Jiankun Wang

Research Assistant Professor – Southern University of Science and Technology
Tel:+86 14714421346 | Email:jkwang1992@gmail.com | HomePage: https://jkwang1992.github.io/

Education

- **B.Eng., Shandong University** **09/2011 – 06/2015**
  School of Control Science & Engineering GPA: 91.19/100 Rank: 1/310
- **Ph.D., The Chinese University of Hong Kong** **08/2015 – 07/2019**
  Advisor: Prof. Max Q.-H. Meng Dept. of Electronic Engineering
  Research field: Motion and Path Planning, Human Robot Interaction
- **Visiting Student Researcher, Stanford University** **07/2018 – 12/2018**
  Advisor: Prof. Oussama Khatib Dept. of Computer Science
  Research field: Robotics, Motion Planning and Control

Work

- **Postdoc, The Chinese University of Hong Kong** **08/2019 – 08/2020**
  Advisor: Prof. Max Q.-H. Meng Dept. of Electronic Engineering
  Research field: Motion and Path Planning, Human Robot Interaction
- **Research Assistant Professor, Southern University of Science and Technology** **09/2020 – present**
  Advisor: Prof. Max Q.-H. Meng Dept. of Electronic and Electrical Engineering
  Research field: Motion and Path Planning, Robot Perception, Artificial Intelligence

Preprints

- 2. **Jiankun Wang**, Wenzheng Chi, Chenming Li, Max Q.-H. Meng, "Efficient Robot Motion Planning Using Bidirectional-Unidirectional RRT Extend Function," *IEEE Transactions on Automation Science and Engineering,* under review.
- 1. **Jiankun Wang**, Tingguang Li, Baopu Li, Max Q.-H. Meng, "GMR-RRT*: Sampling-based Path Planning Using Gaussian Mixture Regression," *IEEE Transactions on Intelligent Vehicles,* under review.

Journal Publications

† indicates equal contribution, and * indicates corresponding author.

- 22. **Jiankun Wang**, Jianbang Liu, Weinan Chen, Wenzheng Chi, Max Q.-H. Meng*, "Robot Path Planning via Neural-Networks-Driven Prediction," *IEEE Transactions on Artificial Intelligence,* 2021, Early Access.
- 21. **Jiankun Wang**, Tianyi Zhang, Nachuan Ma, Max Q.-H. Meng*, "Deep Neural Network Enhanced Sampling-based Path Planning in 3D Space," *IEEE Transactions on Automation Science and Engineering,* 2021, Early Access.
- 20. Weinan Chen, Lei Zhu, Shing Yan Loo, **Jiankun Wang**, Chaoqun Wang, Max Q.-H. Meng, Hong Zhang*, "Robustness Improvement of Using Pre-trained Network in Visual Odometry for On-road Driving," *IEEE Transactions on Vehicular Technology,* 2021, Early Access.
- 19. Max Q.-H. Meng, Yu Sun, **Jiankun Wang**, "A Successful Hybrid ICRA 2021," *IEEE Robotics and Automation Magazine*, 2021, 28(3). **EiC invited paper.**
- 18. Zhaoting Li, Tingguang Li, **Jiankun Wang***, Max Q.-H. Meng*, "Learning Robot Exploration Strategy with 4D Point-Clouds-like Information as Observations," *IEEE Robotics and Automation Letters,* 2021, Early Access.
- 17. Tianyi Zhang†, **Jiankun Wang**†, Max Q.-H. Meng*, "Generative Adversarial Network based Heuristics for Sampling-based Path Planning," *IEEE/CAA Journal of Automatica Sinica,* 2021, Early Access.
- 16. Wenzheng Chi, Zhiyu Ding, **Jiankun Wang***, Guodong Chen*, Lining Sun*, "A Generalized Voronoi Diagram based Efficient Heuristic Path Planning Method for RRTs in Mobile Robots," *IEEE Transactions on Industrial Electronics,* 2021, Early Access.
- 15. **Jiankun Wang**, Tianyi Zhang, Nchuan Ma, Zhaoting Li, Han Ma, Fei Meng, Max Q.-H. Meng*, "A Survey of Learning-based Robot Motion Planning," *IET Cyber-Systems and Robotics,* 2021, Early Access.
- 14. **Jiankun Wang**†, Weinan Chen†, Xiao Xiao†, Yangxin Xu†, Chenming Li, Xiao Jia, Max Q.-H. Meng*, "A survey

of the development of biomimetic intelligence and robotics," *Biomimetic Intelligence and Robotics,* 2021, Early Access. **EiC invited paper.**

