Jiankun Wang

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Education

1. **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
2. **Visiting Student Researcher, Stanford University** **07/2018 – 12/2018**
   Advisor: Prof. Oussama Khatib Dept. of Computer Science
   Research field: Robotics, Motion Planning and Control
3. **B.Eng., Shandong University** **09/2011 – 06/2015**
   School of Control Science & Engineering GPA: 91.19/100 Rank: 1/310

Work

1. **Assistant Professor, Southern University of Science and Technology** **07/2022 – present**
   Dept. of Electronic and Electrical Engineering
   Research field: AI-driven Motion and Path Planning, Human-robot Interaction
2. **Research Assistant Professor, Southern University of Science and Technology** **09/2020 – 06/2022**
   Dept. of Electronic and Electrical Engineering
   Research field: AI-driven Motion and Path Planning, Human-robot Interaction
3. **Postdoc, The Chinese University of Hong Kong** **08/2019 – 08/2020**
   Advisor: Prof. Max Q.-H. Meng Dept. of Electronic Engineering
   Research field: Path Planning, Motion Planning

Academic Appointments

1. Associate Editor, IEEE Robotics and Automation Letters
2. Early Career Editorial Board, IEEE/CAA Journal of Automatica Sinica (JCR Q1)
3. Associate Editor, Biomimetic Intelligence and Robotics
4. Associate Editor, Intelligence & Robotics
5. Senior Program Committee, IEEE ICRA 2021, IEEE ROBIO 2019, IEEE ICIA 2016-2019
6. Technical Committee, IEEE ROBIO 2021

Honors and Awards

10. **IEEE Senior Member** **2022**
    Honor bestowed only to those who have made significant contributions to the profession
9. **Reaching Out Award of CUHK** **2018 – 2019**
   Award for international exchange student
8. **Global Scholarship Programme for Research Excellence** **2018 – 2019**
   *Award for **Excellent** exchange student*
7. **Hong Kong Ph.D. Fellowship Scheme** **2015 – 2019**
   ***Highest** scholarship for Ph.D. students in Hong Kong*
6. **Outstanding Graduate of Shandong Province (top 0.5%)** **2015 – 2016**
   ***Highest** award for graduates in Shandong Province*

5. **The President Scholarship of Shandong University (top 0.2%)** **2014 – 2015**
Highest award for students in Shandong University

4. **Outstanding Student of Shandong Province (top 0.5%)** **2014 – 2015**
Highest award for students in Shandong Province

3. **First Prize – International Underwater Robot Competiotion** **2014 – 2015**
Award for winners in underwater robot competiotion

2. **Champion – China Robot Competition** **2013 – 2014**
Highest award in Robot Competition, China

1. **National Scholarship (top 2%)** **2012 – 2013**
Highest national wide scholarship for undergraduate students in China

Research Funding

1. National Natural Science Foundation of China, Young Scientists Fund, "Research of Scene-Adaptive Robot Navigation in Densely Populated Dynamic Environments", 2022-2024, 300,000 RMB, **Principle Investigator**.
2. Science, Technology and Innovation Commission of Shenzhen Municipality, Key Laboratory Program, "Shenzhen Key Laboratory of Robotics Perception and Intelligence", 2021-2023, 5,000,000 RMB, **Major Contributor**.
3. Ministry of Science and Technology, National Key R&D Program of China, "Magnetically Controlled Active Capsule Robotic System for Colon Examination", 2019-2022, 9,100,000 RMB, **Major Contributor**.
4. Innovation and Technology Commission (Hong Kong), Innovation and Technology Support Programme, "An Intelligent Robotic System for Autonomous Airport Passenger Trolley Deployment", 2017-2021, 6,757,000 HK$, **Major Contributor**.

Preprints

2. Chenming Li, Han Ma, Peng Xu, **Jiankun Wang***, Max Q.-H. Meng*, "BiAIT*: Symmetrical Bidirectional Optimal Path Planning with Adaptive Heuristic," *IEEE Transactions on Automation Science and Engineering,* Under review.

1. Peng Xu, Hu Cheng, **Jiankun Wang***, Max Q.-H. Meng*, "Learning to Reorient Objects with Stable Placements Afforded by Extrinsic Supports," *IEEE Transactions on Automation Science and Engineering,* Under review.

Journal Publications

† indicates equal contribution, * indicates corresponding author, and orange color indicates ESI Highly Cited Papers.

29. Fei Meng, Han Ma, **Jiankun Wang***, Max Q.-H. Meng*, "NR-RRT: Neural Risk-Aware Near-Optimal Path Planning in Uncertain Nonconvex Environments," *IEEE Transactions on Automation Science and Engineering,* 2022, Early Access.

28. Zhiyu Ding, Jie Liu, Wenzheng Chi*, **Jiankun Wang**, Guodong Chen, Lining Sun, "PRTIRL Based Socially Adaptive Path Planning for Mobile Robots," *International Journal of Social Robotics,* 2022, Early Access.

