

# Liangming CHEN, Ph.D.

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📖 Systems and control

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🔍 <https://scholar.google.com/citations?hl=en&user=6bL04agAAAAJ>



## Employment

- 2022.12 – Now ■ Associate Professor, Center for Control Science and Technology, Southern University of Science and Technology, China.
- 2022.04 – 2022.11 ■ Research Fellow, School of Electronic and Electrical Engineering, Nanyang Technological University, Singapore.  
Supervisor: Prof. Lihua Xie (*IEEE Fellow, IFAC Fellow, Fellow of Academy of Engineering Singapore*).
- 2021.04 – 2022.04 ■ Research Fellow, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore.  
Supervisor: Asst Prof. Mir Feroskhan.

## Education

- 2017.09 – 2021.03 ■ Ph. D. Systems and Control, University of Groningen, The Netherlands.  
Supervisors: Prof. Ming Cao (*IEEE Fellow*) and Prof. Jacqueliën Scherpen (*IEEE Fellow, Past President of European Control Association*).
- 2015.09 – 2019.12 ■ Ph. D. Control Science and Engineering, Harbin Institute of Technology, China.  
Supervisors: Prof. Chuanjiang Li and Prof. Yanning Guo.
- 2011.09 – 2015.07 ■ B. Eng. Automation, Southwest Jiaotong University, China.

## Editorial Experience

- 2023 – Now ■ Member of the EUCA (European Control Association) Conference Editorial Board.  
■ Associate Editor of the 2024 European Control Conference.
- 2023 – 2024 ■ Associate Editor of the 3rd Conference on Fully Actuated System Theory and Applications.
- 2022 ■ Associate Editor of the 17th International Conference on Control, Automation, Robotics and Vision (ICARCV 2022).
- 2021 – 2022 ■ Guest Editor of the special issue Networked Control of Multi-Robot Systems in the journal Electronics (Impact Factor: 2.9).

## Academic Service

- 2022 – Now ■ A member of IEEE Robotics and Automation Society and IEEE Control Systems Society (IEEE Senior Membership: 95614854)
- 2017 – Now ■ Reviewed 4 manuscripts for *IEEE Transactions on Robotics*, 16 manuscripts for *ISA Transactions*, 40 manuscripts for *IEEE Transactions on Automatic Control*, 14 manuscripts for *IEEE Transactions on Control of Network Systems*, 18 manuscripts for *International Journal of Robust & Nonlinear Control*, 16 manuscripts for *IEEE Transactions on Industrial Electronics*, and 6 manuscripts for *Automatica*, ...
- 2024 ■ Publications Chair of the 2024 International Annual Conference on Complex Systems and Intelligent Science, Guangzhou, China.

## Academic Service (continued)

- 2023
  - Vice Secretary-General of the 3rd Conference on Fully Actuated System Theory and Applications, Shenzhen, China
  - Chair of Session: Rigidity theory, multi-agent formations, and distributed localization in the 62nd 2023 IEEE Conference on Decision and Control, Singapore.
  - Local Arrangements Chair of the 2023 International Annual Conference on Complex Systems and Intelligent Science, Shenzhen, China.
  - Publicity Chair of the 2023 International Conference on Control Science and Systems Engineering, Shenzhen, China.
- 2019
  - Co-chair of Session: State Estimation, Control and Optimization of Power Networks in the 15th IEEE International Conference on Control & Automation, Edinburgh, UK.

## Conference Presentations

- 2023
  - Invited Speaker at the 35th Chinese Control and Decision Conference, May. 20-22, 2023, China. Presentation Title: Angle rigidity graph theory for multi-agent formations.
- 2022
  - Keynote Speaker at the 6th International Conference on Industrial Informatics - Computing Technology, Intelligent Technology, Industrial Information Integration, Dec. 16-18, 2022, Shantou, China. Presentation Title: Angle rigidity theory for multi-agent formations.
- 2021
  - Invited Speaker at the 7th International Conference on Robotics and Artificial Intelligence, Nov. 19-22, 2021, Guangzhou, China. Presentation Title: Multi-robot formations.

## Honors and Awards

- 2023
  - One of our published papers in *Automatica* is selected as a Key Scientific Article and reported by the scientific media Advances in Engineering.
- 2022
  - Excellent Youth Scholars funded by the National Natural Science Foundation of China.
- 2019
  - Reviewer certificate awarded by the journal *Asian Journal of Control*.
- 2018
  - Excellent Student Award in Harbin Institute of Technology.
- 2015
  - Finalist of the Most Excellent Student in Southwest Jiaotong University.
- 2014
  - National Scholarship granted by Chinese Ministry of Education.

## Expertise

- Control
  - Nonlinear systems and control; cooperative control; decentralized control; unmanned systems; cooperative autonomous systems; distributed control over networks; distributed estimation, sensor networks; stability of nonlinear systems; multi-agent systems; formation control; distributed localization; spiking control systems; sensor networks; swarms.
- Robotics
  - Distributed robot systems; multi-robot systems; networked robots; neurorobotic; multi-robot coordination; aerial robotics; swarm robots; aerial systems: perception and autonomy.
- Mathematics
  - Rigidity theory; angle rigidity; distance rigidity; localization; neurodynamics.

