

FENGCHEN (FELIX) WANG

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SUMMARY

Specializing in control theory and application, vehicle dynamics and control, connected and automated vehicle systems, and complex networked systems.

PROFESSIONAL EXPERIENCE

- **Senior Software Engineer (vehicular simulation)** Jun. 2020 – present
The MathWorks, Inc. Novi, USA
- **Graduate Research Associate** Aug. 2016 – May. 2020
Arizona State University Mesa, USA
- **Graduate Research Associate** Sep. 2014 – Jun. 2016
China Agricultural University Beijing, China

EDUCATION

- **Ph.D. in Systems Engineering** Aug. 2016 – May. 2020
Arizona State University (ASU) Mesa, USA
Advisor: Prof. Yan Chen
Dissertation topic: flocking modeling, control, and optimization of connected and automated vehicles for safe and efficient mobility
- **M.S. in Computer Science** Aug. 2022 – present
Georgia Institute of Technology Atlanta, USA
- **M.S. in Automotive Engineering** Sep. 2014 – Jun. 2016
China Agricultural University (CAU) Beijing, China
Advisor: Prof. Jianzhu Zhao
Dissertation topic: semi-active control for the magnetorheological suspensions of crawler chassis with electromagnetic de-sedimentation
- **B.E. in Automotive Engineering** Sep. 2010 – Jul. 2014
China Agricultural University Beijing, China

TRAINING & VISITING EXPERIENCE

- **TUM-Tsinghua Summer School in Transportation Engineering** Jul. 2015
Tsinghua University Beijing, China
Funded by DAAD
- **Visiting Scholar** Feb. 2012 – Jul. 2012
National Chung Hsing University Taichung, Taiwan

SELECTED FELLOWSHIPS & HONORS

Fellowships & Scholarships

- ASU Graduate College Completion Fellowship 2020
- ASU Graduate Block Grant Fellowship 2019 – 2020
- National Scholarship 2015
- CAU Science, Technology Innovation, and Academic Achievement Scholarship 2012
- Hong Kong Xizhi Education Foundation Scholarship 2011 – 2013
- CAU Excellent Academic Records Scholarship 2011 – 2013

Honors & Awards

- CAU Outstanding Graduate 2016 and 2014
- Second Prize in the 8th "Challenge Cup" Capital Science and Technology Extracurricular Academic Works Competition for College Students 2015
- Beijing Outstanding Graduate 2014
- CAU Best Undergraduates Dissertation TOP 100 2014
- Second Prize in Beijing Competition of Contemporary Undergraduate Mathematical Contest in Modeling 2012

SELECTED PUBLICATIONS AND INVITED TALKS

[Google scholar](#)

Selected Journal Papers

- J1. F. Wang, Y. Shi, and Y. Chen, "Hierarchical MIMO decoupling control for vehicle roll and planar motions with control allocation," *IEEE Transactions on Vehicular Technology* (Early Access), 2023 (DOI: 10.1109/TVT.2023.3308577)
- J2. G. Wang, M. Liu, **F. Wang**, and Y. Chen, "A novel and elliptical lattice design of flocking control for multi-agent ground vehicles," *IEEE Control Systems Letters*, vol.7, pp. 1159-1164, 2022. (DOI: 10.1109/LCSYS.2022.3231628)
- J3. **F. Wang** and Y. Chen, "Flocking control of multi-agent systems with permanent obstacles in strictly confined environments," *ASME Journal of Autonomous Vehicles and Systems*, vol.1, no. 2, 021005, 2021. (DOI: 10.1115/1.405)
- J4. **F. Wang** and Yan Chen, "Resilient flocking control for connected and automated vehicles with cyber-attack threats," *ASME Letters in Dynamic Systems and Control*, vol.1, no. 3, 031013, 2021. (DOI: 10.1115/1.4050123)
- J5. Y. Huang, **F. Wang**, A. Li, Y. Shi, and Y. Chen, "Development and experimental evaluations of an over-actuated autonomous ground vehicle," *IEEE/ASME Transactions on Mechatronics*, vol. 26, no. 1, pp. 33-44, 2020. (DOI: 10.1109/TMECH.2020.2998454)
- J6. **F. Wang** and Y. Chen, "A novel hierarchical flocking control framework for connected and automated vehicles," *IEEE Transactions on Intelligent Transportation Systems*, vol.22, no. 8, pp. 4801-4812, 2020. (DOI: 10.1109/TITS.2020.2986436)

