Pinxin Long 龙品辛 **February 2019**

CONTACT INFORMATION
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INTERESTS **Autonomous Driving, Robotics, Deep Learning and Reinforcement Learning**

EDUCATION **University of Electronic Science and Technology of China (UESTC)**, Chengdu, China
B.Eng., Automation **Sep. 2008 to June 2012**

EXPERIENCE **Metoak CO. LTD.**, Beijing, China

Senior Algorithm Engineer **Oct. 2017 to Now**

- Implemented key modules of a Driver Monitoring System (DMS) with our stereo camera.
- Enhanced the performance of our Advanced Driver Assistance Systems (ADAS) by fusing data from IMU.
- Developed several infrastructure for testing, development and production, e.g. a ROS package of our stereo camera.

Dorabot Inc., Shenzhen, China

Research Scientist **Sep. 2016 to Sep. 2017**

- Proposed a decentralized sensor-level collision avoidance policy for multi-robot systems, and optimized it with a multi-scenario multi-stage reinforcement learning framework [3].
- Deployed the policy on the real non-holonomic multi-robot systems [2].

Robotics Engineer Intern **Jan. 2016 to Mar. 2016**

- Developed a robotic system that is capable of both picking and placing general objects in warehouse scenarios [5].
- Performed a survey on multi-agent navigation (collision avoidance).

City University of Hong Kong, Hong Kong, China

Research Assistant **Mar. 2016 to Sep. 2016**

- **Supervisor**: Prof. Jia Pan
- Designed a novel end-to-end framework to generate reactive collision avoidance policy for fully distributed non-communicating multi-agent navigation [4].

Shenzhen Institutes of Advanced Technology (SIAT), **Chinese Academy of Sciences (CAS)**, Shenzhen, China

Research Assistant, Visual Computing Research Center **Oct. 2012 to Nov. 2015**

- **Supervisors**: Prof. Hui Huang, Prof. Kevin Xu, and Prof. Baoquan Chen
- Employed a data-driven approach to modeling contextual information covering both intra-object part relations and inter-object layouts for scene understanding [6].
- Participated in the Amazon Picking Challenge 2015 along with other teammates from Dorabot Inc and Hong Kong University. I mainly worked on several components of the challenge: creating the robot URDF file, motion planning, grasping, and the overall framework [5].
- Developed an autonomous scene scanning system with the PR2 robot and proposed an approach for object-level scene reconstruction coupled with object-centric scene analysis [8].
- Participated in presenting an intrusive acquisition solution for scanning and modelling of plants and foliage [7].
- Participated in designing a quality-driven, Poisson-guided autonomous object scanning method and implemented the proposed system on the PR2 robot [9].

University of Electronic Science and Technology of China, Chengdu, China

Undergraduate Researcher, Machine Intelligence Institute **Sep. 2010 to June 2012**

- **Supervisor**: Prof. Hong Cheng
- Developed an approach for recognizing the everyday indoor objects and measuring their real size with an RGB-D camera.
- Built an indoor mobile robot and performed map building, autonomous navigation and people following with the robot.
- Designed several quadruped robots from scratch and implemented discrete reaching movement and rhythmic movements (four different gaits) on them by using Central Pattern Generator-based locomotion control methods.

PUBLICATIONS

[1] Tingxiang Fan*, Xinjing Chen*, Jia Pan, Pinxin Long, Wenxi Liu, Ruigang Yang, Dinesh Manocha **Getting Robots Unfrozen and Unlost in Dense Pedestrian Crowds.** *IEEE Robotics and Automation Letters (RAL)*, 2019.

[2] Tingxiang Fan*, Pinxin Long*, Wenxi Liu, Jia Pan. **Fully Distributed Multi-Robot Collision Avoidance via Deep Reinforcement Learning for Safe and Efficient Navigation in Complex Scenarios.** *Submitted to The International Journal of Robotics Research (IJRR)*, 2019.

