

# Shaoxiong Wang

✉ [wang\\_sx@mit.edu](mailto:wang_sx@mit.edu)  
🌐 [shaoxiongwang.com](http://shaoxiongwang.com)

## EDUCATION

- June 2019 **Massachusetts Institute of Technology**, Cambridge, MA
- June 2022 (expected) – 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: **13<sup>th</sup>/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
- July 2020 **Best Paper Award Finalist**, RSS'20  
Cable Manipulation with a Tactile-Reactive Gripper
- May 2017 **Grand Prize of Challenge Cup**, Tsinghua University  
Ranking top 6 out of 381 teams; Award for the project *DeepMusic*.
- Aug. 2016 **1<sup>st</sup> Place in Microsoft Campus Elite Competition**, Microsoft Research Asia  
Ranking 1<sup>st</sup> 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 27<sup>th</sup> out of 57000.

## WORK EXPERIENCE

- Sep. 2017 – **MIT**, *Perceptual Science (PerSci) Group*, Research Assistant, Advisor: Prof. Edward H. Adelson
- Current
- 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 on multimodal learning using vision and touch, e.g. [3D Shape Reconstruction \(IROS'18\)](#), and [Material Perception \(CVPR'17 Oral\)](#).

- May 2020 – **Facebook AI 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**, *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 2015 – **University of Illinois at Chicago**, *Big Data and Social Computing (BDSC) Lab*, Research Assistant, Advisor: Prof. Philip S. Yu
- Aug. 2015 – Designed a model to combine multiple similarity metrics by entropy. One metric is calculated by heterogeneous meta-path and the other is by knowledge-base attributes.
- Experimented on Stackoverflow label prediction, and increased the ranking performance by 1.2% compared to baseline algorithms.
- July 2014 – **Sogou**, *Intern*, Mentor: Feng Shi
- Sept. 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<sup>A</sup>T<sub>E</sub>X, 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

## PUBLICATIONS

May 2021 **GelSight Wedge: Measuring High-Resolution 3D Contact Geometry with a Compact Robot Finger**  
**Shaoxiong Wang**, Yu She, Brandon 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](#)]
- Dec. 2020 **TACTO: A Fast, Flexible and Open-source Simulator for High-Resolution Vision-based Tactile Sensors**  
[Shaoxiong Wang](#), Michael Lambeta, Po-Wei Chou, Roberto Calandra  
*NeurIPS'20 Workshop in Robot Learning, and Deep Reinforcement Learning*. [[Code](#)]
- Oct. 2020 **SwingBot: Learning Physical Features from In-hand Tactile Exploration for Dynamic Swing-up Manipulation**  
Chen Wang\*, [Shaoxiong Wang\\*](#), Brandon 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  
*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  
*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  
*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)*