上海交通大学自动化系
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系统控制与信息处理教育部重点实验室
Key Laboratory of System Control and Information Processing, Ministry of Education

学术报告会

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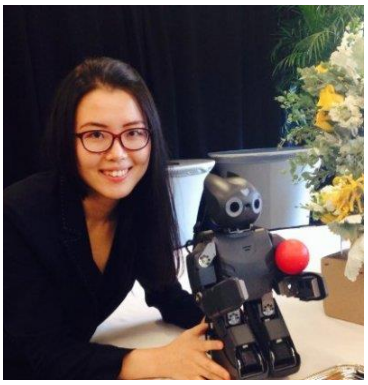
地点：电院群楼2-406会议室

Modeling, Motion Planning and Control of Bipedal Robotic Walking



Yan Gu
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Abstract:
Bipedal robotic walking has a great potential to become an important part in our everyday life. However, realization of satisfactory walking performance is a very challenging problem. My Ph.D. research investigates methodologies for achieving dynamic, versatile, and energy-efficient bipedal robotic walking, both fully actuated and under-actuated, based on nonlinear control theories. Previous work based on orbital stabilization and the Hybrid Zero Dynamics framework suffers from lack of versatility because it drives the joints to follow a certain walking pattern, which is defined as the relative evolution of joint positions in a complete walking cycle. Instead of orbital stabilization, my approach is to achieve exponential stabilization, which forces a biped to track a specific time function exponentially fast and contributes to significantly improve the walking versatility. Future work will focus on energy efficient bipedal robotic walking.

Biography:
Yan Gu is a Ph.D. candidate at Purdue University. She received her B.S. degree from Zhejiang University in 2011 as a recipient of the Chu Kochen Scholarship. She was awarded the Frederick N. Andrews Fellowship in 2011 and the Magoon Award for Excellence in Teaching in 2014 at Purdue. Her research interests include walking control of bipedal robots, understanding control mechanisms of animal locomotion, and rehabilitation. She has been teaching the laboratory sections of ME475, a senior control design course, as the head TA since 2013 Fall.