Chao Wang

CONTACT INFORMATION

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EDUCATION

University of Wisconsin-Madison, Madison, WI, USA

PhD 2019 Department of Industrial and Systems Engineering
MS 2018 Department of Statistics

University of Science and Technology of China, Hefei, China

MS 2015 Department of Mechanical Engineering

Hefei University of Technology, Hefei, China

BS 2012 Department of Mechanical Engineering

EMPLOYMENT

Assistant Professor — Aug 2019 - Present
Department of Industrial and Systems Engineering
University of Iowa

Research Assistant — Sep 2015 - Jun 2019
Department of Industrial and Systems Engineering
University of Wisconsin Madison

Research Assistant — Sep 2012 - Jun 2015
Department of Mechanical Engineering
University of Science and Technology of China

RESEARCH INTEREST

- **Smart and connected systems**.
- **Manufacturing process control and infrastructure management**.
- Transfer/multitask learning for information fusion.
- High dimensional data modeling and analysis.

TEACHING

University of Iowa

1. Instructor: ISE 3610 Stochastic Modeling, Fall 2020, 2021, 2022, 2023
2. Instructor: ISE 6790 Advanced Data Analytics and Informatics, Fall 2021, 2022

University of Wisconsin

1. Instructor: ISyE 415 Introduction to Manufacturing Systems Design and Analysis (Jan. 2017- Mar. 2017)

PUBLICATION

Journal Papers (Names with underlines are my students, names with asterisk are corresponding authors)

1. Yao J., Balasubramaniam B., Li, B., and **Wang C.*** (2023). "Adaptive sampling and monitoring of partially observed images", *Journal of Quality Technology*, accepted.
2. Hu Z., **Wang C.**, Wu J., and Du D.* (2023). "Gaussian process latent variable model-based multi-output modeling of incomplete data", *IEEE Transactions on Automation Science and Engineering*, accepted.
3. Xu, R., **Wang, C.**, Li, Y., and Wu, J.* (2023). Generalized Time Warping Invariant Dictionary Learning for Time Series Classification and Clustering. *arXiv preprint arXiv:2306.17690*.
4. Yao J., Xian X., and **Wang C.*** (2023). "Adaptive sampling for monitoring multi-profile data with within-and-between profile correlation", *Technometrics*, 65 (3), 375-387.
5. Fallahdizcheh A., Laroia S., and **Wang C.*** (2023). "Sequential active contour based on morphological-driven thresholding for ultrasound image segmentation of ascites," *IEEE Journal of Biomedical and Health Informatics*, 27 (9), 4305-4316.
6. Zhang, J., **Wang, C.**, Li, J., Xie, Y., Mao, L.*, and Hu, Z.* (2023). A Bayesian method for capacity degradation prediction of lithium-ion battery considering both within and cross group heterogeneity. *Applied Energy*, *351*, 121855.
7. Fallahdizcheh A., and **Wang C.*** (2023). "Data-level transfer learning for degradation modeling and prognosis," *Journal of Quality Technology*, 55 (2), 140-162.
8. Wang X., **Wang C.***, Song X., Kirby L., and Wu J.* (2022). "Regularized multi-output Gaussian convolution process with domain adaptation", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 45 (5), 6142-6156.
9. Fallahdizcheh A., and **Wang C.*** (2022). "Transfer learning of degradation modeling and prognosis based on multivariate functional analysis with heterogeneous sampling rates," *Reliability Engineering & System Safety*, 223: 108448.
10. McGehee D.*, Cheryl A., Kasarla P., and **Wang C**. (2022). "Quantifying and recommending seat belt reminder timing using naturalistic driving video data," *Journal of Safety Research*, 80: 399-407.
11. Ellis D.*, Tatum M., **Wang C.**, Thomas G., and Peters T. (2022). "Combining physics-based and Kriging models to improve the estimation of noise exposure," *Journal of Occupational and Environmental Hygiene*, 19 (6), 343-352.
12. Fallahdizcheh A., and **Wang C.*** (2022). "Profile monitoring based on transfer learning of multiple profiles with incomplete samples," *IISE Transactions*, 54 (7), 643-658.
13. Lee J., **Wang C.**, Sui X., Zhou S.*, and Chen J. (2022). "Landmark-embedded Gaussian process with applications for functional data modeling", *IISE Transactions*, 54 (11), 1033-1046.
14. Hu Z., and **Wang C.*** (2022). "Nonlinear online multi-output Gaussian process for multi-stream data informatics," *IEEE Transactions on Industrial Informatics*, 18 (6), 3885-3893.
15. Gao Y., Huang X., **Wang C.**, and Wu J.* (2022). "Estimating size and number density of three-dimensional particles using truncated cross-sectional data," *Journal of Manufacturing Science and Engineering*, 144 (2): 021002.
16. Kasarla P., **Wang C.***, Brown T., and McGehee D. (2021) "Modeling and prediction of driving performance measures based on multi-output convolutional Gaussian process," *Accident Analysis & Prevention*, 161: 106360.
17. **Wang C.**, Pu H., Sui X., Zhou S.*, and Chen J. (2021), "Hybrid modeling and sensitivity analysis on reduced graphene oxided filed-effect transistor", *IEEE Transactions on Nanotechnology*, 20: 404-416.
18. **Wang C.**, Zhang W., and Villarini G.* (2021). "On the use of convolutional Gaussian process to

