

The Department of Mechanical Engineering/College of Engineering and Applied Sciences
Stony Brook University

Mechanical Engineering Seminar

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Professor

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Osaka University

Lecture Title: Non-Contact Non-Invasive Stiffness Sensing Toward Medical Diagnosis

Monday, March 2, 2009, 11:00 AM, Room 301 Engineering Building

Abstract

The recent advancement of high speed sensor and actuator enables us to quickly measure the stiffness distribution of the human body. We designed and developed non-contact stiffness sensor for diagnosing human body, such as evaluation of eye stiffness, tumor detection in internal organs, visualization of skin shock wave and evaluation of heart stiffness. The highlight of this talk is active strobe imager with the capability of real time visualization of the dynamic behavior of tissue that we can not see by our naked eye. A couple of discoveries through the newly developed sensing system are introduced with video demonstration.

Biography

Makoto Kaneko is a Professor in the Department of Mechanical Engineering at Osaka University. In 1981 he received his Ph.D. degree from the University of Tokyo. From 1990 to 1993 he was an Associate Professor at Kyushu Institute of Technology and from 1993 to 2006 he was Professor at Hiroshima University. Dr. Kaneko's research encompasses high speed hyper human technology which supports to develop a system capable of exceeding human capability. Especially, he is interested in dynamic active sensing by utilizing a high speed camera and a high speed actuator, and their implementation into medical system for exploring a new direction of medical diagnosis. He served as the Editor-in-Chief of Journal of Robotics and Mechatronics, an associate editor of the IEEE Transaction on Robotics and Automation, and an editorial member of Robotics and Automation Magazine. Dr. Kaneko is currently serving as a part editor of an upcoming international handbook of robotics and also co-authored a chapter on robot hands. He was the Director of the Hyper Human Research Project Center and the Project Leader of the 21century COE on "Hyper Human Technology toward the 21st Century Industrial Revolution". He was a Vice President of IEEE Robotics and Automation Society during 2004 through 2005. He published over 170 journal papers and 180 conference papers. He got 21 awards including Humboldt Research Award, IEEE Best Conference Paper Awards (ICIA, ICRA, ISATP) and IEEE RAS Best Transactions Paper Award.

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