

2010 TIGP Distinguished Lecture Series

The TIGP Distinguished Lecture Series (TIGP-DLS) is aimed to complement TIGP students' academic pursuits by providing outstanding opportunities for them to meet with prominent scientists from all disciplines. Our goal is to invite exceptional scientists to share with the TIGP students their unique stories on achieving success in their respective fields. We also encourage the speakers to address topics that will inspire creative thinking in our young scholars.

Coming Up

14:00 March 22, 2011

Speaker:

Professor James C. Wang

Mallinckrodt and Emeritus Professor of Biochemistry and
Molecular Biology, Harvard University

Academician, Academia Sinica

Member, U.S. National Academy of Sciences

2010 TIGP Distinguished Lecture Series

Title of the talk:

Intelligence: Machine vs. Human

Speaker:

Dr. Wen-Lian Hsu

Host: Vice President Chao-Han Liu

14:00, November 12, 2010

14:00 ~ 14:30	Registration
14:30 ~ 14:40	Opening Remarks
14:40 ~ 15:40	Speech
15:40 ~ 16:00	Discussion
16:00 ~ 16:30	Light Refreshments

2F Conference Room 1, Center of Academic Activities, Academia Sinica

Organized by International Affairs Office, Academia Sinica
Contact Info: TIGP Office, 02-2789-9906, meg@gate.sinica.edu.tw

Abstract

With the advancement of computing technology, artificial intelligence (AI) has greatly improved human lives in modern civilization. Everything ranging from Internet search, digital learning, robotics to smart phones has all been developed with lots of AI components therein. Bioinformatics and medical informatics have also expanded the vision of biologists and led to faster new discoveries in health and science. However, deep down in our hearts, we know that machine intelligence nowadays is, in many ways, quite different from human intelligence.

AI has created wonders in many aspects of our lives, but it did them mostly through engineering and programming techniques rather than the kind of intelligence that would enlighten human beings. Chess program is a good example. IBM's Deep Blue defeated the Russian grandmaster, Garry Kasparov, in 1997 by systematically evaluating 200 million possible moves on the chess board per second and winning with brute force. In Kasparov's words, "correctly evaluating a small handful of moves is far more important in human chess, and human decision-making in general, than the systematically deeper and deeper search for better moves—the number of moves "seen ahead"—that computers rely on."

However, it seems that current AI researchers are less interested in simulating how human thinks and behaves. This is especially clear in areas where human beings can easily beat computers, such as speech recognition and image processing. In speech recognition, most programs adopt dynamic programming algorithms in evaluating the final word sequences, but human beings can understand an utterance by listening only to a selected number of words or phrases in the sentence or often, understand even before the utterance is finished.

Which models are more realistic and what changes need to be made to take advantage of the logic behind human intelligence? In this talk we shall explore possible directions that could lead to computer systems behaving more like a human being.

About the Speaker

Dr. Wen-Lian Hsu received his Ph.D. from Cornell University in 1980. After the postdoctoral training at Universite Catholique de Louvain, Belgium, Dr. Hsu joined Northwestern University and focused his research on graph algorithms. Dr. Hsu was recruited to the Institute of Information Science of Academia Sinica and initiated the project "intelligent Chinese phonetic input system", aiming at resolving a major bottleneck in the computerization of Chinese language. A software resulted from this project, 自然輸入法 (GOING), was selected as one of the ten best Chinese computer products of Taiwan in 1993. Later, Dr. Hsu moved into the research of Intelligent Agent on the Internet, and produced the Math. Problem Solving Agent and a Chinese natural language Q & A system, @skbots. Recently, Dr. Hsu invented the PC-tree data structure to design very efficient algorithms in

planar graphs and intersection graphs. In the meantime, he has applied similar techniques to tackle computational problems in Biology such as error-tolerant algorithms in DNA sequence analysis, Genome knowledge base and intelligent knowledge management systems.

Education & Academic Appointments

- 2008 ~ present Distinguished Research Fellow, Academia Sinica, Institute of Information Science, Taiwan
- 2003 ~ present Director of the Bioinformatics Program, Academia Sinica, Taiwan International Graduate Program (TIGP), Taiwan
- 2001 ~ present Professor (joint appointment), National Tsing-Hua University, Department of Computer Science, Taiwan
- 1997 ~ 1998 Acting Director, Academia Sinica, Institute of Information Science, Taiwan
- 1996 ~ 1997 Visiting Professor, Stanford University, CSLI center, USA
- 1978 ~ 1980 Ph.D. , Operations Research , Cornell University, USA
- 1975 ~ 1978 M.S. , Operations Research , Cornell University, USA
- 1969 ~ 1973 B. S. The Department of Mathematics , National Taiwan University, Taiwan

Honors & Awards

- 2010 Pan Wen Yuan Distinguished Research Award (潘文淵研究傑出獎)
- 2008 Teco Technology Award, Taiwan
- 2006 IEEE Fellow, USA
- 2005 Distinguished Research Fellow Award of the NSC, Taiwan
- 1999 Academia Sinica Investigator Award, Taiwan
- 1999 Li Kuo-Ding Medal: K.-T. Li Research Penetration Award ,Taiwan
- 1999 NSC Designated Research Fellow, Taiwan
- 1994-7 Distinguished Research Awards by NSC, Taiwan
- 1993 Intelligent Chinese Input Software -- Top ten Most Distinguished Chinese computer products, Taiwan
- 1991-2 Distinguished Research Awards by the National Science Council (NSC),Taiwan
- 1981 Research Initiation Award of the National Science Foundation, Taiwan

Research Interest

Analysis of algorithms, graph theory; Search methods in artificial intelligence, etc (lab website: <http://iasl.iis.sinica.edu.tw/index.htm>)