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SEMINAR SERIES ON COMPLEX SYSTEMS, NETWORKS, CONTROL AND CHAOS

**Challenges and Fun
in Designing Agile Mobile Robots**

Dr Jimmy To

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Date and Time: Friday, 14 November 2008, 4:30pm – 5:30pm

Venue: Room **CD634**, Hong Kong Polytechnic University

Reception starts at 4:15pm

(Language: **English**)

Abstract

The agility of mobile robots presents challenges quite different from stationary industrial robots. In this seminar, the speaker will first analyze the practical issues to be resolved in achieving fast and accurate motion. Drawing examples from robots designed for the past RoboCon competitions, he will then elaborate the physics behind some popular designs of robot chassis, followed by some unconventional designs and the tradeoffs among them. Next, he will present how speed and accuracy can be optimized by the practical application of PID onto the control of speed, acceleration, deceleration, position and bearing. He will also highlight on how similar techniques may be employed to tolerate centrifugal-forces and pendulum motion.

About the Speaker

Dr. To received his BSc degree in Electrical Engineering from the University of Manitoba and an MSc degree in Computer Engineering from the University of Southern California. He received his PhD in Computer Science from the Hong Kong University of Science and Technology. Prior to joining the Hong Kong Polytechnic University, Dr. To worked for five years in the local electronic industry, mainly in the development of consumer products and computer related products. His research interests are in computer architecture, embedded systems and multimedia/VoD servers. His publications include a monograph on VoD servers. His teaching is currently focused on a outcome-oriented subject based on robot platforms newly developed each year for EIE's annual Robotic Project Competition. In the past three years, Dr. To led teams of students to build mobile robots to compete in the inter-university robot competition RoboCon, and received a total of six prizes within three years.