SRG is held in cooperation with IEEE Robotics and Automation Society Singapore Chapter and is jointly organised by:

Institute of Technical Education, Nanyang Polytechnic, Nanyang Technological University, National University of Singapore, Ngee Ann Polytechnic, Republic Polytechnic, Robotic Games Society (Singapore), Singapore Polytechnic, Singapore Science Centre and Temasek Polytechnic.

Robotic Games Society (Singapore)

SRG 2006 Public Lecture
3.00 pm, 23 March 2006, Theatre For The Arts, Nanyang Polytechnic

Future Robotics

by

HENRIK HAUTOP LUND

Maersk Institute, University of Southern Denmark, Denmark

Abstract:

This talk will present novel directions in artificial intelligence robotics, showing how future robotic applications may enter into our daily life in forms that are significantly different from the robots of today. The presentation will include extensive video material to illustrate the future robot directions. It is believed that modern artificial intelligence will play a major role in creating intelligent robotic systems. Amongst such intelligent robotic systems, we find the shape-shifting robots that by themselves can change their own physical form, such as the ATRON modules for self-reconfiguration. A robot is composed of up to 100 such ATRON modules that each can be moved around on the structure to change the overall physical structure or to do self-repair. Also, robotic building blocks can be used as I-BLOCKS for teaching purposes. For instance, the African I-BLOCKS use the modular robotics approach for allowing novice users from different cultures to have IT training in a simple, hands-on manner. The use of robotic building blocks, instead of other educational robotic systems such as LEGO Mindstorms, allows everybody to build robots within minutes without the necessary use and knowledge of PC systems. Further, we will see how the approach can be used to create the playgrounds of tomorrow for creating physical play as a remedy for the growing obesity in the population. On such playware playgrounds, users can interact with the playgrounds as in computer games, and by using neural networks the playground can adapt to the individual users.

See also: www.adaptronics.dk

About the Speaker:

Henrik Hautop Lund, full professor. Is head of the AdapTronics Group (www.adaptronics.dk) at the Maersk Institute, University of Southern Denmark, and formerly he founded the LEGO Lab. His AdapTronics Group has won world championships (RoboCup Humanoid Free Style World Championship 2002, and FIRA KheperaSot World Championship 2002) and has been awarded several best paper awards. His research focuses on the role of morphology in intelligent autonomous systems, and his group is performing research in the field of modern artificial intelligence. He has won several scientific prizes and awards for the work on applying modern artificial intelligence to robotics. Previously, he founded the LEGO Lab at the CIT/University of Aarhus in 1997, and worked as research associate from 1992 to 1995 at the Institute of Psychology, The National Research Council, Rome, Italy, doing research in the fields of artificial life, neural networks, and evolutionary computation. Further, he worked as research associate during 1996 and 1997 in the Department of Artificial Intelligence at University of Edinburgh, UK, doing research on biologically inspired robotics and evolutionary robotics. He has led numerous large research projects and projects involving collaboration between academic institutions and private companies. He founded the RoboCluster, a cluster of competencies in robotics comprising more than 100 interested parties (mainly industrial partners) in the region of Southern Denmark. He is member of the Danish National Research Council appointed by the minister of research, technology and innovation. His robot development work has been presented to HM Queen of Denmark, HM Emperor of Japan, prime ministers, etc. He has published more than 100 scientific articles.

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