

Education

University of Michigan	Robotics	Ph.D.	4.00/4.0	2020-Present
University of Michigan	Robotics	M.S.	3.96/4.0	2018-2020
National Taiwan University	Mechanical Engineering	B.S.	3.87/4.0	2013-2017

Professional Career

Amazon Robotics AI , Seattle, Washinton, USA				
Applied Scientist Intern				Jun. 2022 – Sep. 2022
University of Michigan , Ann Arbor, Michigan, USA				
Graduate Student Research Assistant, <i>Computational Autonomy and Robotics Laboratory</i>				May 2020 – Present
Graduate Student Research Assistant, <i>Biped Robotics Laboratory & Perceptual Robotics Laboratory</i>				Jan. 2019 – Apr. 2020
Graduate Student Instructor				Winter 2020, Winter 2022
National Taiwan University , Taipei, Taiwan				
Teaching Assistant				Aug. 2017 – Jul. 2018
Industrial Technology Research Institute , Hsinchu, Taiwan				
Intern				Jul. 2016 – Aug. 2016
Abbott Vascular , Taipei, Taiwan				
Intern				Jul. 2015 – Oct. 2015

Teaching Experience

Guest Lecture				Winter 2024
NAVARCH/EECS 568, ROB 530: Mobile Robotics: Methods and Algorithms				
College of Engineering, University of Michigan				
Graduate Student Instructor, Graduate Course				Winter 2020, 2022
NAVARCH/EECS 568, ROB 530: Mobile Robotics: Methods and Algorithms				
with Asst. Prof. Maani Ghaffari				
College of Engineering, University of Michigan				
Teaching Assistant, Undergraduate Course				Fall 2017, Spring 2018
ME 2001: Engineering Mathematics				
with Prof. Wen-Fang Wu				
Department of Mechanical Engineering, National Taiwan University				
Teaching Assistant, Undergraduate Course				Spring 2018
ME 1003: Engineering Graphics				
with Assoc. Prof. Wei-Jiun Su				
Department of Mechanical Engineering, National Taiwan University				
Teaching Assistant, Undergraduate Course				Fall 2017
ME 2004: Machine Design Theory				
with Prof. Shana Smith				
Department of Mechanical Engineering, National Taiwan University				
Teaching Assistant, Undergraduate Course				Fall 2017
ME 2005: Thermodynamics				
with Prof. Mei-Jiau Huang				
Department of Mechanical Engineering, National Taiwan University				

Publications

Journal Articles

1. Xi Lin, Yewei Huang, Dingyi Sun, **Tzu-Yuan Lin**, Brendan Englot, Ryan M. Eustice, and Maani Ghaffari. "A Robust Keyframe-based Visual SLAM for RGB-D Cameras in Challenging Scenarios." *IEEE Access* (2023). [[Paper Link](#)]
2. Maani Ghaffari, Ray Zhang, Minghan Zhu, Chien Erh Lin, **Tzu-Yuan Lin**, Sangli Teng, Tingjun Li, Tianyi Liu, Jingwei Song. "Progress in symmetry preserving robot perception and control through geometry and learning." *Frontiers in Robotics and AI*, 9 (2022). [[Paper Link](#)]
3. Hao-Ming Hsiao, **Tzu-Yuan Lin**, Chien-Erh Lin, Han-Yu Lee, and Yi-Ping Wang. "Innovation of New Occlusion Devices for Cancers." *Applied Sciences* 7, no. 5 (2017): 530. [[Paper Link](#)]
4. Hao-Ming Hsiao, Yi-Ping Wang, Yu-Han Cheng, **Tzu-Yuan Lin**, and Chien-Erh Lin. "A Novel Spherical Stent Concept for Intracranial Aneurysm." *Sensors and Materials* 28, no. 9 (2016): 947-955. [[Paper Link](#)]

