

学术报告会

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地点：电院群楼2-406会议室

Interaction Modeling and Force Control of Soft Tissue for Surgical Robot

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Abstract:

Controlling the interaction between the robot and living soft tissues has become an important issue as the number of robots inside the operating room increase. Many research efforts have been done in order to control this interaction. Nowadays, researches are running in force control for helping surgeons in medical procedures such as needle insertion, motion compensation in beating heart surgeries and teleoperation systems with haptic feedback. The viscoelasticity property of the interaction between organ tissue and robotic instrument further complicates the force control design which is much easier in other applications by assuming the interaction model to be elastic (industry, stiff object manipulation, etc.). In this presentation, the force control problem of surgical robot on soft tissue is addressed based on a viscoelastic interaction model. Also, some other modeling related issues in surgical robotics are will be introduced as well. In end of the presentation, some experiment demos from French or European projects on surgical robotics will be shown by videos.

Biography:

Dr. Chao Liu received his Ph.D. degree in Electrical & Electronic Engineering from Nanyang Technological University, Singapore. He is now a CR1 Senior Research Scientist of French National Center for Scientific Research (CNRS) with LIRMM, Montpellier. His research interests mainly include surgical robotics, control theory and systems, computer vision. Dr. Liu has been involved in several European and French national research projects on medical robotics as Principle Investigator or participant. He is an expert panelist of Project Evaluation Committee for French National Research Agency (ANR) and Swiss National Science Foundation (SNSF). Dr. Liu serves on IEEE Technical Committee on "Telerobotics" since 2011 and IFAC Technical Committee on "Biological and Medical systems" since 2012. He also serves as program committee member and associate editor for numerous international conferences. Dr. Liu is a Senior Member of IEEE and a member of the honor society Sigma Xi.