



IEEE – Joint CSS/R&A Societies Chapter, Queensland,  
Electrical Branch Committee, IEAust-Queensland



present

## The IEEE – Distinguished Lecture

### *Fusion of Human and Machine Intelligence*

by

*Professor T J Tarn, USA, FIEEE*

**Date :** 04 March 2002

**Time :** 4:30pm to 6:30pm (Light refreshments will be provided from 4:00pm)  
A special arrangement has been achieved with the QCA Gallery. Doors will be open to Lecture attendees from 3:45pm to visit the Gallery. On display will be the 2002 Thiess Art Prize, featuring works by QCA students.

**Venue :** Queensland College of Arts (QCA) Lecture Theatre & Gallery, Griffith University, South Bank, Grey Street  
(Parking is available in a car park opposite the College, and in the undercover car park near the South Bank Parklands - <http://www.gu.edu.au/home/cam/maps/qca.html>)

#### **Abstract:**

The objective of this talk is to present an analytical scheme to integrate the heterogeneity of human and robot functions to achieve human friendly robotic operations. The heterogeneity of human and robot functions can be characterized by the fact that humans are intelligent while robots are fast, powerful and accurate. Humans can use their knowledge and experience to quickly respond to unexpected events, which makes it easy for humans to deal with unstructured environments. In contrast, robots can easily enhance the mechanical power of humans and the ability of humans to work remotely. Therefore, robots are capable of performing precise and repetitive tasks at high speed or in a hazardous environment. The important issue, in light of human/robot heterogeneity, is how to plan and control a robotic operation such that the human and the robot can cooperate in a complementary manner. Thus, a task which cannot be done by either human or robot alone can be performed efficiently and robustly by both. This talk introduces a new paradigm for human/robot interactive systems, heterogeneous function-based human/robot cooperation. A new perceptive action reference frame will be developed. It matches human perception and robot sensory measurement, and provides a platform for modeling the human/robot cooperative operations.

#### **Speaker:**

DR. TZYH-JONG (T.J.) TARN is a Professor in the Department of Systems Science and Mathematics and the Director of the Center for Robotics and Automation at Washington University, St. Louis, Missouri. He has held visiting professor positions at Imperial College, England; University of Rome, Italy; Nagoya University, Japan; Ecole Nationale Supérieure de Mécanique, France; and the Academy of Sciences, Russia. He also has been awarded the title of Honorary Professor at several Chinese universities, including Xichuan University and Tsinghua University.

Dr. Tarn is a member of IEEE, SIAM and Sigma Xi. An active member of the IEEE Robotics and Automation Society, Dr. Tarn served as the President of the IEEE Robotics and Automation Society, 1992-1993, the Director of the IEEE Division X (Systems and Control), 1995-1996, and a member of the IEEE Board of Directors, 1995-1996. Currently he serves as the Vice President for Publications of the IEEE Neural Networks Council and the Chairman of the Management Committee of the IEEE/ASME Transactions on Mechatronics.

He has received many awards. In particular, he is the recipient of the prestigious Joseph F. Engelberger Award of the Robotic Industries Association in 1999 for contributing to the advancement of the science of robotics and the Auto Soft Lifetime Achievement Award in 2000 in recognition of his pioneering and outstanding contributions to the fields of Robotics and Automation. He was featured in the Special Report on Engineering, 1998 Best Graduate School issue of US News and World Report and his recent research accomplishments were reported in the "Washington Times", Washington D.C., the "Financial Times", London, "Le Monde", Paris, and "Chicago Sun-Times", Chicago, etc. Dr. Tarn is a Fellow of IEEE.

**RSVP:** Please reply to Ms Annah Beere, QLD Division Phone: (07) 3832 3749, Email: [abeere@ieaust.org.au](mailto:abeere@ieaust.org.au) by 27/02/2002.