XUAN LIU

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OBJECTIVE

My goal is to become a professional robotics engineer & scientist specialized in robotics and artificial intelligence. My research interest lies in applying learning algorithms to the reaction policies of high level controllers to improve the general performance of locomotion, manipulation and recognition of humanoid robot as well as related applications such as exoskeleton and prosthesis.

EDUCATION

PhD student of Robotics Engineering - Worcester Polytechnic Institute — GPA: 4.0/4.0	2017.9-present
Master of Computer Science (Intelligent Robotics) - University of Southern California — GPA: 3.92/4.0	2015.9-2017.6
Bachelor of Computer Science (Network Engineering) Beijing University of Posts & Telecommunications--GPA: 86.1/100 (above 91%)	2011.9-2015.6

RELATED COURSES

Robot Dynamics, Introduction to Robotics, Machine Learning, System Dynamics, Signal and System, Natural Language Processing, Introduction of Artificial Intelligence, Coordinated Mobile Robotics

RESEARCH EXPERIENCE

1. Doctoral Research   *Supervisor: Prof. Jie Fu*   2017.9-present
Control and Intelligent Robotics Lab, Department of Robotics Engineering, Worcester Polytechnic Institute.

♦   I'm currently working on combining the formal method logic specification and hierarchical reinforcement learning to generate efficient and robust high level planning for robot multi-task scenarios. (Details coming soon)

2. Lab Intern   *Supervisor: Prof. Stefan Schaal*   2016.7-2017.5
Computational Learning & Motor Control Lab, Department of Computer Science, University of Southern California.

♦   Use dynamical movement primitives (DMP) algorithm to generate a basic walking pattern, based on the imitation of the joint trajectories from an existing humanoid robot.
♦   Testify the impact of each rhythmic DMP parameter on producing new trajectories from an origin pattern.
♦   Expand original data into different speed (10%-200%) and styles.
♦   Analyze and compare the flexibility, efficiency and stability properties on the generated walking patterns between DMP approach and classic zero moment point (ZMP) based inverse kinematics pattern generators.
♦   Find the most efficient trajectory in a pattern group generated from one specific DMP model.
♦   Collaborate and coordinate with supervisor and fellow graduate students.

2. Graduate Student Worker   *Supervisor: Prof. Maja Matarić*   2016.3-2017.5
Interaction Lab, Department of Computer Science, University of Southern California.

♦   Develop a web based interaction game using ROS to conduct psychological coping test on young patients and collect data for the researchers from Children's Hospital of Los Angeles (CHLA).
♦   Handle skills on developing web applications using javascript and robot control & communication applications using ROS.
♦   Collaborate and coordinate with medical researchers, fellow graduate students and undergraduate student.

3.Undergraduate Lab Intern   *Supervisor: Prof. Chenglong Fu*   2014.3-2015.8
Lab for Robotics, Automation Tech & Equipment, Department of Mechanical Engineering, Tsinghua University

•   Designed a series of controlling method to realize stable hopping movement on 3D single-legged robot.
•   Summarized the key factors for the balance control of 3D single legged hopping robot. Also have a paper related, which has been published on *International Conference on Climbing and Walking Robot 2015*.
•   Collaborated with faculty and fellow graduate student.

HONORS AND AWARDS

Team leader, Meritorious winner in Mathematical Contest in Modeling 2014   2014.2

PUBLICATIONS

Liu, Xuan, other authors. (2015). "The Key Factors of a One-Legged Robot to Keep Balance When Hopping in   2015.9
Place". *In Assistive Robotics: Proceedings of the 18th International Conference on CLAWAR 2015*. World Scientific
2015.

TECHNICAL SKILLS

- Programming languages, mathematical and tool packages: Python, C, C ++, Matlab, Mathematica, Javascript, Latex, VHDL
- Skills: Arduino, ROS, Lab-view, Webots, SL (simulator used in CLMC lab), Mysql, Opencv,
- Operating system: Linux (Ubuntu, Raspberry Pi), Mac OS, Windows OS