technology; it will give [users] a richer experience."

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