

Shaoxiong Wang

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Google Scholar

EDUCATION

- June 2019 **Massachusetts Institute of Technology**, Cambridge, MA
- July 2022
- Ph.D. Candidate in Computer Science
 - Major: Robot Learning, Tactile Perception & Manipulation, Computer Vision, Machine Learning
 - Minor: Computational Fabrication
 - Computer Science and Artificial Intelligence Laboratory (CSAIL)
 - Advisor: Edward H. Adelson
- August 2017 **Massachusetts Institute of Technology**, Cambridge, MA
- May 2019
- M.S. in Computer Science
 - Computer Science and Artificial Intelligence Laboratory (CSAIL)
 - GPA: **5.0/5.0**
 - Advisor: Edward H. Adelson
- August 2013 **Tsinghua University**, Beijing, China
- July 2017
- B.E. in Computer Science & Technology
 - GPA: **91/100** Ranking: **13th/127**
 - Advisor: Jie Tang

HONORS

- Sep 2020 **Best Paper Award**, IROS'20
SwingBot: Learning Physical Features from In-hand Tactile Exploration for Dynamic Swing-up Manipulation
Top 1 out of 2996 paper submissions
- July 2020 **Best Paper Award Finalist**, RSS'20
Cable Manipulation with a Tactile-Reactive Gripper
Top 3 out of 321 paper submissions
- May 2017 **Grand Prize of Challenge Cup**, Tsinghua University
Ranking top 6 out of 381 teams; Award for the project *DeepMusic*.
- Aug. 2016 **1st Place in Microsoft Campus Elite Competition**, Microsoft Research Asia
Ranking 1st out of 280 teams; Award for the project *DeepMusic*.
- Oct. 2016 **Sohu Scholarship**, Sohu Inc.
- Oct. 2016 **Outstanding Academic Scholarship**, Tsinghua University
- Oct. 2014 **Technological Innovation Scholarship**, Tsinghua University
- July 2011 **Gold Medal in National Olympiad in Informatics (NOI)**, China Computer Federation (CCF)
Ranking 27th out of 57000.

WORK EXPERIENCE

- Aug. 2022 – **Dexterity, Inc.**, *Robotics Engineer*
- Present
- Developing perception and control algorithms for robots in logistics and warehouses.

- Sep. 2017 – **MIT, Perceptual Science (PerSci) Group**, Research Assistant, Advisor: Prof. Edward H. Adelson
- Jul. 2022 – Developed compact vision-based tactile sensor [GelSight Wedge \(ICRA'21\)](#), which transformed touch signals into images, and provided high-resolution contact geometry and force.
- Worked on robotic manipulation with tactile feedback, e.g. [Cable Manipulation \(RSS'20 Best Paper Finalist\)](#), and [Dynamic Swing-Up Manipulation \(IROS'20 Best Paper\)](#).
 - Studied multimodal learning using vision and touch, e.g. [3D Shape Reconstruction \(IROS'18\)](#), and [Material Perception \(CVPR'17 Oral\)](#).
- May 2020 – **Facebook AI Research, Research Intern**, Mentor: Dr. Roberto Calandra
- Aug. 2020 – Developed fast optical simulation of vision-based tactile sensors for robotic tasks, open-sourced at <https://github.com/facebookresearch/tacto>
- Learned grasp stability from vision and touch using 1 million simulated data, and achieved 96% accuracy with ResNet.
- Feb 2016 – **Tencent, Inc., Research Intern**, Mentor: Prof. Xiao Liu
- Oct. 2016 – Studied user financial situation based on Wechat red envelope behaviours.
- Collaborated on anonymized feature extraction, for user behaviours in sampled Wechat groups.
 - Predicted the behaviour of credit card binding, using extract features and random forest models.
- Sep. 2015 – **Tsinghua University, State Key Laboratory of Intelligent Technology and Systems**, Research Assistant, Advisor: Prof. Xiaolin Hu
- June 2016 – Developed a music generation system "DeepMusic" based on Long-short Term Memory (LSTM), embedded with music principles.
- Analyzed and cleaned the musical notes extracted from GTP (Guitar Pro) files.
 - Conducted music Turing test, where the system "fooled" about 30% of the subjects.
- July 2014 – **Sogou, Inc., Research Intern**, Mentor: Feng Shi
- Sep. 2014 – Extracted user monthly statistics features by Hadoop distributed system.
- Selected useful features to achieve best F1-score using liblinear.
 - Published a service to predict whether a user will pay in e-book shop.
- Jan. 2014 – **Tsinghua University, Knowledge Engineering Group (KEG)**, Research Assistant, Advisor: Prof. Jie Tang
- June 2016 – Developed conference analysis for academic network mining <https://www.aminer.org>
- Analyzed and visualized the most-cited papers/authors for each conference, and the distribution of authors' country, sex, language.
 - Extracted the keywords of each conference and visualized them by tag cloud.

SKILLS

- Languages Python, C/C++, Matlab, Java
- Frameworks PyTorch, Keras, Flask, Qt
- Tools git, shell, L^AT_EX, Final Cut Pro, Adobe {Ps, Pr, Ae}, SolidWorks/Onshape, Eagle
- Fabrication 3D Printing, Laser Cutting, Molding, Waterjet, PCB Milling

TEACHING

- Spring 2021 6.819/6.869, Advances in Computer Vision, MIT, Teaching Assistant
- Fall 2019 6.819/6.869, Advances in Computer Vision, MIT, Teaching Assistant

PATENTS

- Sep 2022 **Enhanced Depth Estimation Using Dep Learning**
[Shaoxiong Wang](#), Yu She, Branden Romero, Edward H. Adelson
 Patent Number: WO2022191910A1

