

Curriculum Vitae

LEI TAI

CONTACT INFORMATION	CYT2014 Robotics Institute, HKUST Clear Water Bay, Hong Kong	Email: ltai@ust.hk Web: http://tailei.ram-lab.com github: https://github.com/onlytailei
EDUCATION	Hong Kong University of Science and Technology , Hong Kong SAR, China P.R. Ph.D. candidate in Electronic & Computer Engineering. Sept. 2014 - present <ul style="list-style-type: none">• Research Interests: <i>Mobile Robotics, Deep Learning, Deep Reinforcement Learning</i>• Advisor: Prof. Ming Liu University of Freiburg , Germany Visiting Scholar in Autonomous Intelligent Systems Lab Mar. 2017 - Jan. 2018 <ul style="list-style-type: none">• Advisor: Prof. Dr. Wolfram Burgard Harbin Institute of Technology , Harbin, China P.R. M.S. in Engineering. Sep. 2012 - Jun. 2014 <ul style="list-style-type: none">• GPA: 81.20/100 (Top 30%). B.S. in Engineering. Sep. 2008 - Jun. 2012 <ul style="list-style-type: none">• GPA: 88.17/100, (Top 10%).	
WORKING AND RESEARCH EXPERIENCE	Research in sensorimotor learning RAM Lab Aug. 2015 - present <ul style="list-style-type: none">• Sensorimotor learning for both indoor and outdoor robot navigation.• Improve autonomous driving through human gaze learning.• 3D point cloud perception including detection and segmentation. Research in deep RL for robotics AIS Lab Mar. 2017 - Jan. 2018 <ul style="list-style-type: none">• Generalized deep reinforcement learning with external memory and prediction ability.• Socially compliant navigation in crowded environment.• Visual domain adaptation for learning-based visual control policies. Algorithm R&D Intern Xiangji Keji (MLOG) , Beijing June. 2015 - Aug. 2015 <ul style="list-style-type: none">• Nowcast precipitation prediction through radar echo images with deep learning.• Optical flow estimation and motion tracking of the radar images for Tian Qi Jia.	
PUBLICATIONS	Journals <ol style="list-style-type: none">1. Jingwei Zhang*, Lei Tai*, Peng Yun, Yufeng Xiong, Ming Liu, Joschka Boedecker, Wolfram Burgard, “VR Goggles for Robots: Real-to-sim Domain Adaptation for Visual Control”, (* indicates equal contribution), <i>IEEE Robotics and Automation Letters (RA-L)</i>, 2019.2. Peng Yun, Lei Tai, Yuan Wang, Ming Liu, “Focal Loss in 3D Object Detection”, <i>IEEE Robotics and Automation Letters (RA-L)</i>, 2019.3. Lei Tai, Shaohua Li, Ming Liu, “Autonomous Exploration of Mobile Robots through Deep Neural Networks”, <i>International Journal of Advanced Robotic Systems (IJARS)</i>, 2017.4. Lei Tai, Ming Liu, “Mobile Robots Exploration through CNN-based Reinforcement Learning”, <i>Robotics and Biomimetics</i>, 2016.	

Conferences

1. **Lei Tai**, Peng Yun, Yuying Chen, Congcong Liu, Haoyang Ye, Ming Liu, “Visual-based Autonomous Driving Deployment from a Stochastic and Uncertainty-aware Perspective”, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.
2. Yuying Chen*, Congcong Liu*, **Lei Tai**, Ming Liu, Bertram Shi, “Gaze Training by Modulated Dropout Improves Imitation Learning”. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.
3. Congcong Liu*, Yuying Chen*, **Lei Tai**, Ming Liu, Bertram Shi, “Utilizing Eye Gaze to Enhance the Generalization of Imitation Network to Unseen Environments”, *International Conference on Machine Learning (ICML) Workshop*, 2019.
4. Congcong Liu*, Yuying Chen*, **Lei Tai**, Haoyang Ye, Ming Liu, Bertram Shi, “A Gaze Model Improves Autonomous Driving”, *ACM Symposium on Eye Tracking Research & Applications (ETRA)*, 2019.
5. **Lei Tai**, Jingwei Zhang, Ming Liu, Wolfram Burgard, “Socially-compliant Navigation through Raw Depth Inputs with Generative Adversarial Imitation Learning”, *International Conference on Robotics and Automation (ICRA)*, 2018.
6. Oleksii Zhelo, Jingwei Zhang, **Lei Tai**, Ming Liu, Wolfram Burgard, “Curiosity-driven Exploration for Mapless Navigation with Deep Reinforcement Learning”, *International Conference on Robotics and Automation (ICRA) Workshop*, 2018.
7. **Lei Tai**, Giuseppe Paolo, and Ming Liu, “Virtual-to-real Deep Reinforcement Learning: Continuous Control of Mobile Robots for Mapless Navigation, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2017.
8. **Lei Tai**, Haoyang Ye, Qiong Ye, Ming Liu, “PCA-aided Fully Convolutional Networks for Semantic Segmentation of Multi-channel fMRI”, *International Conference on Advanced Robotics (ICAR)*, 2017.
9. **Lei Tai**, Shaohua Li, and Ming Liu, “A Deep-Network Solution Towards Model-less Obstacle Avoidance”, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2016.
10. **Lei Tai**, Ming Liu, “A Robot Exploration Strategy Based on Q-learning Network”, *IEEE International Conference on Real-time Computing and Robotics (RCAR)*, 2016.