[3] Pinxin Long*, Tingxiang Fan*, Xinyi Liao, Wenxi Liu, Hao Zhang, Jia Pan. **Towards Optimally Decentralized Multi-Robot Collision Avoidance via Deep Reinforcement Learning.** *IEEE International Conference on Robotics and Automation (ICRA)*, 2018.

[4] Pinxin Long, Wenxi Liu, Jia Pan. **Deep-Learned Collision Avoidance Policy for Distributed Multi-Agent Navigation.** *IEEE Robotics and Automation Letters (RAL)*, 2(2), 2017.

[5] Hao Zhang, Pinxin Long, Dandan Zhou, Zhongfeng Qian, Zheng Wang, Weiwei Wan, Dinesh Manocha, Chonhyon Park, Tommy Hu, Chao Cao, Yibo Chen, Marco Chow, Jia Pan. **DoraPicker: An Autonomous Picking System for General Objects.** *IEEE International Conference on Automation Science and Engineering (CASE)*, 2016.

[6] Yifie Shi, Pinxin Long, Kai Xu, Hui Huang, and Yueshan Xiong. **Data-Driven Contextual Modeling for 3D Scene Understanding.** *Computer & Graphics (C&G)*, 55: 55-67, 2016.

[7] Kangxue Yin, Hui Huang, Pinxin Long, Alex Gaissinski, Minglun Gong, and Andrei Sharf. **Full 3D Plant Reconstruction via Intrusive Acquisition.** *Computer Graphics Forum (CGF)* Vol. 34(2), 2016.

[8] Kai Xu, Hui Huang, Yifei Shi, Hao Li, Pinxin Long, Jianong Caichen, Wei Sun, and Baoquan Chen. **Autoscanning for coupled scene reconstruction and proactive object analysis.** *ACM Transactions on Graphics (TOG)* Vol. 34(6) (Special Issue of *SIGGRAPH ASIA* 2015), 2015.

[9] Shihao Wu, Wei Sun, Pinxin Long, Hui Huang, Daniel Cohen-Or, Minglun Gong, Oliver Deussen, and Baoquan Chen. **Quality-driven Poisson-guided Autoscanning.** *ACM Transactions on Graphics (TOG)* Vol.33(6) (Special Issue of *SIGGRAPH ASIA* 2014), 2014.

WORKSHOP PRESENTATIONS

[10] Pinxin Long, Xinyi Liao, Hao Zhang, Wenxi Liu and Jia Pan. **Exploring Deep Networks for Reactive and Distributed Collision Avoidance Control among Multiple Robots.** *ICRA Workshop on Multi-robot Perception-Driven Control and Planning*, 2017.

[11] Pinxin Long, Xinyi Liao, Wenxi Liu, Hao Zhang and Jia Pan. **Deep-Learned Collision Avoidance Policy for Distributed Multi-Agent Navigation.** *NIPS Workshop on Learning, Inference and Control of Multi-Agent Systems*, 2016.

AWARDS & HONORS

- SIAT Innovation Program for Excellent Young Researchers 2015
- Outstanding Bachelor Thesis (Grade: 95/100), UESTC 2012
- As the sole representative of UESTC to participate in the 4th Chinese University Students'Creativity Forum. 2011
- The Top 1 Project of Creative Experimental Project of National Undergraduate Students in UESTC, 1 out of 197, Team Leader 2011
- Outstanding students in National Graduates Summer School on Intelligent Robotics 2010
- Several Scholarships in UESTC 2009 - 2011

SKILLS

Programming Languages
C/C++, Python, LaTeX, MATLAB, HTML

Software/Libraries
TensorFlow, Keras, PyTorch, OpenAI Gym, ROS, PCL, OpenCV, MoveIt!

Robot simulators
Stage, Gazebo, V-REP

Robots (I worked with)
PR2 (Willow Garage), UR5 (Universal Robots), Turtlebot, Multiple Mobile Robots, Self-made Quadruped Robots