- 13. Nachuan Ma†, **Jiankun Wang**†, Jianbang Liu, Max Q.-H. Meng*, "Conditional Generative Adversarial Networks for Optimal Path Planning," *IEEE Transactions on Cognitive and Developmental Systems,* 2021, Early Access.
- 12. Wenzheng Chi†, **Jiankun Wang**†, Zhiyu Ding, Guodong Chen*, Lining Sun*, "A Reusable Generalized Voronoi Diagram Based Feature Tree for Fast Robot Motion Planning in Trapped Environments," *IEEE Sensors Journal,* 2021, Early Access.
- 11. **Jiankun Wang**, Max Q.-H. Meng*, "Real-time Decision Making and Path Planning for Robotic Autonomous Luggage Trolley Collection at Airports," *IEEE Transactions on Systems, Man and Cybernetics: Systems,* 2021, Early Access.
- 10. **Jiankun Wang**, Baopu Li, Max Q.-H. Meng*, "Kinematic Constrained Bi-directional RRT with Efficient Branch Pruning for Robot Path Planning," *Expert Systems with Applications,* 2021, 170(114511).
- 9. Jin Pan, Xiaochun Mai, Chaoqun Wang, Zhe Min,**Jiankun Wang**, *et al.*, "A Searching Space Constrained Partial to Full Registration Approach with Applications in Airport Trolley Deployment Robot," 2020, *IEEE Sensors Journal,* Early Access.
- 8. **Jiankun Wang**, Max Q.-H. Meng*, Oussama Khatib*, "EB-RRT: Optimal Motion Planning for Mobile Robots," *IEEE Transactions on Automation Science and Engineering,* 2020, 17(4).
- 7. **Jiankun Wang**, Wenzheng Chi, Chenming Li, Chaoqun Wang, Max Q.-H. Meng*, "Neural RRT*: Learning-based Optimal Path Planning," *IEEE Transactions on Automation Science and Engineering,* 2020, 17(4).
- 6. **Jiankun Wang**, Max Q.-H. Meng*, "Optimal Path Planning using Generalized Voronoi Graph and Multiple Potential Functions," *IEEE Transactions on Industrial Electronics,* 2020, 67(12).
- 5. **Jiankun Wang**, Max Q.-H. Meng*, "Socially Compliant Path Planning for Robotic Autonomous Luggage Trolley Collection at Airports," *Sensors,* 2019, 19(12).
- 4. Chaoqun Wang†, **Jiankun Wang**†, *et al.*, "Safe and Robust Mobile Robot Navigation in Uneven Indoor Environments," *Sensors,* 2019, 19(13).
- 3. **Jiankun Wang**, Wenzheng Chi, Mingjie Shao and Max Q.-H. Meng*, "Finding a High-Quality Initial Solution for the RRTs Algorithms in 2D Environments," *Robotica,* 2019, 37(10).
- 2. Wenzheng Chi, Chaoqun Wang, **Jiankun Wang**, Max Q.-H. Meng*, "Risk-DTRRT-Based Optimal Motion Planning Algorithm for Mobile Robots," *IEEE Transactions on Automation Science and Engineering,* 2018, 16(3).
- 1. Chaoqun Wang, Jiyu Cheng, **Jiankun Wang**, Xintong Li and Max Q.-H. Meng*, "Efficient Object Search With Belief Road Map Using Mobile Robot," *IEEE Robotics and Automation Letters,* 2018, 3(4).

