# LEI TAI


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## Education

**Hong Kong University of Science and Technology (HKUST)**, Hong Kong

Ph.D. in Robotics. Jan. 2017 - present

- Research Interests: *Mobile Robotics, Deep Learning, Deep Reinforcement Learning*
- Advisor: Dr. Ming Liu

**City University of Hong Kong (CityU)**, Hong Kong

Ph.D. in Mechanical and Biomedical Engineering. Sep. 2015 - Jan. 2017

- Advisor: Dr. Ming Liu

**Harbin Institute of Technology (HIT)**, Harbin, China P.R.

M.S. in Engineering. Sep. 2012 - Jun. 2014

- GPA: 81.20/100 (Top 30%).

B.S. in Engineering. Sep. 2008 - Jun. 2012

- GPA: 88.17/100, (Top 10%).

## Research Experience

**Deep-Learning-based Mobile Robotics Navigation** Aug. 2015 - present

Robotics and Multiperception Lab, HKUST

- Indoor Obstacle Avoidance aided by Convolutional Neural Networks.
- End-to-End Deep Reinforcement Learning in Robotics.

**Industrial Robot Automation** Aug. 2014 - Jun. 2015

Robotics Institute, HKUST

- Industrial Automation in 3C electrical products workshops.

## Publications

1. **Lei Tai**, Shaohua Li, and Ming Liu, A Deep-Network Solution Towards Model-less Obstacle Avoidence, IEEE/RSJ International Conference on Intelligent Robots and Systems *IROS*, Daejeon, Korea, 2016.
2. **Lei Tai**, Ming Liu, A Robot Exploration Strategy Based on Q-learning Network, IEEE International Conference on Real-time Computing and Robotics, *RCAR*, Angkor Wat, Cambodia, June 6-10, 2016.
3. **Lei Tai**, Ming Liu, "Mobile Robots Exploration through CNN-based Reinforcement Learning", *Robotics and Biomimetics*, 2016.

## Submitted Publications

1. **Lei Tai**, Ming Liu, "Deep-learning in Mobile Robotics - from Perception to Control Systems: A Survey on Why and Why not", Submitted to *International Journal of Robotics Research*, *IJRR*, 2016.
2. **Lei Tai**, Ming Liu, "Towards cognitive exploration through deep reinforcement learning for mobile robots", Submitted to *International Conference on Robotics and Automation*, *ICRA*, 2017.

3. **Lei Tai**, Qiong Ye, Ming Liu, "PCA-aided Fully Convolutional Networks for Semantic Segmentation of Multi-channel fMRI", Submitted to *International Conference on Robotics and Automation*, *ICRA*, 2017.

4. **Lei Tai**, Shaohua Li, Ming Liu, "Autonomous Exploration of Mobile Robots through Deep Neural Networks", Submitted to *International Journal of Advanced Robotic Systems*, *IJARS*, 2016.

## Papers In Preparation

1. **Lei Tai**, Ming Liu, "Navigation in Crowded Pedestrians through Deep Reinforcement Learning".

## Awards

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

Student Awards

- Honorable Scholarship Award, HIT (Top 10%) — June 2012
- Jinjiang Scholarship Award, HIT (Top 1%) — May 2010

## Teaching Experience

Teaching Assistant — Spring 2015
ELEC 3200: System Modeling, Analysis and Control
Instructor: Prof. Ling Shi
ECE Department
Hong Kong University of Science and Technology

## Service

Referee Service

- International Journal of Advanced Robotic Systems, *IJARS*.
- IEEE International Conference on Robotics and Automation *ICRA*, 2017.
- IEEE/RSJ International Conference on Intelligent Robots and Systems *IROS*, 2016.
- IEEE International Conference on Real-time Computing and Robotics *RCAR*, 2016.

Conference Service

- Program Committee Member of IEEE International Conference on Real-time Computing and Robotics *RCAR*, June, 2016.
- Program Committee Member of International Conference on Computer Vision Systems *ICVS*, Aug, 2017.

## Professional Skills

Programming

- Experienced in Python, C++, MATLAB, Lua

Frameworks

- ROS, V-REP, Gazebo, Caffe, TensorFlow

## Language Skills

TOEFL-IBT

- Reading (28), Listening (28), Speaking (20), Writing (25), Total (101). — Mar. 2013

GRE

- Verbal (540), Quantitative (800), Analytical Writing (3.5). — Oct. 2010