## Main Publications

### Journal Articles

- 1 L. Chen, J. Xiao, Y. Zheng, N. A. Alagappan, and M. Feroskhan, "Design, modeling, and control of a coaxial drone," *IEEE Transactions on Robotics*, vol. 40, pp. 1650–1663, 2024. DOI: 10.1109/TR0.2024.3354161.
- 2 L. Chen, C. Li, B. Xiao, and Y. Guo, "Formation-containment control of networked euler-lagrange systems: An event-triggered framework," *ISA Transactions*, vol. 86, pp. 87–97, Mar. 2019, ISSN: 0019-0578. DOI: 10.1016/j.isatra.2018.10.019.
- 3 L. Chen, Z. Lin, and L. Xie, "Angle-based distributed node localizability and localization," *IEEE Transactions on Automatic Control*, Published online, 2023. DOI: 10.1109/TAC.2023.3339437.
- 4 L. Chen and M. Cao, "Angle rigidity for multiagent formations in 3-D," *IEEE Transactions on Automatic Control*, vol. 68, no. 10, pp. 6130–6145, 2023. DOI: 10.1109/TAC.2023.3237799.
- 5 L. Chen and Z. Sun, "Globally stabilizing triangularly angle rigid formations," *IEEE Transactions on Automatic Control*, vol. 68, no. 2, pp. 1169–1175, Feb. 2023, ISSN: 0018-9286. DOI: 10.1109/TAC.2022.3151567.
- 6 L. Chen, Q. Yang, M. Shi, Y. Li, and M. Feroskhan, "Stabilizing angle rigid formations with prescribed orientation and scale," *IEEE Transactions on Industrial Electronics*, vol. 69, no. 11, pp. 11 654–11 664, Nov. 2022, ISSN: 0278-0046. DOI: 10.1109/TIE.2021.3120476.
- 7 L. Chen, L. Xie, X. Li, X. Fang, and M. Feroskhan, "Simultaneous localization and formation using angle-only measurements in 2D," *Automatica*, vol. 146, Dec. 2022, ISSN: 0005-1098. DOI: 10.1016/j.automatica.2022.110605.
- 8 L. Chen, M. Shi, H. G. de Marina, and M. Cao, "Stabilizing and maneuvering angle rigid multiagent formations with double-integrator agent dynamics," *IEEE Transactions on Control of Network Systems*, vol. 9, no. 3, pp. 1362–1374, Sep. 2022, ISSN: 2325-5870. DOI: 10.1109/TCNS.2022.3153885.
- 9 L. Chen, "Triangular angle rigidity for distributed localization in 2D," *Automatica*, vol. 143, Sep. 2022, ISSN: 0005-1098. DOI: 10.1016/j.automatica.2022.110414.
- 10 L. Chen and Z. Sun, "Gradient-based bearing-only formation control: An elevation angle approach," *Automatica*, vol. 141, Jul. 2022, ISSN: 0005-1098. DOI: 10.1016/j.automatica.2022.110310.
- 11 L. Chen, H. G. de Marina, and M. Cao, "Maneuvering formations of mobile agents using designed mismatched angles," *IEEE Transactions on Automatic Control*, vol. 67, no. 4, pp. 1655–1668, Apr. 2022, ISSN: 0018-9286. DOI: 10.1109/TAC.2021.3066388.
- 12 L. Chen, M. Cao, and C. Li, "Angle rigidity and its usage to stabilize multiagent formations in 2-D," *IEEE Transactions on Automatic Control*, vol. 66, no. 8, pp. 3667–3681, Aug. 2021, ISSN: 0018-9286. DOI: 10.1109/TAC.2020.3025539.
- 13 L. Chen, J. Mei, C. Li, and G. Ma, "Distributed leader-follower affine formation maneuver control for high-order multiagent systems," *IEEE Transactions on Automatic Control*, vol. 65, no. 11, pp. 4941–4948, Nov. 2020, ISSN: 0018-9286. DOI: 10.1109/TAC.2020.2986684.
- 14 L. Chen, J. Xiao, R. C. H. Lin, and M. Feroskhan, "Angle-constrained formation maneuvering of unmanned aerial vehicles," *IEEE Transactions on Control Systems Technology*, vol. 31, no. 4, pp. 1733–1746, Jul. 2023, ISSN: 1063-6536. DOI: 10.1109/TCST.2023.3240286.
- 15 L. Chen, C. Liang, Y. Li, J. Mei, and L. Xie, "Performance optimization of continuous network localization," *Automatica*, 2024.

## Referee

Prof. Ming Cao      IEEE Fellow, Faculty of Science and Engineering, University of Groningen, the Netherlands. Email: m.cao@rug.nl

## Referee (continued)

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Prof. Lihua Xie      IEEE Fellow, School of Electronic and Electrical Engineering, Nanyang Technological University, Singapore. Email: elhxie@ntue.du.sg