iCART: Intelligent Cooperative Autonomous Robot Transporters

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Date: Dec. 5, 2011 (Monday)
Time: 3:00pm < Tea Reception at 2:45pm >
Venue: Room B6619, SEEM & MBE Conference Room (via Lift #4 of AC1)

ABSTRACT
Mechanical parking systems, such as elevator/tower parking systems, convey parking systems, shuttle parking systems, etc., are very popular in Japan especially inside of a crowded city. These systems are used to park automobiles efficiently in a narrow space available for parking in department stores, hotels, etc., although users are required to maneuver their cars skillfully and guide their cars into a specified narrow place. iCART (Intelligent Cooperative Autonomous Robot Transporters) is a robot system which maneuvers a car in a narrow space instead of its driver. Coordination of multiple mobile robots together for handling a vehicle is a challenging task for multiple mobile robots. The slippage between a mobile base and the ground is inevitable and its odometry could not be used for the coordination of the multiple robots having physical interaction. The estimation error of robot pose caused by the slippage could damage the automobile carried by the system. A new coordinated motion control scheme has been designed inspired by a “caster” mechanism and implemented in the robots to overcome the problem. Through the development of iCART, we will discuss issues relating to robotics as systems integration.
BIOGRAPHY
Dr. Kazuhiro Kosuge is a Professor in the Department of Bioengineering and Robotics at Tohoku University, Japan. He received the B.S., M.S., and Ph.D. in control engineering from the Tokyo Institute of Technology, in 1978, 1980, and 1988 respectively. From 1980 through 1982, he was a Research Staff in the Production Engineering Department, Nippon Denso Co., Ltd. (DENSO Co., Ltd. at present). From 1982 through 1990, he was a Research Associate in the Department of Control Engineering at Tokyo Institute of Technology. From 1990 to 1995, he was an Associate Professor at Nagoya University. From 1995, he has been at Tohoku University. He received the JSME Awards for the best papers from the Japan Society of Mechanical Engineers in 2002 and 2005, the RSJ Award for the best papers from the Robotics Society of Japan in 2005. He is an IEEE Fellow, a JSME Fellow, a SICE Fellow and RSJ Fellow. He is currently serving as President of IEEE Robotics and Automation Society (2010-2011).

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