Refereed Conference Papers

1. Xihang Yu, Sangli Teng, Theodor Chakhachiro, Wenzhe Tong, Tingjun Li, **Tzu-Yuan Lin**, Sarah Koehler, Manuel Ahumada, Jeffrey M. Walls, and Maani Ghaffari. "Fully Proprioceptive Slip-Velocity-Aware State Estimation for Mobile Robots via Invariant Kalman Filtering and Disturbance Observer." *IEEE International Conference on Intelligent Robots and Systems (IROS)*. 2023. [[Paper Link](#)]
2. **Tzu-Yuan Lin**, Ray Zhang, Justin Yu, and Maani Ghaffari. "Legged Robot State Estimation using Invariant Kalman Filtering and Learned Contact Events." In *5th Annual Conference on Robot Learning (CoRL)*, pp. 1057-1066. PMLR, 2022. [[Paper Link](#)]
3. Ray Zhang, **Tzu-Yuan Lin**, Chien Erh Lin, Steven A. Parkison, William Clark, Jessy W. Grizzle, Ryan M. Eustice, and Maani Ghaffari. "A new framework for registration of semantic point clouds from stereo and RGB-D cameras." In *2021 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 12214-12221. IEEE, 2021. [[Paper Link](#)]
4. Yen-Ting Wang, Yi-Ping Wang, **Tzu-Yuan Lin**, Chien-Erh Lin, and Hao-Ming Hsiao. "Drug-eluting stent with rhombic-shape reservoirs for drug delivery." In *2016 International Conference on Applied System Innovation (ICASI)*, pp. 1-4. IEEE, 2016. [[Paper Link](#)]

Preprints

1. **Tzu-Yuan Lin**, Tingjun Li, Wenzhe Tong, and Maani Ghaffari. "Proprioceptive Invariant Robot State Estimation." Submitted to *IEEE Transactions on Robotics (T-RO)*. 2023. [[arXiv preprint](#)]
2. **Tzu-Yuan Lin**, Minghan Zhu, and Maani Ghaffari. "Lie Neurons: Adjoint-Equivariant Neural Networks for Semisimple Lie Algebras." Submitted to *The Forty-first International Conference on Machine Learning (ICML)*. 2024. [[arXiv preprint](#)]
3. **Tzu-Yuan Lin**, William Clark, Ryan M. Eustice, Jessy W. Grizzle, Anthony Bloch, and Maani Ghaffari. "Adaptive Continuous Visual Odometry from RGB-D Images." [[arXiv preprint](#)]

Awards

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| – Government Scholarship to Study Abroad, the Ministry of Education, Taiwan | May 2023 |
| – Rackham International Student Fellowship and the Chia-Lun Lo Fellowship, University of Michigan | Dec. 2019 |
| – Presidential Award, National Taiwan University | 2015-2017 |
| – Altruism Award, National Taiwan University | Apr. 2016 |
| – Gold Winner in the International Design Awards (IDA), USA | Jun. 2016 |
| – Second Prize in the STAM Student Thesis Competition, Taiwan | Nov. 2016 |
| – Honorable mention in the CGMH Medical Robot Competition, Taiwan | Dec. 2016 |

Professional Service

Reviewing Activities

– IEEE Transactions on Robotics (T-RO)	2023 – 2024
– IEEE Robotics and Automation Letters (RA-L)	2021 – 2023
– International Conference on Robotics and Automation (ICRA)	2021 – 2023
– International Conference on Intelligent Robots and Systems (IROS)	2020 – 2023
– Conference on Robot Learning (CoRL)	2022 – 2023
– Robotics and Autonomous Systems (RAS)	2023
– Control Systems Letters (L-CSS)	2023
– International Conference on Ubiquitous Robots (UR)	2020

Outreach

– UM Robotics Graduate Student Council – Outreach Chair	2021
– UM Robotics Mentorship Program – Mentor	2019, 2020, 2023
– UM Discover Engineering – Workshop Organizer and Volunteer	Jul. 2019 – Aug. 2019
– Ann Arbor Summer Festival – KidZone Volunteer	Jul. 2019
– ASME NTU Student Section, Taiwan – Public Relations	Aug. 2016 – Jun. 2017
– NTU ME Student Association – Director of Academic Division	Jul. 2015 – Jun. 2016
– NTU International Affairs – Student Volunteer	Sep. 2014 – Jun. 2016

Professional Membership

– Student Member, Institute of Electrical and Electronics Engineers	2019 – Present
– IEEE Robotics and Automation Society (RAS)	2019 – Present
– IEEE Young Professionals	2019 – Present