



**The Hong Kong University of Science & Technology**

**Joint Seminar**

**Department of Computer Science  
and  
Department of Electrical and Electronic Engineering**

**“Toward a robot vision system : an image matching sub-system”**

**by  
Professor Edwige Pissaloux  
University of Rouen  
and  
Robotics Laboratory of Paris, France**

**ABSTRACT**

This talk will presents a robot vision system under design in Robotic Laboratory of Paris. Its image matching sub-system performs in hard real time (less than 1 second) matching of 2 gray-level images by calculating a plan projective transform from images.

The system prototype PC board includes an original parallel asynchronous systolic VLSI —  $\mu$ PD (FPGA Xilinx Virtex 300 implemented), a DSP and a microcontroller. The  $\mu$ PD circuit is a VLSI dedicated to fast images line/column matching. The matching materializes the modified dynamic programming algorithm. Its internal architecture is adaptive final application temporal constraints and admitted geometric differences between images. The architecture adaptativity, scalability and software virtualization of the  $\mu$ PD circuit permit to match images of any size. The processing speed (2000 faster than image matching sequential solution), system volume and system cost have been optimized according to A<sup>3</sup>C circuit/system design methodology (A<sup>3</sup>C — algorithm — architecture adequation under constraints).

This talk will finish with a video presentation of the Robotic Laboratory of Paris research activities : different robots under development, system for elderly people assistance, virtual reality systems, ....

Date: Monday, 3 June 2002

Time: 4:00pm – 5:00pm

Venue: Lecture Theater F (Leung Yat Sing Lecture Theater, near lift nos. 25/26)  
The Hong Kong University of Science & Technology  
Clear Water Bay, Kowloon

For enquiries, please call 2358 7008

**\*\*\*\* ALL are Welcome \*\*\*\***

*Biography:*

*Edwige Pissaloux received her BS (76) from Ecole Polytechnic, MS (78) in Electronics from Paris 6 University and MS (80) in Computer Science from Paris 7 University, PhD (83) in Applied Mathematics from Paris 7 and Doctorat D'Etat (87) (habilitation) in Mathematics Applied to Electronics from Paris 7 University. In parallel, since 1982, she has been an assistant professor at Institute of Technology of Paris 11 University, CS Department. In 1993 she has*

*been appointed as a full professor at Institute of Technology of Paris 13 University, than in 1996 a full professor at Rouen University, Physics Department. Since 1990, Professor Pissaloux is permanently invited professor at La Trobe University, Melbourne, Australia.*

*Professor Pissaloux conducts her research activities in Paris Robotics Laboratory (CNRS eq. To Chinese Academy of Sciences) in VLSI and Vision System Design with application to Robotics and medical robotics.*