Jialiang Fan

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I am a doctoral student at the University of Notre Dame majoring in Computer Science Engineering. I completed my Master's degree in Computer Technology from Lanzhou University in 2023. Throughout my academic journey, I have developed a strong passion for advanced computer science and robotic technologies. My enthusiasm for these fields is fueled by my extensive experience in conducting lab work and completing various projects.

Education

- **University of Notre Dame** — **South Bend, IN, USA**
  Doctoral in Computer Science Engineering — *2024.6-Now*
- **Lanzhou University** — **Lanzhou, P.R. China**
  Master of Engineering, Computer Technology — *2020–2023*
- **Shandong University** — **Jinan, P.R. China**
  Bachelor of Engineering, Software Engineering — *2015–2019*

Research/Project Experience

- **Research at Lanzhou University, Tencent Robotics X** — **Lanzhou, Shenzhen, P.R. China**
  Learning and Optimization Control of Redundant Manipulators — *2020.5–2023.6*
  - Developing a control strategy based on the quadratic programming (QP) problem for dual-arm robots
  - Proposing a motion-force control scheme based on kinematics for redundant manipulators with unknown structural information
  - Proposing a control scheme for redundant manipulators with unknown structural information by applying joint constraints of the acceleration level to control the manipulator at the joint velocity level
  - Doing ongoing research to extend the application of the Jacobian matrix learning scheme and motion-force control scheme to mobile robots with the effectiveness of the proposed scheme having been proved through theoretical analyses, simulations and physical experiments
- **Research at University of Georgia** — **Athens, Georgia, USA**
  Computer vision on Robotics and Medical imaging — *2023.1–Now*
  - Implemented depth estimation for RGB images using computer vision techniques applicable to robotics and autonomous driving scenarios.
  - Applied computer vision techniques for medical image recognition, including classification and segmentation of Intracerebral hemorrhage images.

Paperwork

- **J. Fan**, G. Lu, and X. Fan, Dual-Task Vision Transformer for Rapid and Accurate Intracerebral Hemorrhage Classification on CT Images, **submitted** to ***https://arxiv.org/abs/2405.06814***, 2024.
- **J. Fan**, L. Jin, and Y. Zheng, Admittance-based Learning and Control for Mobile Manipulators: A Kinematic Perspective, **submitted** to ***IEEE Trans. Autom. Sci. Eng.*, (replying of major revision)**, 2024.
- M. Liu, **J. Fan**, Y. Zheng, S. Li, and L. Jin, A Simultaneous Learning and Control Scheme for Redundant Manipulators With Physical Constraints on Decision Variable and Its Derivative, **published** in ***IEEE Trans. Ind. Electron.***, 2022.
- **J. Fan**, L. Jin, Z. Xie, S. Li, and Y. Zheng, Data-Driven Motion-Force Control Scheme for Redundant

Manipulators: A Kinematic Perspective, **published** in ***IEEE Trans. Ind. Informat.***, 2022.

- D. Fu, H. huang, Lin. Wei, X. Xiao, L. Jin, S. Liao, **J. Fan**, and Z. Xie, Modified Newton Integration Algorithm With Noise Tolerance Applied to Robotics, published in ***IEEE Trans. Syst., Man, Cybern., Syst.***, 2021.
- **J. Fan**, M. Liu, and S. Li, MKE Scheme for Planning and Control of Dual-arm Robotic System Aided with Recurrent Neural Networks, in ***Proc. Int. Joint Conf. Neural Netw. (IJCNN)***, 2021.

Research Projects

- 09/2021—4/2023 Robot Research on Fusion of Learning and Model Motion Control, funded by the Chinese Institute of Electronics and Tencent Robotics X Rhino bird Special Research Plan, 500,000 CNY (**Key Participate**)

Working Experiences

- **Tencent, Robotics X (Internship)** **Shenzhen, P.R. China**
  Integration of model-based and learning-based motion control for robots *2021-12–2022-09*
  - Using artificial intelligence technology to control manipulators to execute throwing dexterous tasks: trowing bottle in the scenario of bartending
  - Research on holistic control of mobile robot: utilizing ROS to control a mobile robot consists of a self-developed differential-based wheeled robot and a Kinova Jaco manipulator
- **Asterfusion.com (Full-time Job)** **Xi'an, P.R. China**
  Developed SDN software for packet handling using Python and P4 *2020-01–2020-06*
  - Responsible for the development of Software Define Network (SDN) based on Stratum operating system using Python and P4, including packet statistics/filtering/matching/forwarding/broadcasting and others
- **Shanbay.com (Internship)** **Nanjing, P.R. China**
  Backend development using Python, Flask, Django, gRPC for various projects *2018-08–2019-01*
  - Responsible for backend development using Python language and frameworks such as Flask, Django and gRPC
  - Participated in the backend development of WeChat applets of Fennec English-learning series
  - Participated in the backend development for projects of the 2018 Nanjing English-speaking Contest for Primary School Students and the 2018 Yangzhou English Contest for Middle School Students, with a total number of users exceeding 100,000

Selected Awards and Honors

- Received excellent master's thesis of Gansu Province (2023)
- Received outstanding graduate of Lanzhou University (2023)
- Received the National Scholarship (2022)
- Awarded as the Advanced graduate individual of Lanzhou University (2022)
- Awarded as the 'Outstanding Postgraduate Student' by Lanzhou University (2021, 2022)
- Awarded as the 'Excellent model for graduate students' by Lanzhou University (2022)

Academic Review

- ***IEEE ACCESS***
- ***IEEE Transactions on Industrial Informatics***
- ***IEEE Transactions on Automation Sciences and Engineering***

- *IEEE Transactions on Systems, Man, and Cybernetics: Systems*
- *IEEE Transactions on Control Systems Technology*
- *IEEE Transactions on Intelligent Vehicles*
- *Frontiers in Neurorobotics*
- *2023 International Conference on Robotics and Automation (Conference)*
- *Electronics Letters*
- *Neural Processing Letters*