improve the seasonal forecasting of precipitation and temperature", *Journal of Hydrology*, 593: 125862.

19. **Wang C.***, and Zhou S. (2021). "Control of key performance indicators of manufacturing production systems through pair-copula modeling and stochastic optimization", *Journal of Manufacturing Systems*, 58: 120-130.
20. **Wang C.,** Zhu X., Zhou S.*, and Zhou Y. (2021). "Bayesian learning of structures of ordered block graphical models with an application on multistage manufacturing processes", *IISE Transactions*, 53 (7), 770-786.
21. **Wang C.**, and Zhou S.* (2019). "Approximate Key Performance Indicator Joint Distribution through Ordered Block Model and Pair Copula Construction", *IISE Transactions*, 51 (11),1265-1278.
22. **Wang C.,** and Zhou S.* (2018). "Process Tracking and Monitoring Based on Discrete Jumping Model". *Journal of Quality Technology*, 50 (1): 34-48.
23. **Wang C.,** and Zhou S.* (2017). "Contamination Source Identification Based on Sequential Bayesian Approach for Water Distribution Network with Stochastic Demands". *IISE Transactions*, 49 (9): 899-910.
24. Zhu J., **Wang C.,** Hu Z., Kong F.*, and Liu X. (2017). "Adaptive Variational Mode Decomposition Based on Artificial Fish Swarm Algorithm for Fault Diagnosis of Rolling Bearings". *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 231 (4): 635-654.
25. Hu Z., **Wang C.,** Zhu J., Liu X., and Kong F.* (2016). "Bearing Fault Diagnosis Based on an Improved Morphological Filter". *Measurement*, 80 (0): 163-178.
26. **Wang C.,** Shen C., He Q.*, Zhang A., Liu F., and Kong F. (2016). "Wayside Acoustic Defective Bearing Detection Based on Improved Dopplerlet Transform and Doppler Transient Matching". *Applied Acoustics*, 101 (1): 141-155.
27. **Wang C.,** Hu F., He Q.*, Zhang A., Liu F., and Kong F. (2014). "De-noising of Wayside Acoustic Signal from Train Bearings Based on Variable Digital Filtering". *Applied Acoustics*, 83 (1): 127- 140.
28. **Wang C.,** Kong F., He Q.*, Hu F., and Liu F. (2014). "Doppler Effect Removal Based on Instantaneous Frequency Estimation and Time Domain Re-sampling for Wayside Acoustic Defective Bearing Detector System", *Measurement*, 50 (0): 346-355.

Conference Papers

29. Kirby, L., Fei, F., **Wang, C.**, and Song, X. (2020). Hydrothermal Assisted Transient Jet Fusion of Ceramics: A Test Case Using Bentonite Clay. *Procedia Manufacturing*, 48, 797-806.
30. Lee, J., **Wang C.,** Zhou S. and Chen J. (2019). "Spatial Distribution Quantification and Control of Ink Flakes in Reduced Graphene Oxide FET Inkjet Printing". *Procedia Manufacturing*, 34, 19-25.
31. **Wang C.,** and Zhou S. (2018). "Control of Key Performance Indicators through an Approximated Predictive Model". *Proceedings of the International Symposium on Flexible Automation*. The Institute of Systems, Control and Information Engineers, 404-406.