- J7. **F. Wang** and Y. Chen, "Vehicle rollover propensity detection based on a mass-center-position metric: a continuous and completed method," *IEEE Transactions on Vehicular Technology*, vol. 68, no. 9, pp. 8652-8662, 2019. (DOI: 10.1109/TVT.2019.2930698)
- J8. **F. Wang** and Y. Chen, "A novel active rollover preventer for ground vehicles based on continuous roll motion detection," *ASME Transactions Journal of Dynamic Systems, Measurement and Control*, vol. 141, no. 1, pp. 011010-011010-8, 2019. (DOI: 10.1115/1.4041201)
- J9. **F. Wang** and Y. Chen, "Dynamics and control of a novel active yaw stabilizer to enhance vehicle lateral motion stability," *ASME Transactions Journal of Dynamic Systems, Measurement, and Control*, vol. 140, no. 8, pp. 081007-081007-9, 2018. (DOI: 10.1115/1.4039187)
- J10. **F. Wang**, D. Wang, J. Sun, and J. Zhao, "Intelligent optimal control for the crawler vehicle with semi-active suspension using modified staged continuous tabu search algorithm," *Transactions of the Institute of Measurement and Control*, vol. 40, no. 13, pp. 3617-3624, 2018. (DOI: 10.1177/0142331217728567)
- J11. J. Zhao, F. Sun, **F. Wang**, Z. Peng, D. Zhu, and M. Gao, "Magnetorheological fluid static sedimentation characteristic measurement method study based on the capacitance testing," *Journal of Functional Materials*, vol. 48, no. 08, pp. 08092-08096, 2017. (DOI: 10.3969/j.issn.1001-9731.2017.08.016)
- J12. J. Zhao, **F. Wang**, Y. Zhu, X. Zhang, and D. Wang, "Subsection following steering control strategy and test of hydrostatic-mechanical driving crawler chassis," *Transactions of the Chinese Society for Agricultural Machinery*, vol. 47, no. 04, pp. 36-41, 2016. (DOI: 10.6041/j.issn.1000-1298.2016.04.006)
- J13. J. Zhao, **F. Wang**, B. Yu, P. Tong, and K. Chen, "Experimental study on the ride comfort of a crawler power chassis scale model based on the similitude theory," *Chinese Journal of Mechanical Engineering*, vol. 28, no. 3, pp. 496-503, 2015. (DOI: 10.3901/CJME.2015.0306.024)
- J14. J. Zhao, **F. Wang**, B. Yu, and D. Wang, "Research on all-terrain profiling crawler power chassis," *Transactions of the Chinese Society for Agricultural Machinery*, vol. 45, no. 09, pp. 20-24, 2014. (DOI: 10.6041/j.issn.1000-1298.2014.09.004)

Selected Conference Papers/Invited Talks

- C1. **F. Wang**, G. Wang, and Y. Chen, "Adaptive spacing policy design of flocking control for multi-agent vehicular systems," in *Proceedings of 2022 Modeling, Estimation, and Control Conference, IFAC PapersOnLine*, vol. 55, iss. 37, pp. 524-529, 2022. (Invited Paper)
- C2. **F. Wang** and Y. Chen, "Fast-convergence flocking control for multi-agent systems with switching communication topology," in *Proceedings of the 2020 American Control Conference*, Denver, CO, USA, July 1-3, 2020.
- C3. **F. Wang**, P. Xu, A. Li, and Y. Chen, "Energy optimization of lateral motions for autonomous ground vehicles with four-wheel steering control," in *Proceedings of the ASME 2019 Dynamic Systems and Control Conference*, Park City, Utah, USA, October 8-11, 2019, DSCC2019-9003. (Invited Paper)
- C4. Y. Peng, **F. Wang**, S. Gurumoorthy, Y. Chen, and M. Xin, "Experimental validations on vision-based path tracking with preview four-wheel steering control," in *Proceedings of the ASME 2019 Dynamic Systems and Control Conference*, Park City, Utah, USA, October 8-11, 2019, DSCC2019-9159.