Apr 2022 **Learning physical features from tactile robotic exploration**
Chen Wang, [Shaoxiong Wang](#), Branden Romero, Filipe Veiga, Edward H. Adelson
Patent Number: WO2022087360A1

PROFESSIONAL SERVICES

Conference Reviewer, (16 papers)

Nov 2022 IEEE International Conference on Robotics and Automation (ICRA), 1 paper
Jul 2022 Conference on Robot Learning (CoRL), 4 papers
Apr 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 1 paper
Jul 2021 Conference on Robot Learning (CoRL), 5 papers
Apr 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2 papers
Dec 2020 IEEE Transactions on Industrial Electronics (TIE), 1 paper
Dec 2020 IEEE International Conference on Robotics and Automation (ICRA), 2 papers

Journal Reviewer, (6 papers)

Dec 2023 IEEE Robotics and Automation Letters (RA-L), 1 paper
Apr 2022 IEEE Robotics and Automation Letters (RA-L), 1 paper
Mar 2022 IEEE Robotics and Automation Letters (RA-L) with IROS, 2 papers
Jun 2020 IEEE Robotics and Automation Letters (RA-L) with IROS, 1 paper
Feb 2020 IEEE Robotics and Automation Letters (RA-L) with RoboSoft, 1 paper

Program Committee Member

May 2022 IEEE International Conference on Robotics and Automation (ICRA) Workshop
Reinforcement Learning for Contact-Rich Manipulation [[Website](#)]
May 2021 International Conference on Learning Representations (ICLR) Workshop
Embodied Multimodal Learning [[Website](#)]

PUBLICATIONS

Jan 2023 **DTact: A Vision-Based Tactile Sensor that Measures High-Resolution 3D Geometry Directly from Darkness**
Changyi Lin, Ziqi Lin, [Shaoxiong Wang](#), Huazhe Xu
IEEE International Conference on Robotics and Automation (ICRA'23) [[Project](#)]

Dec 2022 **Visuotactile Affordances for Cloth Manipulation with Local Control**
Neha Sunil*, [Shaoxiong Wang](#)*, Yu She, Edward Adelson, Alberto Rodriguez
(* indicates equal contribution)
Conference on Robot Learning (CoRL22) [[Project](#)]

Dec 2022 **See, Hear, and Feel: Smart Sensory Fusion for Robotic Manipulation**
Hao Li*, Yizhi Zhang*, Junzhe Zhu, [Shaoxiong Wang](#), Michelle A Lee, Huazhe Xu, Edward Adelson, Li Fei-Fei, Ruohan Gao, Jiajun Wu
(* indicates equal contribution)
Conference on Robot Learning (CoRL22) [[Project](#)]

Aug 2022 **Towards Learning to Play Piano with Dexterous Hands and Touch**
Huazhe Xu, Yuping Luo, [Shaoxiong Wang](#), Trevor Darrell, Roberto Calandra
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'22)

- May 2022 **TACTO: A Fast, Flexible and Open-source Simulator for High-Resolution Vision-based Tactile Sensors**
[Shaoxiong Wang](#), Michael Lambeta, Po-Wei Chou, Roberto Calandra
IEEE Robotics and Automation Letters (RA-L) and ICRA'22 [\[Code\]](#)
- May 2021 **GelSight Wedge: Measuring High-Resolution 3D Contact Geometry with a Compact Robot Finger**
[Shaoxiong Wang](#), Yu She, Branden Romero, Edward H. Adelson
IEEE International Conference on Robotics and Automation (ICRA'21). [\[Project\]](#)
- May 2021 **PyTouch: A Machine Learning Library for Touch Processing**
Michael Lambeta, Huazhe Xu, Jingwei Xu, Po-Wei Chou, [Shaoxiong Wang](#), Trevor Darrell, Roberto Calandra
IEEE International Conference on Robotics and Automation (ICRA'21). [\[Code\]](#)
- Oct. 2020 **SwingBot: Learning Physical Features from In-hand Tactile Exploration for Dynamic Swing-up Manipulation**
Chen Wang*, [Shaoxiong Wang*](#), Branden Romero, Filipe Veiga, Edward H. Adelson
(* indicates equal contribution)
*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'20 **Best Paper Award**)*.
[\[Project\]](#)
- July 2020 **Cable Manipulation with a Tactile-Reactive Gripper**
Yu She*, [Shaoxiong Wang*](#), Siyuan Dong*, Neha Sunil, Alberto Rodriguez, Edward H. Adelson
(* indicates equal contribution)
The International Journal of Robotics Research (IJRR'21)
*Robotics: Science and Systems (RSS'20 **Best Paper Award Finalist**)*. [\[Project\]](#)
- Oct. 2018 **3D Shape Perception from Monocular Vision, Touch, and Shape Priors**
[Shaoxiong Wang*](#), Jiajun Wu*, Xingyuan Sun, Wenzhen Yuan, William T. Freeman, Joshua B. Tenenbaum, Edward H. Adelson
(* indicates equal contribution)
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'18) [\[Project\]](#)
- May 2018 **Active Clothing Material Perception using Tactile Sensing and Machine Learning**
Wenzhen Yuan, Yuchen Mo, [Shaoxiong Wang](#), Edward H. Adelson
IEEE International Conference on Robotics and Automation (ICRA'18) [\[Project\]](#)
- July 2017 **Connecting Look and Feel: Associating the visual and tactile properties of physical materials**
Wenzhen Yuan*, [Shaoxiong Wang*](#), Siyuan Dong, Edward H. Adelson
(* indicates equal contribution)
Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR'17 **Oral**) [\[Project\]](#)
- Nov. 2016 **Active Zero-Shot Learning**
Sihong Xie, [Shaoxiong Wang](#), Philip S. Yu
Proceedings of the 25th ACM International on Conference on Information and Knowledge Management (CIKM'16)