Conference Publications

- 15. Bingyi Xia, Kaiwei Che, Zhilong Tang, **Jiankun Wang***, Max Q.-H. Meng*, "Motion Planning for Hexapod Robots in Dynamic Rough Terrain Environments," *2021 IEEE International Conference on Robotics and Biomimetics (ROBIO).*
- 14. Jianbang Liu, Baopu Li, Tingguang Li, Wenzheng Chi, **Jiankun Wang***, Max Q.-H. Meng*, "Learning-based Fast Path Planning in Complex Environments," *2021 IEEE International Conference on Robotics and Biomimetics (ROBIO).*
- 13. Han Ma, Jianbang Liu, Fei Meng, Jin Pan, **Jiankun Wang***, Max Q.-H. Meng*, "A Nonuniform Sampling Strategy for Path Planning Using Heuristic-based Certificate Set," *2021 IEEE International Conference on Robotics and Biomimetics (ROBIO).*
- 12. Chenming Li, Chaoqun Wang, **Jiankun Wang**, Yutian Shen, Max Q.-H. Meng*, "Sliding-Window Informed RRT*: A Method for Speeding Up the Optimization and Path Smoothing," *2021 IEEE International Conference on Real-time Computing and Robotics (RCAR).*
- 11. Zhaoting Li†, **Jiankun Wang**†, Max Q.-H. Meng*, "Efficient Heuristic Generation for Robot Path Planning with Recurrent Generative Model," *2021 IEEE International Conference on Robotics and Automation (ICRA).*
- 10. Xiao Jia, Xiaochun Mai, Xiaohan Xing, Yutian Shen, **Jiankun Wang**, Max Q.-H. Meng*, "Multibranch Learning for Angiodysplasia Segmentation with Attention-Guided Networks and Domain Adaptation," *2021 IEEE International Conference on Robotics and Automation (ICRA).*
- 9. HaoChih LIN, Baopu Li*, Xin Zhou, **Jiankun Wang**, Max Q.-H. Meng, "No Need for Interactions: Robust Model-Based Imitation Learning using Neural ODE," *2021 IEEE International Conference on Robotics and Automation (ICRA).*

- 8. Yuan Yuan, Jie Liu, **Jiankun Wang**, Wenzheng Chi*, Lining Sun*, "A Knowledge-Based Fast Motion Planning Method Through Online Environmental Feature Learning," *2021 IEEE International Conference on Robotics and Automation (ICRA).*
- 7. **Jiankun Wang**, Max Q.-H. Meng*, "Path Planning for Nonholonomic Multiple Mobile Robot System with Applications to Robotic Autonomous Luggage Trolley Collection at Airports," *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).*
- 6. Keyu Li, Yangxin Xu, **Jiankun Wang**, Max Q.-H. Meng*, "SARL: Deep Reinforcement Learning based Human-Aware Navigation for Mobile Robot in Indoor Environments," *2019 IEEE International Conference on Robotics and Biomimetics (ROBIO).*
- 5. **Jiankun Wang**, Xintong Li, Wenzheng Chi, Max Q.-H. Meng*, "Tropistic RRT*: An Efficient Planning Algorithm via Adaptive Restricted Sampling Space," *2018 IEEE International Conference on Information and Automation (ICIA).*
- 4. Wenzheng Chi, **Jiankun Wang**, Max Q.-H. Meng*, "Risk-Informed-RRT*: A Sampling-based Human-friendly Motion Planning Algorithm for Mobile Service Robots in Indoor Environments," *2018 IEEE International Conference on Information and Automation (ICIA).*
- 3. Frank Powen Lo, Xintong Li, **Jiankun Wang**, Max Q.-H. Meng*, "Motion Artifact Reduction in PPG Signals based on Periodic Component Factorization," *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'2017).*
- 2. Frank Powen Lo, Xintong Li, **Jiankun Wang**, Jiyu Cheng, Max Q.-H. Meng*, "Continuous Systolic and Diastolic Blood Pressure Estimation utilizing Long Short-term Memory Network," *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'2017).*
- 1. **Jiankun Wang**, Xintong Li, Max Q.-H. Meng*, "An Improved RRT Algorithm Incorporating Obstacle Boundary Information," *2016 IEEE International Conference on Robotics and Biomimetics (ROBIO).*