- C5. **F. Wang** and Y. Chen, “Energy-efficient flocking control: a distributed least-informed method,” in *Proceedings of 2019 IEEE Conference on Control Technology and Applications*, Hong Kong, China, August 19-21, 2019, pp. 332-337.
- C6. **F. Wang** and Y. Chen, “Hierarchical input-output decoupling control for vehicle rollover mitigation,” in *Proceedings of the ASME 2018 Dynamic Systems and Control Conference*, Atlanta, GA, USA, September 30 – October 3, 2018, DSCC2018-9166. (Invited Paper)
- C7. **F. Wang** and Y. Chen, “A novel autonomous trajectory control for vehicular cyber-physical systems with flocking control algorithms,” in *Proceedings of the 2018 American Control Conference*, Milwaukee, MI, USA, June 2018, 5076-5081. (Invited paper)
- C8. **F. Wang** and Y. Chen, “Vehicle rollover prevention through a novel active rollover preventer,” in *Proceedings of the ASME 2017 Dynamic Systems and Control Conference*, Tysons, VA, USA, October 11-13, 2017, DSCC2017-5146. (Invited Paper)
- C9. **F. Wang** and Y. Chen, “Detection of vehicle tripped and untripped rollovers by a novel index with mass-center-position estimations,” in *Proceedings of the ASME 2017 Dynamic Systems and Control Conference*, Tysons, VA, USA, October 11-13, 2017, DSCC2017-5149. (Invited Paper)
- C10. **F. Wang** and Y. Chen, “Vehicle safety enhancement through a novel active yaw moment stabilizer,” in *Proceedings of the 2017 American Control Conference*, Seattle, WA, USA, May 24-26, 2017, pp. 5556-5561. (Invited Paper)
- C11. **F. Wang**, R. Ji, L. Qi, and W. Gao, “A modified staged continuous tabu search algorithm,” in *Proceedings of the 2013 International Conference on Advanced Computer Science and Electronics Information*, Beijing, China, 2013, pp. 182-185.

SELECTED PATENTS

- P1. J. Zhao, **F. Wang**, Y. Zhu, et al., “A kind of subsection following steering control strategy of hydrostatic-mechanical driving crawler chassis,” Chinese Patent CN104986221B, Mar. 1, 2017.
- P2. J. Zhao, **F. Wang**, B. Yu, et al., “A kind of crawler non-road vehicles having a new type damping system,” Chinese Patent CN103879466B, Apr. 20, 2016.
- P3. J. Zhao, B. Yu, **F. Wang**, et al., “An electric adjustable ground clearance tractor,” Chinese Patent CN103921643B, Feb. 10, 2016.
- P4. R. Ji, **F. Wang**, L. Qi, et al., “Calculation method of soil water characteristic parameters based on modified staged continuous tabu search algorithm,” Chinese Patent ZL201210208585.7, Jul. 30, 2014.

PROFESSIONAL ACTIVITIES AND SERVICES

Journal and Conference Editor

- Associate editor, American Control Conference (2021 - present)

Journal Reviewer

- IEEE Transactions on Automatic Control
- IEEE Transactions on Vehicular Technology
- IEEE Transactions on Intelligent Vehicles
- IEEE Vehicular Technology Magazine

- IEEE Access
- IEEE/ASME Transactions on Mechatronics (TMECH Junior Reviewer Program)
- IFAC Journal Mechatronics
- Transactions of the Institute of Measurement and Control
- Proceedings of the Institution of Mechanical Engineers. Part I: Journal of Systems and Control Engineering
- Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering
- Measurement and Control
- Mathematical Problems in Engineering
- International Journal of Vehicle Design
- International Journal on Artificial Intelligence Tools
- PLOS ONE
- Science Progress

Conference Reviewer

- IEEE Conference on Decision and Control
- American Control Conference
- ASME Dynamic Systems and Control Conference
- SAE Technical Papers

TEACHING

Arizona State University

- EGR530: Principles of Systems Engineering, Lecture: State Space Model-based Control Design with Applications to Vehicle Systems (Spring 2019)
- EGR598 Topic: Vehicle Dynamics and Control, Lecture: Introduction to CarSim® (Fall 2018)
- EGR530: Principles of Systems Engineering, Lecture: Sensors and Transducers (Spring 2018)
- EGR598 Topic: Vehicle Dynamics and Control, Lecture: Vehicle Active Safety Control System (Fall 2017)
- EGR598 Topic: Vehicle Dynamics and Control, Lecture: Introduction to CarSim® (Spring 2016)

AFFILIATIONS

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| • Member of the IEEE | Dec. 2017 – present |
| • Member of the Honor Society of Phi Kappa Phi | Oct. 2017 – present |
| • Member of the ASME | Feb. 2017 – present |