XINGHAO ZHU

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EDUCATION

University of California Berkeley (Mechanical Engineering Department) — California, USA
PhD Student — Aug 2018 - Present
- Major: Control **GPA: 4.0**
- Research Interests: Control, Learning, Robotics, Robotic Dexterous Manipulation
- Research Advisor: Prof. Masayoshi Tomizuka

Xi'an Jiaotong University (XJTU) — Xi'an, China
BEc. Major in Electrical Engineering & the Honors Youth Program — Sep 2012 – July 2018
- Best Undergraduate Thesis Paper of XJTU in 2018 (awarded to top 1% of ~4000)

SELECTED RESEARCH EXPERIENCES

University of California Berkeley (Mechanical Systems Control (MSC) Laboratory) — California, USA
Graduate Student Researcher to Prof. Masayoshi Tomizuka (Director of the MSC Lab)
Robotic Manipulation of Deformable Objects with Real-Time Tracking — Apr 2017 – Aug 2017
- The aim of the project was to enable robots to accurately manipulate a deformable object using complex motions
- Used an observer to track the object in real-time and to provide the estimated states to a trajectory planner; the trajectory planner generated motions for robots to enable them to manipulate the rope to a randomly given shape

Optimization Model for Planning Precision Grasps with Multi-Fingered Hands — Aug 2018 – June 2019
- This work proposed an optimization model to search for precision grasps with multi-fingered hands. The model took noisy point cloud of the object as input and optimized the grasp quality by iteratively searching for the palm pose and finger joints positions
- The proposed model was able to locate collision-free optimal precision grasps efficiently. The average computation time was 0.50 sec/grasp. The searching was robust to the incompleteness and noise of the point cloud

Robotic Dexterous Grasping Using Multi-Fingered Hand by Learning Methods — Aug 2019 – Present
- This ongoing work trying to use learning-based methods with analytical analysis to improve the performance of the grasping tasks with the multi-fingered hand

Xi'an Jiaotong University (Department of Automation) — Xi'an, China
Motor Imagery Based Electroencephalogram (EEG) Classification (Undergraduate Thesis) — Jan 2018 – June 2018
Research Assistant to Prof. Zuren Feng (Research Supervisor, Professor of Automation)
- The aim of this project was to design and implement a Brain-Computer Interface to classification motor imagery EEG. Filter Bank Common Spatial Pattern algorithm was utilized to extract the features of the signal, and Supported Vector Machine was used to classified the features

Power Line Carrier Communication (PLC) — May 2016 – Aug 2016
Research Assistant to Prof. Aimin Zhang (Research Supervisor, Professor of Automation)
- PLC has many applications for commercial but is rarely applied in industrial. The aim of this project was to build a PLC system appropriate for use in industry, and to deal with the block of signals caused by electronic devices

Application of Inkjet Technology in 3D Printing — Oct 2015 – Apr 2016
Research Assistant to Prof. Li Wang (Research Supervisor, Professor of Mechanical Engineering)
- Identified major challenges of the 3D inkjet printer and proposed methods to overcome those challenges
- Assisted in designing and testing of the newly-designed 3D inkjet printer and quantitatively analyzed the results

WORK EXPERIENCE

Fanuc America Company (Fanuc Advanced Research Laboratory) — California, USA
Robotics Research Intern — June 2019 – Aug 2019

PUBLICATIONS

[1] Yongxiang Fan, **Xinghao Zhu** and Masayoshi Tomizuka "Optimization Model for Planning Precision Grasps with Multi-Fingered Hands", accepted by *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.

ADDITIONAL INFORMATION

Computer Skills
- Coding in C/C++; Python; MATLAB; Verilog HDL
- Familiar with Ubuntu; Robot Operating System (ROS); Arduino UNO; 3D Printing; Photoshop; Premiere