27. Han Ma, Chenming Li, Jianbang Liu, **Jiankun Wang***, Max Q.-H. Meng*, "Enhance Connectivity of Promising Regions for Sampling-based Path Planning," *IEEE Transactions on Automation Science and Engineering,* 2022, Early Access.

26. Fan Bai, Fei Meng, Jianbang Liu, **Jiankun Wang**, Max Q.-H. Meng*, "Hierarchical Policy for Non-prehensile Multi-object Rearrangement with Deep Reinforcement Learning and Monte Carlo Tree Search," *Biomimetic Intelligence and Robotics,* 2022, 2(3).

25. Han Ma, Fei Meng, Chengwei Ye, **Jiankun Wang***, Max Q.-H. Meng*, "Bi-Risk-RRT Based Efficient Motion Planning for Autonomous Ground Vehicles," *IEEE Transactions on Intelligent Vehicles,* 2022, Early Access.

24. **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,* 2022, Early Access.

23. **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,* 2021, Early Access.

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, 70(12).

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, 7(1).

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, 9(1).

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, 3(4).

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, 1(100001). **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," *IEEE Sensors Journal,* 2021, 21(10).

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). **2021 ESI Highly Cited Papers.**

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, 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, Max Q.-H. Meng*, "Efficient Object Search With Belief Road Map Using Mobile Robot," *IEEE Robotics and Automation Letters,* 2018, 3(4).

Conference Publications

18. Pengyu Wang, Chaoqun Wang, **Jiankun Wang***, Max Q.-H. Meng*, "Quadrotor Autonomous Landing on Moving Platform," *2022 International Symposium on Biomimetic Intelligence and Robotics & Orthopaedic Robotics Forum (ISBIR-ORF).*

17. Zhirui Sun, **Jiankun Wang***, Max Q.-H. Meng*, "Multi-Tree Guided Efficient Robot Motion Planning," *2022 International Symposium on Biomimetic Intelligence and Robotics & Orthopaedic Robotics Forum (ISBIR-ORF).*

16. Anxing Xiao†, Hao Luan†, Ziqi Zhao†, Yue Hong, Jieting Zhao, **Jiankun Wang***, Max Q.-H. Meng*, "Robotic Autonomous Trolley Collection with Progressive Perception and Nonlinear Model Predictive Control," *2022 IEEE International Conference on Robotics and Automation (ICRA).*

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).*

Selected Talks

1. AI-driven Robot Path Planning
   Dept. of Electronic and Electrical Engineering, Southern University of Science and Technology, 2022.4.25
2. Path Planning for Nonholonomic Multiple Mobile Robot System with Applications to Robotic Autonomous Luggage Trolley Collection at Airports
   at IEEE/RSJ IROS 2020, Las Vegas, US (Virtual Meeting)
3. Tropistic RRT*: An Efficient Planning Algorithm via Adaptive Restricted Sampling Space
   at IEEE ICIA 2018, Wuyi Mountain, China
4. Motion Artifact Reduction in PPG Signals based on Periodic Component Factorization
   at EMBC 2017, Jeju Island, South Korea
5. Continuous Systolic and Diastolic Blood Pressure Estimation utilizing Long Short-term Memory Network
   at EMBC 2017, Jeju Island, South Korea
6. An Improved RRT Algorithm Incorporating Obstacle Boundary Information
   at IEEE ROBIO 2016, Qingdao, China

Professional Services

1. **Reviewer of Conferences**
   - IEEE ICRA, IEEE/RSJ IROS, IEEE ROBIO, IEEE ICIA
2. **Reviewer of Journals**
   - IEEE Transactions on Robotics
   - IEEE Robotics and Automation Letters
   - IEEE Transactions on Cybernetics
   - IEEE Transactions on Industrial Electronics
   - IEEE Transactions on Instrumentation and Measurement
   - IEEE Transactions on Intelligent Transportation Systems
   - IEEE Transactions on Intelligent Vehicles
   - IEEE Transactions on Games
   - IEEE Transactions on Vehicular Technology

- IEEE/CAA Journal of Automatica Sinica
- IET Intelligent Transport Systems
- Intelligent Service Robotics
- SCIENCE CHINA Information Science
- Applied Science
- IEEE Access

3. **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

1. **Ph.D. Students**
   - Shilong Yao, SUSTech & CityU 2021
   - Xuheng Gao, SUSTech 2021
   - Jie Yang, SUSTech 2021
   - Ziqi Zhao, SUSTech 2020
   - Fei Meng, CUHK 2020
   - Jianbang Liu, CUHK 2020
   - Han Ma, CUHK 2019
   - Peng Xu, CUHK 2019
   - Chenming Li, CUHK 2019
2. **MSC Students**
   - Zhirui Sun, SUSTech 2021
   - Bingyi Xia, SUSTech 2020
   - Kaiwei Che, SUSTech 2020
   - Yue Hong, SUSTech 2020
3. **Research Assistants**
   - Anxing Xiao, SUSTech 2021, admitted to **UBC 2022**
   - Hao Luan, SUSTech 2021, admitted to **U of Toronto 2022**
   - 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**