



Faculty of Engineering

The University of Hong Kong

香港大學工程學院



Faculty Seminar Series

Chemical Reaction Inspired Metaheuristic for Optimization*

Prof Victor Li

Associate Dean, Research

Faculty of Engineering

The University of Hong Kong

Date: January 15, 2009 (Thursday)
Time: 1:00 pm - 2:00 pm
Venue: Room 737, Haking Wong Building, HKU
Language: English

**Joint work with PhD student Albert Y.S. Lam*

Abstract:

We encounter optimization problems in our daily lives and in research in various fields. Some of them are so hard that we can, at best, approximate the best solutions with (meta-)heuristic methods. However, the huge number of optimization problems and the small number of generally acknowledged methods mean that more metaheuristics are needed to fill the gap. We propose a new metaheuristic, called Chemical Reaction Optimization (CRO), to solve these hard problems. It mimics the interactions of molecules in a chemical reaction to reach a low energy stable state. Simulation results show that CRO is very competitive with the few existing successful metaheuristics, outperforming them in some cases. Moreover, with the No-Free-Lunch theorem, CRO must have equal performance as the others on the average but it can outperform all other metaheuristics when matched to the right problem type. Therefore, it provides a new approach for solving optimization problems, especially those which may not be solvable with the few generally acknowledged approaches.

Speaker:

Victor O.K. Li (http://www.eee.hku.hk/staff_personal/vli.htm) was born in Hong Kong in 1954. He received SB, SM, EE and ScD degrees in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology, Cambridge, Massachusetts, in 1977, 1979, 1980, and 1981, respectively. He joined the University of Southern California (USC), Los Angeles, California, USA in February 1981, and became Professor of Electrical Engineering and Director of the USC Communication Sciences Institute. Since September 1997 he has been with the University of Hong Kong, Hong Kong, where he is Associate Dean (Research) of Engineering, and Chair Professor of Information Engineering. He also served as Managing Director of Versitech Ltd. (<http://www.versitech.com.hk/>), the technology transfer and commercial arm of the University, from September 1997 to June 2004. Prof. Li serves on various corporate boards. His research is in information technology, including all-optical networks, wireless networks, and Internet technologies and applications.

~ Sandwiches and drinks will be provided ~

All teaching/research staff and students are welcome.