



**The IEEE Control Systems Society and Robotics & Automation Society Chapter  
and  
Electrical Branch Committee, IEAust**

invite you to a

**WORKSHOP ON INTELLIGENT CONTROL**

- Computational Intelligence in Robotics: Learning, Adaptation and Evolution  
by  
Professor Toshio Fukuda  
The IEEE – Robotics & Automation Society Distinguished Lecturer, Japan
- Hybrid Control Systems  
by  
Professor Panos J. Antsaklis  
The IEEE-Control Systems Society Distinguished Lecturer, USA
- The ICSL Cooperative Mobile Robots  
by  
Dr Ljubo Vlacic  
Intelligent Control Systems Laboratory, Griffith University, Australia

Date and Venue

15 December, 12:00 - 16:00  
Hawken Auditorium, Engineering House  
447 Upper Edward Street, Brisbane

Refreshments will be served from 12:00 noon.

Registration Fee:

IEEE/IEAust members: No Charge.  
Non-members: \$200

Seat Booking:

To book your seat, please contact Ms Kathryn Norton, the IEAust, before 13 December on  
ph: 3832 3749, e-mail: [KNorton@ieaust.org.au](mailto:KNorton@ieaust.org.au)  
*Seat booking is essential.*

## PROGRAM

**12:00 – 13:00** Refreshments and welcome to the IEEE Distinguished Lecturers, Professor Antsaklis and Professor Fukuda

**13:00 – 14:00** Computational Intelligence in Robotics: Learning, Adaptation and Evolution  
by  
Professor Toshio Fukuda, The IEEE – Robotics & Automation Society Distinguished Lecturer, Japan

Intelligent robots still need more intelligence for daily work although intelligence in robotics has benefited from recent developments in the computational intelligence, such as neural networks, Fuzzy Logic, evolutionary computation and other methodologies. The most recent activities of world robotics will be overviewed, followed by a demonstration of an entertainment robot and a personal robot. Some demonstration examples will be shown with discussions on future robotics.

**14:00 – 15:00** Hybrid Control Systems  
by  
Professor Panos J. Antsaklis, The IEEE-Control Systems Society Distinguished Lecturer, USA

Hybrid systems are dynamical systems, the behavior of which is determined by interacting continuous and discrete dynamics. Their study is essential in designing sequential supervisory controllers for continuous systems, and it is central in designing intelligent control systems with a high degree of autonomy. Hybrid control systems are common in practice and may be found in such applications as flexible manufacturing, chemical process control, electric power distribution, and computer communication networks. A summary of recent research results in hybrid control systems will be presented. The most recent achievements in the supervisory control of hybrid systems will be discussed.

**15:00 – 15:30** Coffee/Tea

**15:30 – 16:00** The ICSL Cooperative Mobile Robots  
by  
Ljubo Vlacic, Intelligent Control Systems Laboratory, Griffith University

Intelligent Vehicle Technologies are now evolving extremely rapidly. They explore the synergy between microelectronics, artificial intelligence and intelligent control, and mark the beginning of a new era in the transport and related industry sectors. The ICSL Cooperative Mobile Robots are prototyped to perform manoeuvres considered essential for the autonomous operation of driverless vehicles on urban roads. A video-taped demonstration of the ICSL mobile robots will show some of these manoeuvres and the ability of the robots to cooperate.

**16:00** Closure

## **SPEAKERS' SHORT BIOGRAPHIES**

Professor Toshio Fukuda graduated from Waseda University in 1971 and from the Graduate School, University of Tokyo, in 1977. He joined the National Mechanical Engineering Lab (1977-1982) and the Science University of Tokyo (1982-1989). He has been a Professor at Nagoya University since 1989 where he is heading the Micro-systems, Control and Mechatronics Laboratory. Professor Fukuda was the President, IEEE Robotics and Automation Society (1998-99) and is Editor-in-Chief, IEEE/ASME Trans. on Mechatronics (2000 - present). He will be the IEEE Division X Director (2001-2002).

Panos J. Antsaklis is Professor of Electrical Engineering and Director of the Centre for Applied Mathematics of the University of Notre Dame, USA. His research interests are in the control of Hybrid and Discrete Event Systems and on Autonomous, Intelligent and Learning Control Systems. He has authored the research monograph "Supervisory Control of Discrete Event Systems Using Petri Nets" (Kluwer Academic 1998; with J. Moody) and the graduate textbook "Linear Systems" (McGraw-Hill 1997; with A.N. Michel). He has edited four books on Intelligent Autonomous Control and on Hybrid Systems, and he is the Guest Editor of the Special Issue on Hybrid Systems: Theory and Applications in the Proceedings of the IEEE (July 2000). He is an IEEE Fellow and an IEEE Third Millennium Medal recipient. He was the 1997 President of the IEEE Control Systems Society.

Ljubo Vlacic is Head of Griffith University's School of Microelectronic Engineering and Director of its Intelligent Control Systems Laboratory. His research interests span the areas of decision and control; and the application of these methodologies to industrial automation, mechatronics, intelligent robotics intelligent vehicles and transport systems. He has authored a research monograph on Distributed Process Control Systems and coedited two books on Mechatronics, and Intelligent Vehicles. He is the Editorial Board member of four scientific journals. He is an IEAust Fellow, Senior Member of IEEE and a chartered professional engineer. He is Chairman of the IEEE CSS/R&A Societies Chapter for Queensland.