

REACHING HIGHER AND FURTHER

Profiles in Research



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Centre for Computing and Information Systems

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Dr. Fuhua Lin is constructing intelligent software agents that never sleep.

Like travel agents arranging airline schedules and hotel accommodations, Dr. Lin's online agents will understand students' needs, help them choose courses and programs, and instantly assist and assess them. These agents will work as assistants to online educators and reduce their information workload.

"The idea here is to use Artificial Intelligence (AI) technology to help students and educators," says Dr. Lin, editor and contributing author of the book, *Designing Distributed Learning Environments with Intelligent Software Agents*.

Back in the 1950s, the Massachusetts Institute of Technology created an Artificial Intelligence Laboratory to study the nature of intelligence and to engineer thinking robots. The challenge has been to understand the mind, vision, language and human intelligence: an undertaking as massive as conquering outer space.

While sentient robots are yet to roam among us, the study of Artificial Intelligence has already touched many disciplines. Dr. Lin is now combining AI with distributed systems and applying them to distance and online education.

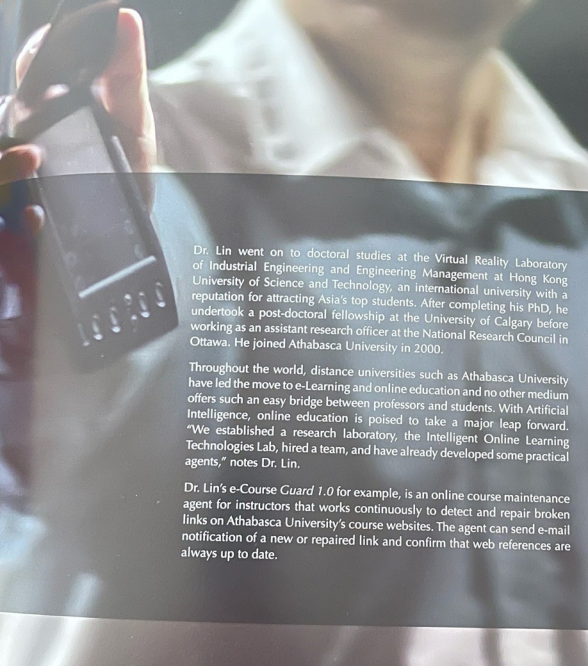
Dr. Lin began his studies in Mainland China and obtained Bachelor of Science and Master of Science degrees from the South China University of Technology in Guangzhou. He worked as a lecturer and then associate professor in Applied Mathematics, and directed an applied software laboratory. Dr. Lin received an Outstanding Young Teacher Award from Guangdong Province in 1993.

Dr. Fuhua Lin

Dr. Lin went on to doctoral studies at the Virtual Reality Institute of Industrial Engineering and Engineering Management at Hong Kong University of Science and Technology, an international university with a reputation for attracting Asia's top students. After completing his PhD, he undertook a post-doctoral fellowship at the University of Calgary before working as an assistant research officer at the National Research Council in Ottawa. He joined Athabasca University in 2000.

Throughout the world, distance universities such as Athabasca University have led the move to e-Learning and online education and no other medium offers such an easy bridge between professors and students. With Artificial Intelligence, online education is poised to take a major leap forward. "We established a research laboratory, the Intelligent Online Learning Technologies Lab, hired a team, and have already developed some practical agents," notes Dr. Lin.

Dr. Lin's e-Course *Guard 1.0* for example, is a "course-maintenance agent for instructors that works continuously to detect and repair broken links on Athabasca University's course websites. The agent can send e-mail notification of a new or repaired link and can also deal with broken links that are always up to date.



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Having received a National Science and Engineering Research Council Discovery Grant, Dr. Lin and his students are fast-tracking more complex agents that will help students during the whole cycle of learning—choosing courses, designing learning objectives, searching for suitable learning objects, constructing personalized online courses, answering frequently-asked questions and assessing the learning effects.

Dr. Lin predicts that in the future “we will say to our students, ‘Talk to your agent.’ The agent will look in our databases, search for available courses and suggest what courses you should take right now in accordance with your background and preferences. When you are taking a course, the agent will suggest an optimum learning path and the set of learning objectives which will satisfy you the most.”