

Thomas Weng

<https://thomasweng.com> · tweng@andrew.cmu.edu

EDUCATION

Carnegie Mellon University

Ph.D. Candidate in Robotics

Advisor: Dave Held

Thesis Committee: Dave Held, Oliver Kroemer, Shubham Tulsiani, Alberto Rodriguez (MIT)

2018 - present

Pittsburgh, PA

Yale University

B.S. Computer Science & B.A. Economics

GPA: 3.77 / 4.0 with distinction in the C.S. major

Senior Thesis Advisor: Brian Scassellati

2011 - 2015

New Haven, CT

HONORS

Graduate Research Fellowship Award, National Science Foundation

2019

Graduate Research Fellowship Honorable Mention, National Science Foundation

2018

Computer Science Research Prize, Yale University

2015

Trumbull College Scholarship for Economics, Yale University

2014

Maher Family Scholarship, Yale University

2013, 2014

PUBLICATIONS

- [C8] **Weng, T.**, Held, D., Meier, F., and Mukadam, M. Neural Grasp Distance Fields for Robot Manipulation. *IEEE International Conference on Robotics and Automation (ICRA)*, 2023.
- [C7] Tirumala, S.*, **Weng, T.***, Seita, D.*, Kroemer, O., Temel, Z., and Held, D. Learning to Singulate Layers of Cloth Based on Tactile Feedback. *IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2022.
- [C6] **Weng, T.**, Bajracharya, S., Wang, Y., Agrawal, K. and Held, D. FabricFlowNet: Bimanual Cloth Manipulation with a Flow-based Policy. *Conference on Robot Learning (CoRL)*, 2021.
- [C5] Jianing, Q.*, **Weng, T.***, Okorn, B., Zhang, L., and Held, D. Cloth Region Segmentation for Robust Grasp Selection. *International Conference on Intelligent Robots and Systems (IROS)*, 2020.
- [J1] **Weng, T.**, Pallankize, A., Tang, Y., Kroemer, O., and Held, D. Multi-modal perception and transfer learning for grasping transparent and specular objects. *IEEE Robotics and Automation Letters*, 2020. The contents of this paper were also selected by ICRA 2020 Program Committee for presentation at the conference.
- [C4] **Weng, T.**, Perlmutter, L., Nikolaidis, S., Srinivasa, S., and Cakmak, M. Robot Object Referencing through Situated Legible Projections. *IEEE International Conference on Robotics and Automation (ICRA)*, pages 8004-8010. IEEE, 2019.
- [C3] Sefidgar, Y.*, **Weng, T.***, and Cakmak, M. RobotIST: Interactive Situated Tangible Robot Programming. *Proceedings of the Symposium on Spatial User Interaction*. ACM, 2018.
- [C2] Admoni, H., **Weng, T.**, and Scassellati, B. Modeling communicative behaviors for object references in human-robot interaction. *IEEE International Conference on Robotics and Automation (ICRA)*, pages 3352-3359. IEEE, 2016.
- [C1] Admoni, H., **Weng, T.**, Hayes, B. and Scassellati, B. Robot nonverbal behavior improves task performance in difficult collaborations. *ACM/IEEE International Conference on Human Robot Interaction (HRI)*, pages 51-58. IEEE Press, 2016.

RESEARCH AND WORK EXPERIENCE

Facebook Research and AI Mentorship Program

2021 -2023

Visiting Researcher with Dr. Mustafa Mukadam

Researching neural field representations for manipulation through a collaborative CMU-Meta program [C8].

University of Washington Human-Centered Robotics Lab

2017 - 2018

Research Scientist with Prof. Maya Cakmak

Published papers on tangible robot programming and robot-mounted projectors for human-robot interaction [C3, C4].

Microsoft Corp., AI and Research Software Engineer on Bing <i>Worked on Bing Answers for enterprise Q&A, flight booking, and the 2016 presidential election.</i>	2015 - 2017
Yale University Social Robotics Lab Undergraduate Researcher with Prof. Brian Scassellati <i>Published papers on modeling and generating robot non-verbal gestures [C1, C2].</i>	2014 - 2015
Yale University Student Technology Collaborative Student Developer <i>Refactored full-stack Rails app and wrote integration tests to reduce technical debt.</i>	2014 - 2015
Microsoft Corp., Applications and Services Group Software Engineer Intern on Bing <i>Wrote WordPress plugins for Bing Search widgets.</i>	Summer 2014
Microsoft Corp., Applications and Services Group Program Manager Intern on Bing Ads <i>Managed the design and development of the first Bing Ads API support page.</i>	Summer 2013
JPMorgan & Chase, Credit Risk Management Office Summer Intern <i>Automated credit management processes using VBA.</i>	Summer 2012