AWARDED GRANTS

(PI in bold font; Co-PIs in regular font; If Co-PI, Wang's portion in parenthesis)

	Title	PI(s)	Sponsor	Amount	Duration
1	Semi-autonomous 3D Sensing and 3D Concrete Printing for Inspection and Repairing of Vertical Structures	**C. Wang** B. Li K. Wang H. Qin	DOD	$612,611	06/01/2022-06/01/2024
2	Development of A Decision Support Aid System Connecting Climate Model Downscaling and DoD Infrastructure	**G. Villarini** P. Andreas D. James D. Johnson C. Wang	DOD	$1.21M ($85K)	12/01/2022-11/30/2026
3	Smart Semiautonomous Fluid Drainage System for Surgical Procedures	**V. Cichella** C. Lamuta C. Wang	NSF	$151,282 ($45K)	03/01/2022-08/31/2023
4	Smart Additive Manufacturing Towards Use of Recycled Paper Fibers for Producing High-quality Fiber-Reinforced Plastic Composites	**X. Song** H. Udaykumar C. Wang	DOE	$955,942* ($392K)	09/01/2021-07/31/2024
5	Convoluted Gaussian Process: An Alternative to Facilitate Analysis and Predictions of Multiple DPMs under Several Driving Conditions Using Driving Simulators	**C. Wang** T. Brown D. McGehee	DOT	$39.5K	09/01/2020-08/31/2021

*: Including 1:1 cost share

HONORS & AWARDS

1. Student Best Paper Award, *Data Mining (DM) Track, INFORMS*, 2023.
2. IISE Transactions Best Paper Honorable Mention, 2023.
3. Best Paper Award, *Quality, Statistics, and Reliability (QSR) Track, INFORMS*, 2022.
4. Featured Article, *ISE magazine*, 2022
5. Old Gold Fellowship, *University of Iowa*, 2022
6. Finalist of Student Best Paper Award, *QSR Track, INFORMS*, 2021.
7. IISE Transactions Best Paper Award, 2021.
8. Finalist of Best Paper Award, *QSR Track, INFORMS*, 2019.
9. Gilbreth Memorial Fellowship, *Institute of Industrial and Systems Engineers (IISE)*, 2018.
10. E. Wayne Kay Graduate Scholarship, *Society of Manufacturing Engineers (SME)*, 2018.
11. Campus Wide Teaching Assistant Award, *University of Wisconsin Madison*, 2017.
12. Outstanding Performance Award, *Fiat Chrysler Automobiles Group*, 2017.

SERVICE, VOLUNTEERING & ACTIVITIES

1. Service to professional organizations
    1) Associate Editor, Journal of Intelligent Manufacturing, 2023-present.
    2) Elected Board Member, Quality Control & Reliability Engineering Division of IISE, 2023-present.
    3) Council Member, Quality, Statistics, and Reliability Track of INFORMS, 2023-present.
2. Session/conference organizer:
    1) INFORMS session chair: “Statistical learning and modeling of smart and connected systems”. Phoenix, AZ, USA, Nov. 2018.
    2) INFORMS session chair: “Non-parametric modeling, monitoring and control for complex systems”. Seattle, WA, USA, Oct. 2019.
    3) INFORMS session chair: “Gaussian process based modeling, monitoring and knowledge

transfer in engineering applications". Washington, D.C., USA, Nov. 2020 (held online due to COVID-19).
    4) INFORMS session co-chair: "Data-driven prognosis and analytics for IoT enabled systems". Anaheim, CA, USA, Oct. 2021 (held online due to COVID-19).
    5) IISE Annual Conference co-chair of Quality Control and Reliability Engineering (QCRE) track. Seattle, WA, USA, May 2022.
    6) INFORMS session chair: "Multi-process modeling, monitoring, and control in smart and connected systems". Phoenix, AZ, USA, Oct. 2023.
3. Society student chapter president:
    1) SME Student Chapter at University of Wisconsin Madison, 2017
4. Referee for *Technometrics*, *IISE Transactions*, *Journal of Quality Technology*, *IEEE Transactions on Automation Science and Engineering*, *IEEE Transactions on Reliability*, *IEEE/ASME Transactions on Mechatronics*, *International Journal of Production Research*, *Pattern Recognition*, *Annals of Operations Research*, *Quality and Reliability Engineering International*, *Journal of Manufacturing Systems*, *Computers & Industrial Engineering*, *Journal of Intelligent Manufacturing*, *Sensors*, *Scientific Reports*, and *Measurement*.
5. Member of INFORMS, IISE, and SME.