Honors And Awards

- **Reaching Out Award of CUHK** **2018 – 2019**
  Award for exchange student
- **Global Scholarship Programme for Research Excellence** **2018 – 2019**
  *Award for **Excellent** exchange student*
- **Hong Kong Ph.D. Fellowship** **2015 – 2019**
  ***Highest** scholarship for students study in Hong Kong. Selection based on: academic excellence, research ability and potential, communication and interpersonal skills, as well as leadership abilities.*
- **Outstanding Graduate of Shandong Province (top 0.5%)** **2015 – 2016**
  ***Highest** award for graduates in Shandong Province*
- **The President Scholarship of Shandong University (top 0.2%)** **2014 – 2015**
  ***Highest** award for students in Shandong University*
- **Outstanding Student of Shandong Province (top 0.5%)** **2014 – 2015**
  ***Highest** award for students in Shandong Province*
- **First Prize – International Underwater Robot Competiotion** **2014 – 2015**
  Award for winners in underwater robot competiotion
- **Champion – China Robot Competition** **2013 – 2014**
  ***Highest** award in Robot Competition, China*
- **National Scholarship (top 2%)** **2012 – 2013**
  ***Highest** national wide scholarship for undergraduate students in China*
- **First-class Scholarship of Shandong University (top 5%)** **2012 – 2014**
  Award for outstanding students

Selected Talks

- Path Planning for Nonholonomic Multiple Mobile Robot System with Applications to Robotic Autonomous Luggage Trolley Collection at Airports
  at IROS 2020, Las Vegas, US (Virtual Meeting)
- Tropistic RRT*: An Efficient Planning Algorithm via Adaptive Restricted Sampling Space
  at ICIA 2018, Wuyi Mountain, China
- Motion Artifact Reduction in PPG Signals based on Periodic Component Factorization
  at EMBC 2017, Jeju Island, South Korea
- Continuous Systolic and Diastolic Blood Pressure Estimation utilizing Long Short-term Memory Network
  at EMBC 2017, Jeju Island, South Korea
- An Improved RRT Algorithm Incorporating Obstacle Boundary Information
  at ROBIO 2016, Qingdao, China

Professional Services

- **Reviewer of Conferences**
  - SPC of ICRA 2021
  - Local Arrangement Chair of ICRA 2021
  - Session Chair of ICIA 2016, ICIA 2017
  - Reviewer of ICRA, IROS, ROBIO, ICIA, CASE, ICAR
- **Journal Reviews**
  - IEEE Robotics and Automation Letters
  - IEEE Transactions on Intelligent Transportation Systems
  - IEEE Transactions on Intelligent Vehicles
  - IEEE Transactions on Games
  - IEEE Transactions on Vehicular Technology
  - Intelligent Service Robotics
  - IEEE Transactions on Cybernetics
  - IEEE Transactions on Industrial Electronics
  - SCIENCE CHINA Information Science
  - Applied Science
  - IEEE Access
- **Teaching Assistant at CUHK**
  - BMEG4103: Biomedical Modeling. Fall 2015-2016
  - BMEG3420: Medical Robotics. Spring 2016-2017
  - Develop a new course integrating robot and vision. Fall 2016-2017
  - Special TA: Interview, Photographer and General Affairs. Spring 2017-2018
  - ENGG1100: Engineering Design. Spring 2018-2019

Co-Supervised Students

- **Ph.D. Students**
  - Ziqi Zhao, SUSTech 2020
  - Fei Meng, CUHK 2020
  - Jianbang Liu, CUHK 2020
  - Han Ma, CUHK 2019
  - Peng Xu, CUHK 2019
  - Chenming Li, CUHK 2019
- **MSC Students**
  - Bingyi Xia, SUSTech 2020
  - Kaiwei Che, SUSTech 2020
  - Yue Hong, SUSTech 2020
- **Research Assistants**
  - Ruo Zhang, SUSTech 2021

- Kuanqi Cai, SUSTech 2021
- Wei Xiao, SUSTech 2021
- Xuan Zhang, SUSTech 2021
- Zhaoting Li, , SUSTech 2020, admitted to ETH 2021
- Tianyi Zhang, , SUSTech 2020, admitted to ETH 2021
- Nachuan Ma, , SUSTech 2020, admitted to Tongji University 2021