Liangming CHEN, Ph.D.

chenlm6@sustech.edu.cn +86075588015540 Systems and control
https://faculty.sustech.edu.cn/chenlm6/en/
https://scholar.google.com/citations?hl=enuser=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. Jacquelien 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.

2022 — Associate Editor of 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.

Academic Service

2022 – Now — A member of IEEE Industrial Electronics Society, Robotics and Automation Society, Systems, Man and Cybernetics Society, and Control Systems Society (IEEE Senior Membership: 95614854)

2017 – Now — Reviewed 16 papers for *IEEE Transactions on Industrial Electronics*, 30 papers for *IEEE Transactions on Automatic Control*, 12 papers for *IEEE Transactions on Control of Network Systems*, 18 papers for *International Journal of Robust and Nonlinear Control*, …

2024 — Publications Chair of the 2024 International Annual Conference on Complex Systems and Intelligent Science, Guangzhou, China.

2023 — Chair of Session: Rigidity theory, multi-agent formations, and distributed localization in *the 62nd 2023 IEEE Conference on Decision and Control*, Singapore.

Academic Service (continued)

- 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*.

- Student travel award funded by the *2019 American Control Conference*.

2018 - Excellent Student Award in Harbin Institute of Technology.

2015 - Finalist of the Most Excellent Student in Southwest Jiaotong University.

- Outstanding undergraduate thesis 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 over sensor networks; stability of nonlinear systems; multi-agent systems; formation control; distributed localization; spiking control systems.

Robotics - Multi-robot coordination; aerial robotics; localization; modular robots; reconfigurable robots; rigidity manipulation; swarm robots.

Mathematics - Rigidity theory; angle rigidity; distance rigidity; neurodynamics.

Personal statement

Profession - I am familiar with many aspects of the publishing process. I am also skilled in paperplaza management system, papercept management system, and ScholarOne manuscripts system, which are important parts of paper publication. My experience in publication has taught me how to write clearly and concisely, which are essential skills for an editor.

Personal statement (continued)

Efficiency — As a young researcher, I have plenty of time to search for appropriate reviewers, send review invitations, supervise review status, and carefully summarize review reports, guaranteeing an efficient review process. My study experience and collaboration with researchers from different geographic area allow me to have many reviewer resources.

Attitude — The publication quality of papers relies on the quality of review reports. I will invite those researchers with good publication reputation, avoid to handle papers whose authors I am very familiar with, and only invite reviewers whom the paper's authors have no collaboration with. I will also make justifiable decisions for submitted manuscripts.

Main Publications

Journal Articles

1. 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.
2. N. Zhou, Y. Liu, Y. Xia, and L. Chen, "Event-triggered super-twisting strategy for wheeled mobile robot tracking task," *IEEE Transactions on Industrial Informatics*, 2024, Major revision.
3. 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/TRO.2024.3354161.
4. 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.
5. 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.
6. 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.
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, Z. Lin, H. G. de Marina, Z. Sun, and M. Feroskhan, "Maneuvering angle rigid formations with global convergence guarantees," *IEEE-CAA Journal of Automatica Sinica*, vol. 9, no. 8, pp. 1464–1475, Aug. 2022, ISSN: 2329-9266. DOI: 10.1109/JAS.2022.105749.
10. 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.
11. 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.
12. 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.

13 L. Chen, K. Cao, L. Xie, X. Li, and M. Feroskhan, "3-D network localization using angle measurements and reduced communication," *IEEE Transactions on Signal Processing*, vol. 70, pp. 2402–2415, 2022, ISSN: 1053-587X. DOI: 10.1109/TSP.2022.3167512.

14 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.

15 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.

16 L. Chen, C. Li, Y. Guo, G. Ma, Y. Li, and B. Xiao, "Formation-containment control of multi-agent systems with communication delays," *ISA Transactions*, vol. 128, no. A, pp. 32–43, Sep. 2022, ISSN: 0019-0578. DOI: 10.1016/j.isatra.2021.09.012.

17 L. Chen, Q. Yang, C. Li, and G. Ma, "Controlling dynamic formations of mobile agents governed by euler-lagrange dynamics," *International Journal of Control, Automation and Systems*, vol. 19, no. 5, pp. 1740–1750, May 2021, ISSN: 1598-6446. DOI: 10.1007/s12555-020-0274-3.

18 L. Chen, C. Li, Y. Guo, G. Ma, and B. Zhu, "Spacecraft formation-containment flying control with time-varying translational velocity," *Chinese Journal of Aeronautics*, vol. 33, no. 1, pp. 271–281, Jan. 2020, ISSN: 1000-9361. DOI: 10.1016/j.cja.2019.09.018.

19 L. Chen, M. Cao, and C. Li, "Bearing rigidity and formation stabilization for multiple rigid bodies in SE(3)," *Numerical Algebra, Control and Optimization*, vol. 9, no. 3, pp. 257–267, Sep. 2019, ISSN: 2155-3289. DOI: 10.3934/naco.2019017.

20 L. Chen, Z. Sun, C. Li, B. Zhu, and C. Wang, "Satellite affine formation flying with obstacle avoidance," *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering*, vol. 233, no. 16, pp. 5992–6004, Dec. 2019, ISSN: 0954-4100. DOI: 10.1177/0954410019861474.

21 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.

22 L. Chen, C. Li, J. Mei, and G. Ma, "Adaptive cooperative formation-containment control for networked euler-lagrange systems without using relative velocity information," *IET Control Theory & Applications*, vol. 11, no. 9, pp. 1450–1458, Jun. 2017, ISSN: 1751-8644. DOI: 10.1049/iet-cta.2016.1185.

Conference Proceedings

1 L. Chen, M. Cao, Z. Sun, B. D. O. Anderson, and C. Li, "Angle-based formation shape control with velocity alignment," in *2020 21st World Congress of the International Federation of Automatic Control (IFAC)*, vol. 53, 2020, pp. 2447–2452. DOI: 10.1016/j.ifacol.2020.12.190.

2 L. Chen, M. Cao, H. G. de Marina, Y. Guo, and Y. Kapitanyuk, "Triangular formation maneuver using designed mismatched angles," in *2019 18th European Control Conference (ECC)*, 2019, pp. 1544–1549. DOI: 10.23919/ecc.2019.8795944.

3 L. Chen, M. Cao, C. Li, X. Cheng, and Y. Kapitanyuk, "Multi-agent formation control using angle measurements," in *2019 American Control Conference (ACC)*, 2019, pp. 59–64. DOI: 10.23919/acc.2019.8814738.

4 C. Liang, L. Chen, Y. Li, J. Mei, and L. Xie, "Performance optimization of angle-based network localization," in *2023 62nd IEEE Conference on Decision and Control (CDC)*, Accepted, 2023.

5 W. Chen, L. Chen, and J. Mei, "Displacement-based formation control with measurement noises," in *2023 62nd IEEE Conference on Decision and Control (CDC)*, Accepted, 2023.

Referee

Prof. Zhiyun Lin	IEEE Fellow, Center for Control Science and Technology, Southern University of Science and Technology, China. Email: linzy@sustech.edu.cn
Prof. Lihua Xie	IEEE Fellow, School of Electronic and Electrical Engineering, Nanyang Technological University, Singapore. Email: elhxie@ntue.du.sg
Prof. Ming Cao	IEEE Fellow, Faculty of Science and Engineering, University of Groningen, the Netherlands. Email: m.cao@rug.nl