Yongxiang Fan

Email: yongxiang_fan@berkeley.edu LinkedIn: https://www.linkedin.com/in/yongxiang-fan-9a949487/
Phone: +1(510)599-6170 Address: 2103 Etcheverry Hall, UC Berkeley

EDUCATION

University of California, Berkeley (UCB) (Advisor: Masayoshi Tomizuka) **Berkeley, CA**
Ph.D. in Mechanical Engineering, GPA: 3.95/4.0 *expected May. 2019*
- Major: Controls, Minor: Robotics and Optimization
- Related Fields: Reinforcement Learning, Machine Learning

University of Science and Technology of China (USTC) **Hefei, China**
B.E. Degree in Precision Machinery and Precision Instrumentation, *Jun. 2014*
- GPA: 92.7/100, Ranking: 1/61

National Tsing Hua University (NTHU) (Advisor: Shang-Hong Lai) **HsinChu, Taiwan**
Research Visitor in Computer Science, *Jun. 2013-Aug. 2013*
- GPA: 4/4

WORK EXPERIENCE

Autodesk Inc. **San Francisco, CA**
Artificial Intelligent Researcher in AI Lab *Jun. 2018-Aug. 2018*
- Combined reinforcement learning with control and optimization for robotic assembly
- Implemented the proposed planner to UR robots for Lego house assembly

FANUC Corporation **Yamanashi, Japan**
Robotics Research Intern *Jul. 2017-Sep. 2017*
- Proposed a force control structure for FANUC multi-fingered hand
- Implemented a manipulation controller for robust grasping and dexterous manipulation

Brachium Inc. **San Ramon, CA**
Vision & Robotics Researcher *Jun. 2016-Aug. 2016*
- Real-time mouth/jaw detection and registration for dental automation
- Trajectory mapping and tracking for dental robots from single human demonstration

FANUC Corporation **Yamanashi, Japan**
Robotics Research Intern *Jun. 2015-Jul. 2015*
- Proposed a real-time safe visual tracking algorithm and verified on industrial robots
- Built safety checking strategies for real-time collision/singularity avoidance

RESEARCH PROJECTS

Skill Learning for Precision Industrial Assembly *Jun. 2018-Present*
- Proposed a novel Guided-DDPG to improve the efficiency and performance of RL
- Implemented the Guided-DDPG to Universal robots for Lego house assembly

Dexterous In-Hand Manipulation for Multi-Fingered Hands *Apr. 2016-Present*
- Robust manipulation under object and contacts uncertainties
- Real-time finger gaits planning for dexterous manipulation

Grasp Planning for Customized Grippers/Multi-Fingered Hands *Oct. 2017-Present*
- Grasp planning for multi-fingered hands by finger splitting
- Grasp planning for customized grippers by iterative surface fitting

Real-Time Motion Planning *Mar. 2015-Apr. 2016*
- Realized online trajectory planning with collision avoidance for industrial robots
- Trained neural network policy for motion planning by guided policy search

Object Position and Orientation Tracking for 6-DOF Manipulators *Jun. 2015-Mar. 2016*

- Target pose estimation with sensor physics consideration
- Quaternion based controller design for asymptotically stable tracking

Lead-Through Teaching and Collision Avoidance for 6-DOF Manipulators *Mar. 2015-Feb. 2016*

- Lead-through teaching with automatic collision avoidance
- Online safety checking package for FANUC manipulators

Development and Manufacturing of Intelligent Cooking Robot *Oct. 2012-Jun. 2014*

- 5-DOF manipulator and 9-DOF hand design for cooking
- Real-time object recognition/localization by deep learning

PATENT

Akeel, Hadi and **Fan, Yongxiang**. 2016. *Vision guided robot path programming. U.S. Patent Application No.* 62415737, filed November 2016.

RELEVANT SKILLS

Programming Language: C/C++, Python, Matlab, AMPL
Software: ROS, Mujoco, Eclipse, Visual Studio, AutoCAD, Solidworks, LabView, ABAQUS, V-REP

SCHOLARSHIP & AWARDS

Best Application Paper Award (CASE2018)	*Aug. 2018*
J. K. Zee Fellowship (UC Berkeley)	*Jan. 2018-May. 2018*
Graduate Division Block Grant Award (UC Berkeley)	*May. 2017-Aug. 2017*
Berkeley Fellowship (UC Berkeley)	*Aug. 2014-Aug. 2016*
Outstanding Graduate Scholarship (USTC)	*Apr. 2014*
Guo Moruo Scholarship (Highest honor for seniors at USTC)	*Nov. 2013*
National Scholarship (Highest honor for non-seniors at USTC)	*Nov. 2012*

PUBLICATIONS

1. **Y. Fan***, T. Tang, H.-C. Lin, M. Tomizuka, "Real-time grasp planning for multi-fingered hands by finger splitting," *in Intelligent Robots and Systems (IROS), 2018 IEEE/RSJ International Conference.*
2. **Y. Fan***, H.-C. Lin, T. Tang, M. Tomizuka, "Grasp Planning for Customized Grippers by Iterative Surface Fitting." *Automation Science and Engineering (CASE), 2018 IEEE International Conference on*. **(Best Application Paper Award)**
3. **Y. Fan***, T. Tang, H.-C. Lin, Y. Zhao, and M. Tomizuka, "Real-time robust finger gaits planning under object shape and dynamics uncertainties," *in Intelligent Robots and Systems (IROS), 2017 IEEE/RSJ International Conference.*
4. **Y. Fan***, et. al, "Robust dexterous manipulation under object dynamics uncertainties," 2017 *IEEE International Conference on Advanced Intelligent Mechatronics (AIM).* **(Best Conference Paper Award Finalist)**
5. **Y. Fan***, W. Gao, and M. Tomizuka, "Real-time finger gaits planning for dexterous manipulation," *The 20th World Congress of the International Federation of Automatic Control (IFAC), 2017.*
6. **Y. Fan***, et. al, "Object position and orientation tracking for manipulators considering nonnegligible sensor physics," *in Flexible Automation (ISFA), International Symposium on. IEEE, 2016, pp. 450–457.*
7. T. Tang, **Y. Fan**, H-C. Lin, and M. Tomizuka, "State estimation for deformable objects by point registration and dynamic simulation," *in Intelligent Robots and Systems (IROS), 2017 IEEE/RSJ International Conference.*
8. H-C. Lin, **Y. Fan**, T. Tang, and M. Tomizuka, "Human guidance programming on a 6-DoF robot with collision avoidance," *in Intelligent Robots and Systems (IROS), 2016 IEEE/RSJ International Conference.*
9. **Y. Fan***, H.-C. Lin, T. Tang, M. Tomizuka, "A Learning Framework for Robust Bin Picking by Customized Grippers. " submitted to *Robotics and Automation (ICRA), 2019 IEEE International Conference on*.
10. **Y. Fan***, Y. Koga, J. Luo, "A Learning Framework for Precision Industrial Assembly. " submitted to *Robotics and Automation (ICRA), 2019 IEEE International Conference on.*