学术报告会

时间：2016年9月20日 14:00-16:00

地点：电院群楼3-308会议室

Autonomous and Human-Interactive Robots for Industrial Automation: Opportunities and Challenges

Prof. Dikai Liu

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Abstract:

Current applications of robotics is distinguished from more traditional automation by the focus on robots that operate in relatively unstructured, dynamic, difficult and often hazardous environments. A number of robotic systems have been deployed in highly challenging application areas including infrastructure maintenance, mining, cargo handling and healthcare. The first part of this presentation will talk about a range of autonomous robotic systems developed at the Centre for Autonomous Systems at the University of Technology Sydney, Australia. Key elements of these systems ranging from perception, mapping, control to learning will be described.

Recent research has demonstrated the significant challenges that need to be overcome in order to make mobile manipulators effectively co-exist and cooperate with a human in industry applications. The second half of this talk will discuss a model-based assistance-as-needed paradigm for physical human-robot interaction and strength augmentation. Methods, advantages and limitations of implementing the musculoskeletal model-based assistance-as-needed paradigm will also be discussed.

Biography:

Professor Dikai Liu is Co-Director of the Centre for Autonomous Systems at the University of Technology Sydney (UTS), Australia. His main research interest is robotics including motion planning, exploration, physical human-robot interaction, robot teams and robotic system design. He has developed robotic systems for practical applications, including autonomous robots for steel structure maintenance, bio-inspired climbing robots for complex structure inspection, and assistive robots for augmenting human strength in industrial applications. Since 2005, his research has received three best paper awards from international conferences (ISARC'2007, ISARC'2006, ISSNIP'2011-Biomedical Sensing and Sensors Symposium), and won seven research and engineering excellence awards (2015 APICTA Award, 2015 NSW SafeWork NSW Award, 2015 iAwards National Merit Award, 2015 iAwards NSW Merit Award, two EEAS'2013 and 2012 UTS VC Award). Dikai Liu received his PhD in 1997 from the Wuhan University of Technology, China.