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EDUCATION **University of Electronic Science and Technology of China (UESTC)**
Bachelor of Engineering in Automation **Sep. 2008 to June 2012**

- JOURNAL PUBLICATIONS
- [J9] Liangjun Zhang, Jinxin Zhao, Pinxin Long, Liyang Wang, Lingfeng Qian, Feixiang Lu, Xibin Song, Dinesh Manocha. **An autonomous excavator system for material loading tasks.** *Science Robotics*, 6 (55), eabc3164, 2021.
 - [J8] Yajue Yang, Pinxin Long, Jia Pan, Xinbin Song, Liangjun Zhang. Optimization-Based Framework for Excavation Trajectory Generation. *IEEE Robotics and Automation Letters (RAL)*, 6 (2), 1479-1486, 2021.
 - [J7] Tingxiang Fan*, Pinxin Long*, Wenxi Liu, Jia Pan. **Distributed multi-robot collision avoidance via deep reinforcement learning for navigation in complex scenarios.** *The International Journal of Robotics Research (IJRR)*, 39 (7), 856-892, 2020.
 - [J6] 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)*, 4 (2), 1178-1185, 2019.
 - [J5] 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.
 - [J4] Yifei Shi, Pinxin Long, Kai Xu, Hui Huang, Yueshan Xiong. Data-Driven Contextual Modeling for 3D Scene Understanding. *Computer & Graphics (C&G)*, 55: 55-67, 2016.
 - [J3] Kangxue Yin, Hui Huang, Pinxin Long, Alex Gaissinski, Minglun Gong, Andrei Sharf. Full 3D Plant Reconstruction via Intrusive Acquisition. *Computer Graphics Forum (CGF)*, Vol. 34(2), 2016.
 - [J2] Kai Xu, Hui Huang, Yifei Shi, Hao Li, Pinxin Long, Jianong Caichen, Wei Sun, 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.
 - [J1] Shihao Wu, Wei Sun, Pinxin Long, Hui Huang, Daniel Cohen-Or, Minglun Gong, Oliver Deussen, Baoquan Chen. Quality-driven Poisson-guided Autoscanning. *ACM Transactions on Graphics (TOG)*, Vol.33(6) (Special Issue of SIGGRAPH ASIA 2014), 2014.
- CONFERENCE PUBLICATIONS
- [C3] Tingxiang Fan, Pinxin Long, Wenxi Liu, Jia Pan. Learning resilient behaviors for navigation under uncertainty. *IEEE International Conference on Robotics and Automation (ICRA)*, 5299-5305, 2020.
 - [C2] 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.
 - [C1] 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.

WORKSHOP PUBLICATIONS [W2] 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.

[W1] 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.

INDUSTRY EXPERIENCE **Baidu Inc.**, Beijing, China

Apollo Navigation Pilot **May 2021 to May 2024**

- Our product Apollo Navigation Pilot (ANP) is the first vision-based L2+ Autonomous Driving System in China which has been successfully deployed on Jiyue-01 cars and delivered to customers by the end of 2023.
- As a Tech Lead of the Highway PnC team, I led the development of the navigation, decision-making, and planning components for Highway Navigation on Pilot (NOA), with a particular focus on the on/off-ramp scenarios.

Autonomous Excavator Systems **Aug. 2019 to May 2021**

- Designed and built an autonomous excavator system for hazardous industrial solid waste loading which is the first excavator system that has been deployed for the real-world commercial application and can operate for long periods without any human intervention [J9].
- Participated in designing a novel optimization-based framework for autonomous excavator trajectory generation under various objectives – minimum joint displacement, minimum time, etc [J8].

Multi-Robot Systems **June 2019 to Jan. 2020**

- Created and developed a decentralized sensor-level collision avoidance policy for multi-robot systems. The learned policy is also integrated into a hybrid control framework to further improve the policy's robustness and effectiveness [J7].
- Proposed and implemented a novel uncertainty-aware navigation neural network to learn resilient behaviors for mobile robots in the prior unknown environments by introducing an uncertainty-aware predictor to model the environmental uncertainty [C3].

The Dr. Tea Project **June 2019 to July 2019**

- Built and developed an intelligent mobile manipulator – Dr. Tea which can pour tea from a Chinese traditional long-mouth teapot and demonstrated it with the CTO of Baidu – Dr. Wang Haifeng at Baidu Create 2019 (Baidu AI Developer Conference).

Metoak Inc., Beijing, China

Senior Algorithm Engineer **Oct. 2017 to May 2019**

- 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.
- Participated in developing a navigation framework that can enable a mobile robot to navigate through environments with dense crowds and handle the robot freezing and the navigation lost problems simultaneously [J6].

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 [C2].
- Deployed the policy on the real non-holonomic multi-robot systems [W2].

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 [C1].
- Performed a survey on multi-agent navigation (collision avoidance).

RESEARCH
EXPERIENCE

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 [J5][W1].

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 [J4].
- Participated in the **Amazon Picking Challenge 2015** along with other teammates from Dorabot Inc and Hong Kong University. I mainly worked on several key components of the system, e.g. robot description, motion planning, grasping, and the overall framework [C1].
- 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 [J2].
- Participated in presenting an intrusive acquisition solution for scanning and modelling of plants and foliage [J3].
- Participated in designing a quality-driven, Poisson-guided autonomous object scanning method and implemented the proposed system on the PR2 robot [J1].

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.

AWARDS &
HONORS

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|---|------|
| • Innovation Award, Baidu Inc. | 2021 |
| • Best Innovation Team of TPG, Baidu Inc. | 2020 |
| • Seasonal Star Award, Baidu Inc. | 2020 |
| • Final round, The first Amazon Picking Challenge | 2015 |
| • 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

Robots (I worked with)

Bimanual Mobile Manipulator, Electric Cars (Jiyue 01), Excavators, Dr. Tea (A Mobile Manipulator), PR2 (Willow Garage), UR5 (Universal Robots), Turtlebot, Multiple Mobile Robots, Self-made Quadruped Robots

Programming Languages

Python, C/C++, Rust (Learning), JavaScript (Basic), L^AT_EX

Robot simulators

Isaac Sim, MuJoCo, OpenAI Gym, Gazebo, Stage, V-REP