TEACHING EXPERIENCE AND MENTORSHIP

Teaching Assistant , CMU 16-720 Computer Vision	Spring 2021
Teaching Assistant , CMU 16-811 Math Fundamentals for Robotics	Fall 2020
Mentor , CMU Masters in Research and Software Development (MRSD) Team	2018 - 2019
Teaching Assistant , University of Washington CSE 481C Robotics Capstone	Spring 2017
Mansi Agrawal , M.S. Robotics	2021 - present
Sashank Tirumala , M.S. Robotics	2021 - present
Sujay Bajracharya , M.S. Robotics	2020 - 2021
Rashmi Anil , CMU undergraduate	2019 - 2020
Khush Agrawal , RI Summer Scholar	Summer 2020
Yimin Tang , RI Summer Scholar	Summer 2019
Amith Pallankize , visiting student	2018 - 2019

SERVICE AND LEADERSHIP EXPERIENCE

Reviewer

Robotics: Science and Systems (RSS)
 Conference on Robot Learning (CoRL)
 Robotics and Automation Letters (RA-L)
 International Conference on Robotics and Automation (ICRA)
 International Conference on Intelligent Robots and Systems (IROS)
 Human Robot Interaction (HRI)
 Humanoids
 Transactions on Mechatronics
 NeurIPS Workshop: Black in AI
 Masters in Computer Vision (MSCV) Admissions, 2020
 Robotics Institute Summer Scholars (RISS) Admissions, 2019

Graduate Student Assembly (GSA) Representative , Carnegie Mellon University <i>Elected representative of graduate students at the CMU Robotics Institute.</i>	2018 - present
Legislative Action Days Delegate <i>Met with senatorial and congressional staff in Washington, D.C. to advocate on behalf of graduate students on policy issues such as research funding, immigration reform, food insecurity, mental health, and more.</i>	2019, 2021
AI Undergraduate Research Mentor , CMU <i>Met monthly with an undergraduate from an underrepresented background on conducting research at CMU.</i>	2019
Girls of Steel FIRST Robotics Team Mentor , CMU Robotics Institute <i>Mentored the all-girls, multi-school team for the FIRST Robotics competition.</i>	2018

Tour Manager, Yale Alley Cats a cappella group

2012 - 2014

*Managed tours for 14 undergraduates to the American South, the Pacific Northwest, Europe, and Asia.
The Yale Alley Cats is one of the nation's most well-traveled a cappella groups.*

OUTREACH

Google x Prep for Prep x VEX Robotics Workshop Guest Speaker, New York, NY

2022

Presented robotics research to 100 gifted students of color in 7th-9th grade.

Buckley School Alumni Speaker, New York, NY

2018, 2020

Gave presentations on robotics and tech career paths to 7th-9th graders.

Code Haven at Yale Guest Speaker, New Haven, CT

2017

Spoke with students at under-served New Haven public schools about STEM careers.

Trumbull College Mellon Forum Speaker, Yale University

2015

Presented my undergraduate thesis at a selective opportunity for seniors to share their work with their peers.

Yale Social Robotics Lab Open House Volunteer, Yale University

2015

Participated in semi-annual open house for approx. 100 kids and adults in the New Haven community.

TECHNICAL SKILLS

Graduate Coursework

16-811 Mathematical Foundations for Robotics
16-720 Computer Vision
10-701 Machine Learning
16-711 Kinematics, Dynamics, and Control
10-703 Deep Reinforcement Learning and Control
16-782 Planning and Decision-making in Robotics
10-725 Convex Optimization
16-881 Deep Reinforcement Learning for Robotics (seminar)

Robotics

Languages C/C++, Python, MATLAB
Machine Learning PyTorch, Tensorflow
Tools ROS, MoveIt!, OpenCV, MuJoCo, PyBullet, Nvidia FleX, Unity
Robots Franka Panda, Sawyer, PR2, Fetch, Baxter, Kuka, Aldebaran Nao
Sensors Azure Kinect DK, Kinect v2, Intel RealSense, Primesense

Web Development

Languages JavaScript, C#.NET, Python, Ruby
Frameworks React, Node.js, Django, Ruby on Rails