

Special Seminar

Sponsored by the 21st Century COE Program Micro Nanoscience Integrated Systems

Date **1/24 (Wednesday), 2007 15:30-17:00**

Place **Conference Room #3, Core Station 3F**

Biwako-Kusatsu Campus, Ritsumeikan University

Research Opportunities in Robotics

Professor Tzyh Jong Tarn

Washington University

Robots are poised to become, sooner or later, a part of everyday life. They will interact with human and play a role as human assistants. Based on presentations at a recent IARP Workshop on Micro and NANO Robotics in Paris, France (www.robotics-platform.eu.com ; <http://iarp06.robot.jussieu.fr/>), this talk will start to analyze the market trends. Attention will be paid to the application oriented methodology by first identify technological challenges in product scenarios and define the common technological breakthrough requirements. Next is to do cross-fertilization analysis for identified technical domains and towards de-fragmentation of research. The final focus is on research and technology cross- fertilization.

BIOGRAPHY

Dr. Tarn received the D.Sc. degree in control system engineering from Washington University, St. Louis, MO, in 1968. He is currently a Professor in the Department of Systems Science and Mathematics and the Director of the Center for Robotics and Automation at Washington University. He has also held visiting positions at Imperial College, England; the University of Rome, Italy; Nagoya University, Japan; the Ecole Nationale Supérieure de Mécanique, France, and the Academy of Science, USSR. He was awarded the title of Honorary Professor at more than ten Chinese universities, including Sichuan University, Tsinghua University, and the University of Science and Technology, Hefei. Dr. Tarn served as a member of the International Federation on Automatic Control Congress Young Author Prize Committee in 1990, 1993, and in 1996, and as the General Chairman of the First World Congress on Intelligent Control and Intelligent Automation, Beijing, China, 1993. He has also served twice as a member of the Nomination Committee of the prestigious Japan Prize and as a member of the Review Committee of the Institute for Robotics and Intelligent Systems of the Network of Centers of the Excellent Program of the Natural Sciences and Engineering Research Council of Canada. He has published over 300 papers, including over 100 papers on dynamic modeling and control of robotic systems.

An active member of the IEEE Robotics and Automation Society, Dr. Tarn served as a Technical Editor of the IEEE Transactions on Robotics and Automation from 1989 to 1991, the Vice President for Technical Activities from 1989 to 1990, the Program Chairman of the 1991 IEEE International Conference on Robotics and Automation, the President of the IEEE Robotics and Automation Society, 1992-1993, the General Chair of the IEEE/RSJ International Conference on Intelligent Robots and Systems, 2001. He also served as an Associate Editor of the IEEE Transactions on Automatic Control from 1986 to 1989, an Editor of the IEEE/ASME Transactions on Mechatronics, 1996-2000, the Director of the IEEE Division X (Systems and Control), 1995-1996, a member of the Technical Activities Board (TAB), 1992-1996, a member of the United States Activities Board (USAB), 1996-1997, a member of the Educational Activities Board (EAB), 1996, a member of the IEEE Board of Directors, 1995-1996, and the Editor of the IEEE TAB/Press Book Series on Design and Applications, 1994-1996. He currently serves as the

Vice President for Conferences of the Robotics and Automation Society.

He received the **NASA Certificate of Recognition** for the creative development of a technical innovation on "Robot Arm Dynamic Control by Computer" in 1987. The Japan Foundation for the Promotion of Advanced Automation Technology presented him with the **Best Research Article Award** in March, 1994. He also received the **Best Paper Award** at the 1995 IEEE/RSJ International Conference on Intelligent Robots and Systems, and the **Distinguished Member Award** from the IEEE Control Systems Society in 1996. He is the first recipient of both the **Nakamura Prize** (in recognition and appreciation of his contribution to the advancement of the technology on intelligent robots and systems over a decade) at the 10th Anniversary of IROS in Grenoble, France, 1997 and the **Ford Motor Company best paper award** at the Japan/USA Symposium on Flexible Automation, Otsu, Japan, 1998. In addition, 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, the **Auto Soft Lifetime Achievement Award** in 2000 in recognition of his pioneering and outstanding contributions to the fields of Robotics and Automation and the **Pioneer in Robotics and Automation Award** in 2003 from the IEEE Robotics and Automation Society for his technical contribution in developing and implementing nonlinear feedback control concepts for robotics and automation. He was featured in the Special Report on Engineering of the 1998 Best Graduate School issue of **US News and World Report** and his recent research accomplishments were reported recently in the "**Washington Times**", Washington D.C., the "**Financial Times**", London, "**Le Monde**", Paris, and the "**Chicago Sun-Times**", Chicago, etc. Dr. Tarn is a Fellow of IEEE.