

Shaoxiong Wang

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EDUCATION

- June 2019 **Massachusetts Institute of Technology**, Cambridge, MA
- July 2022
- Ph.D. in Computer Science
 - Research: Robot Learning, Tactile Perception & Manipulation, Multi-modal Learning
 - Computer Science and Artificial Intelligence Laboratory (CSAIL)
 - Advisor: Prof. Edward H. Adelson
- Aug. 2017 **Massachusetts Institute of Technology**, Cambridge, MA
- June 2019
- M.S. in Computer Science
 - Computer Science and Artificial Intelligence Laboratory (CSAIL)
 - GPA: **5.0/5.0**
 - Advisor: Prof. Edward H. Adelson
- Aug. 2013 **Tsinghua University**, Beijing, China
- July 2017
- B.E. in Computer Science & Technology
 - Research: Data Mining, Natural Language Processing
 - GPA: **91/100** Ranking: **13th/127**
 - Advisor: Prof. Jie Tang

WORK EXPERIENCE

- May. 2025 – **Tacta Systems, Inc.**, *Head of Robotics Learning*
- Present **Project: Learning Dexterous Manipulation Skills**
- Trained imitation learning and reinforcement learning policies for dexterous manipulation, and achieved ~99% success rate for contact-rich tasks.
 - Fine-tuned VLM to decompose long-horizon tasks into sub-tasks.
 - Integrated tactile sensing in multi-modal policies and conducted ablation studies to show the effectiveness of different modalities.
 - Designed and developed systems for training and evaluating policies in simulation and real robot environments.
 - Collaborated with and supported researchers and engineers across projects, including learning precise insertion tasks with VLA, Residual RL, human-to-robot transfer, tactile-reactive policies, and exoskeletons.
- Feb. 2025 – **Tesla, Inc.**, *Senior Robotics Machine Learning Engineer*
- May. 2025 **Project: Humanoid Box Transport**
- Trained humanoid loco-manipulation RL policies to transport boxes.
 - Experimented with curriculum learning, reward shaping, distillation, etc.
 - Deployed RL policies with Sim2Real for real robot experiments.
- Aug. 2022 – **Dexterity, Inc.**, *Senior Robotics Engineer*
- Feb. 2025 **Project: Contact-Rich Robotic Manipulation**
- Designed and implemented Transformer-based robotic manipulation skills with real-time force feedback control, and deployed in product with ~97% success rate.
 - Integrated physics simulation for development and testing.
 - Developed data, visualization, and analytics pipelines for long-term support and continual learning.
 - Collaborated with the motion planning and control team to ensure safe, robust robot behavior under environmental constraints.
- Project: Autonomous Driving in Structured Environments**
- Developed an autonomous driving system for mobile manipulators inside truck trailers.
 - Developed and deployed localization and feedback control for autonomous driving in daily product operation.
 - Implemented coordinated control between mobile bases and third-party conveyor systems.

- 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 a music Turing test, where the system was evaluated as human-composed music about 30% of the time.
- 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 the 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.
 - Experimented with name disambiguation with feature extraction and clustering.

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.

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 Deep Learning**
[Shaoxiong Wang](#), Yu She, Branden Romero, Edward H. Adelson
Patent Number: WO2022191910A1

Apr 2022 **Learning Physical Features from Tactile Robotic Exploration**
Edward H. Adelson, Branden Romero, Filipe Veiga, [Shaoxiong Wang](#), Chen Wang
Patent Number: WO2022087360A1

PUBLICATIONS

Feb 2025 **Tactile-Reactive Roller Grasper**
Shenli Yuan*, [Shaoxiong Wang](#)*, Radhen Patel, Megha Tippur, Connor Yako, Mark R. Cutkosky, Edward H. Adelson†, Kenneth Salisbury†
IEEE Transactions on Robotics (TRO'25) [[Project](#)]

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 (CoRL'22) [[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 (CoRL'22) [[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)