Qinglei Ji (PhD)

SUMMARY

- Expertise in AI and Control systems, with a proven history of concepting, leading, and performing R&D projects in multiple organizations.
- Experience with industrial product development approaches like Agile and Model-based Systems Engineering.

INTERESTS

I have a profound interest and insatiable curiosity in all facets of AI and robotics, keeping up-to-date with the latest advancements. My areas of focus include:

- Artificial Intelligence: Reinforcement learning, AI safety, and their applications in automated driving systems.
- Mechatronics: Intelligent control, simulation, robotics, sensors, and actuators.
- Systems Engineering: Model-based systems engineering.

EXPERIENCE

Solution Engineer (Autonomous Driving Systems)
Volvo Cars Cooperation, Gothenburg — Nov 2022 - Present

Visiting Researcher (Mechatronics)
Peking University, Beijing — Apr 2017 - Feb 2018

Visiting Student Researcher (Mechanics)
King Abdullah University of Science and Technology, Thuwal — Jun 2016 - Oct 2016

EDUCATION

Doctor of Philosophy (Learning-based Robotics)
Kungliga Tekniska Högskolan, Stockholm — 2022

Engineer's Degree and Master of Science (Aerospace Engineering)
École Nationale Supérieure de Mécanique et d'Aérotechnique, Poitiers — 2018

Bachelor of Engineering (Aerospace Engineering)
Nanjing University of Aeronautics and Astronautics, Nanjing — 2015

AWARDS

[5] Government Award for Outstanding Self-financed Students Abroad	2022
[4] Travel grant from the Karl Engvers foundation	2022
[3] Europe PEGASUS Award	2018
[2] Regional Scholarship of Vienne, France	2017
[1] National Scholarship	2015

PUBLICATIONS

* Corresponding Author   † Equal Contribution

[16] Wang, L., Wang, X., **Ji, Q.**, Wang, L., & Jin, R.* (2023). Mutual Active Learning for Engineering Regulated Statistical Digital Twin Models. **IEEE Transactions on Industrial Informatics**.

[15] **Ji, Q.**, Jansson, J., Sjöberg, M., Wang, X. V., Wang, L., & Feng, L.* (2023). Design and calibration of 3D printed soft deformation sensors for soft actuator control. **Mechatronics**, 92, 102980.

[14] Tan, K., **Ji, Q.**, Feng, L.*, & Törngren, M. (2023). Edge-enabled Adaptive Shape Estimation of 3D Printed Soft Actuators with Gaussian Processes and Unscented Kalman Filters. **IEEE Transactions on Industrial Electronics**.

[13] **Ji, Q.**, Wang, X. V., Wang, L., & Feng, L.* (2022). Online reinforcement learning for the shape morphing adaptive control of 4D printed shape memory polymer. **Control Engineering Practice**, 126, 105257.

[12] Tan, K., **Ji, Q.**, Feng, L.*, & Törngren, M. (2022). Shape estimation of a 3D printed soft sensor using multi-hypothesis extended kalman filter. **IEEE Robotics and Automation Letters**, 7(3), 8383-8390.

[11] **Ji, Q.**, Chen, M., Wang, X. V., Wang, L., & Feng, L.* (2022). Optimal shape morphing control of 4D printed shape memory polymer based on reinforcement learning. **Robotics and Computer-Integrated Manufacturing**, 73, 102209.

[10] **Ji, Q.**, Fu, S., Tan, K., Muralidharan, S. T., Lagrelius, K., Danelia, D., ... & Feng, L.* (2022). Synthesizing the optimal gait of a quadruped robot with soft actuators using deep reinforcement learning. **Robotics and Computer-Integrated Manufacturing**, 78, 102382.

[9] **Ji, Q.**, Wang, X. V., Wang, L., & Feng, L.* (2022). Customized protective visors enabled by closed loop controlled 4D printing. **Scientific reports**, 12(1), 7566.

[8] **Ji, Q.***, Fu, S., Feng, L., Andrikopoulos, G., Wang, X. V., & Wang, L. (2022, October). Omnidirectional walking of a quadruped robot enabled by compressible tendon-driven soft actuators. In 2022 **IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)** (pp. 11015-11022). IEEE.

[7] Muralidharan, S. T., Zhu, R., **Ji, Q.***, Feng, L., Wang, X. V., & Wang, L. (2021, August). A soft quadruped robot enabled by continuum actuators. In 2021 IEEE 17th **International Conference on Automation Science and Engineering (CASE)** (pp. 834-840). IEEE.

[6] **Ji, Q.**, Chen, M., Zhao, C., Zhang, X., Wang, X. V., Wang, L., & Feng, L.* (2020). Feedback control for the precise shape morphing of 4D-printed shape memory polymer. **IEEE Transactions on Industrial Electronics**, 68(12), 12698-12707.

[5] **Ji, Q.**, Zhang, X., Chen, M., Wang, X. V., Wang, L., & Feng, L.* (2020). Design and closed loop control of a 3D printed soft actuator. In 2020 16th **IEEE International Conference on Automation Science and Engineering (CASE)** (pp. 842-848). IEEE.

[4] **Ji, Q.**, Zhao, C., Chen, M., Wang, X. V., Feng, L., & Wang, L.* (2020). A flexible 4D printing service platform for smart manufacturing. In **Swedish Production Symposium** 2020 7-8 October 2020, Jönköping, Sweden.

[3] **Ji, Q.**, Zhang, J. M., Liu, Y., Li, X., Lv, P., Jin, D., & Duan, H.* (2018). A modular microfluidic device via multimaterial 3D printing for emulsion generation. **Scientific reports**, 8(1), 4791.

[2] Zhang, J. M., **Ji, Q.**, & Duan, H.* (2019). Three-dimensional printed devices in droplet microfluidics. **Micromachines**, 10(11), 754.

[1] Zhang, J. M.[+], **Ji, Q.**[+], Liu, Y., Huang, J., & Duan, H.* (2018). An integrated micro-millifluidic processing system. **Lab on a Chip**, 18(22), 3393-3404.

PATENTS

[4] Zhang, J. M., Duan, H., **Ji, Q.**, Li, X. (2020). Modular microfluidic chip fixture. **CN patent**, CN107321403B.

[3] Zhang, J. M., Duan, H., **Ji, Q.** (2019). Microfluidic chip and the device for generating microdroplets that utilizes it. **CN patent**, CN106807463A.

[2] **Ji, Q.**, Duan, H., Zhang, J. M., Liu, Y. (2017). A stop valve. **CN patent**, CN108150672A.

[1] **Ji, Q.**, Liu, Y., Duan, H., Zhang, J. M. (2017). An adjustable flow pump. **CN patent**, CN108252901A.

TEACHING

Lectures

[3] Dynamics and Motion Control

[2] Mechatronics Basics

[1] Advanced Master Project in Mechatronics

Supervisions

[1] Supervised more than 20 master's theses in different organizations.

SERVICES

Conference Reviewers

[3] IEEE International Conference on Automation Science and Engineering (CASE)

[2] IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

[1] International Conference on Energy Engineering and Environmental Protection

Journal Reviewers

[6] Robotics and Autonomous Systems

[5] Journal of Bionic Engineering

[4] Robotics and Computer-Integrated Manufacturing

[3] IEEE Robotics and Automation Letters
[2] Chemical Engineering Journal
[1] Advances in Manufacturing

Event Host
[1] Co-chair for Robotics and Automation Session of IEEE International Conference on Automation Science and Engineering (CASE)