PREPRINT PUBLICATIONS

1. Jingwei Zhang, **Lei Tai**, Joschka Boedecker, Wolfram Burgard, Ming Liu, “Neural SLAM: Learning to Explore with External Memory”.
2. **Lei Tai***, Jingwei Zhang*, Ming Liu, Joschka Boedecker, Wolfram Burgard, “A Survey of Deep Network Solutions for Learning Control in Robotics: From Reinforcement to Imitation”. (* indicates equal contribution).
3. **Lei Tai**, Ming Liu, “Towards cognitive exploration through deep reinforcement learning for mobile robots”.

AWARDS

Paper Awards

- ICAR Best Student Paper Award, Hong Kong July 2017

Contest Awards

- 5th in 2016 Cybathlon Powered Wheelchair Race, Zurich, Switzerland Oct 2016
- Runner-up of 2014 ABU Robocon, Zoucheng, China June 2014
- Best Technology of 2012 ABU Robocon, Harbin, China June 2012
- Honorable Mention of Mathematical Contest in Modeling Mar 2011

TEACHING EXPERIENCE	<p>Teaching Assistant Spring 2019 ELEC 1010: Electronic and Information Technology Instructor: Prof. Kei May Lau ECE Department, Hong Kong University of Science and Technology</p> <p>Teaching Assistant Fall 2018 ELEC 1010: Electronic and Information Technology Instructor: Prof. George Jie Yuan ECE Department, Hong Kong University of Science and Technology</p> <p>Teaching Assistant Spring 2015 ELEC 3200: System Modeling, Analysis and Control Instructor: Prof. Ling Shi ECE Department, Hong Kong University of Science and Technology</p>
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ACADEMIC ACTIVITIES	<p>Referee Services</p> <ul style="list-style-type: none"> • <i>Autonomous Robots (AURO)</i>. • <i>IEEE Transactions on Neural Networks and Learning Systems (NNLS)</i>. • <i>IEEE Robotics and Automation Letters (RA-L)</i>. • <i>International Journal of Advanced Robotic Systems, (IJARS)</i>. • <i>Conference on Robot Learning (CoRL)</i>, 2019. • <i>International Conference on Robotics and Automation (ICRA)</i>, 2017-2019. • <i>International Conference on Intelligent Robots and Systems (IROS)</i>, 2016-2019. • <i>Neural Information Processing Systems (NeurIPS) Workshop</i>, 2018. • <i>Asian Control Conference (ASCC)</i>, 2017. • <i>International Conference on Computer Vision System (ICVS)</i>, 2017. • <i>International Conference on Real-time Computing and Robotics (RCAR)</i>, 2016. <p>Conference Services</p> <ul style="list-style-type: none"> • Program Committee Member of <i>International Conference on Computer Vision Systems (ICVS)</i>, Aug, 2017. • Program Committee Member of <i>International Conference on Real-time Computing and Robotics (RCAR)</i>, June, 2016. <p>Conference Presentations</p> <ul style="list-style-type: none"> • IROS 2019, Macau, China • ETRA 2019, Denver, USA • ICRA 2019, Montreal, Canada • ICRA 2018, Brisbane, Australia • IROS 2017, Vancouver, Canada • IROS 2016, Daejeon, Korea • RCAR 2016, Angkor Wat, Cambodia
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PROFESSIONAL SKILLS	<p>Programming</p> <ul style="list-style-type: none"> • Experienced in Python, C++; Familiar with Matlab <p>Frameworks</p> <ul style="list-style-type: none"> • Deep Learning: PyTorch, TensorFlow • Robotics: ROS, V-REP, Gazebo
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LANGUAGE SKILLS	<p>TOEFL-IBT</p> <ul style="list-style-type: none"> • Reading (28), Listening (28), Speaking (20), Writing (25), Total (101). Mar. 2013 <p>GRE</p> <ul style="list-style-type: none"> • Verbal (540), Quantitative (800), Analytical Writing (3.5). Oct. 2010
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