QING LI

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Education

Virginia Tech, Blacksburg, VA
Ph.D., Statistics, 12/2015
Dissertation: Change-Point Detection in Recurrent-Event Context.
Advisor: Dr. Feng Guo, GPA: 3.9/4.0

University of Rochester, Rochester, NY
M.S., Electrical and Computer Engineering, 05/2010
Thesis: Music Timing Analysis.
Advisor: Dr. Mark Bocko, GPA: 4.0/4.0

Tsinghua University, Beijing, China
B.E., Information Electronics and Engineering, 06/2008

Academic Appointments

Iowa State University, Dept. of Industrial and Manufacturing Systems Engineering (IMSE)
Assistant Professor, Fall 2018 – present

Iowa State University, College of Engineering
Building a World of Difference Faculty Fellow in Engineering, 07/2022 – 06/2025

Iowa State University, Center for Nondestructive Evaluation (CNDE)
Affiliated Assistant Professor, 03/2022 – present

University of Wisconsin-Madison, Dept. of Statistics
Visiting Assistant Professor*, 0*1/2016 – 05/2018

Research Interests

Statistical quality assurance; Statistics, data analytics, and machine learning in advanced manufacturing, non-destructive evaluation, healthcare, and other engineering and natural science applications

Publications

(Student under my supervision in **bold**$^{+}$, Corresponding author*)
Peer-Reviewed Journals (11 have coauthors in underrepresented minority groups)

1. **Liu, L. J. $^{+}$,** Li, B. W., Qin, H. T., and **Li, Q.*,** "Uncertainty quantification utilizing similarity evaluation between 3D surface topography measurements", Special Issue: *Advances in Data Analytics for Manufacturing Quality Assurance, Mathematics* (IF 2.592, Q1), *12(5):669(2024).* https://doi.org/10.3390/math12050669
2. Safaei, N., Seyedekrami, S., Talafidaryani, M., Masoud, A., **Wang, S. D. $^{+}$,** Moqri, M., **Li, Q.,** and Zhang, W. L., "E-CatBoost: An efficient machine learning framework for predicting ICU mortality using the eICU collaborative research database", *PLoS ONE (Impact factor (IF) 2023: 3.752, Q1),* 17(5): e0262895 (2022). https://doi.org/10.1371/journal.pone.0262895

3. **Li, Q**.*, **Liu, L. J.** +**, Li, T. Q.** +**,** and **Yao, K. H.** +, "Bayesian change-points detection assuming power-law process in the recurrent-event context", *Communications in Statistics Part B: Simulation and Computation (IF 1.118, Q3), 1–23 (2021).* https://doi.org/10.1080/03610918.2021.2006711
4. **Jiang, Y. Q.** +**, Wang, S. D.** +**,** Qin, H. T., Li, B. W., and **Li, Q.*,** "Similarity quantification of 3D surface topography measurements via Fourier transform", *Measurement (IF 5.131, Q1),* 110207 (2021). https://doi.org/10.1016/j.measurement.2021.110207
5. **Wang, S. D.** +**,** Zhang, X., Zheng, Y., Li, B. W., Qin, H. **T., and Li, Q.***, "Similarity evaluation of 3D surface topography measurements", *Measurement Science and Technology (IF 2.046, Q2),* 32:125003 (2021). https://doi.org/10.1088/1361-6501/ac1b41
6. Zhang, X., Shen, W. J., Suresh, V., Hamilton, J., Yeh, L. H., Jiang, X. P., Zhang, Z., **Li, Q.,** Li, B. W., Rivero, I. V., and Qin, H. T., "In-situ monitoring of direct energy deposition via structured light system and its application in remanufacturing", *The International Journal of Advanced Manufacturing Technology (IF 3.226, Q1),* 116: 959–974 (2021). https://doi.org/10.21203/rs.3.rs-278338/v1
7. **Jiang, Y. Q.** +**, Li, Q.***, Trevisan, G, Linhares, D., and MacKenzie, C., "Investigating the relationship of porcine reproductive and respiratory syndrome virus RNA detection between adult/sow farm and wean-to-market age categories", *PLoS ONE (IF 3.752, Q1),* 16:e0253429 (2021). https://doi.org/10.1371/journal.pone.0253429
8. Zheng, Y., Zhang, X., **Wang, S. D.** +**, Li, Q.,** Qin, H. T., and Li, B. W., "Similarity evaluation of topography measurement results by different optical metrology technologies for additive manufactured parts", *Optics and Lasers in Engineering (IF 4.059, Q1),* 126: 105920 (2021). https://doi.org/10.1016/j.optlaseng.2019.105920
9. Zheng Y., **Wang, S. D.** +**, Li, Q.**, and Li, B. W., "Fringe projection profilometry by conducting deep learning from its digital twin", *Optics Express (IF 3.833, Q1),* 28(24): 36568-36583 (The first two authors contributed equally) (2020). https://doi.org/10.1364/OE.410428
10. Allen, M. L., **Wang, S. D.** +**,** Olson L. O., **Li, Q.,** and Miha Krofel, "Counting cats for conservation: seasonal estimates of leopard density and drivers of distribution in the Serengeti", *Biodiversity and Conservation (IF 4.296, Q1),* 29: 3591-3608 (2020). https://doi.org/10.1007/s10531-020-02039-w
11. **Li, Q.**, Guo, F., and Inyoung, K., "A non-parametric Bayesian change-point detection method in the recurrent-event context", *Journal of Statistical Computation and Simulation (IF 1.422, Q2),* 90: 2949-2968 (2020). https://doi.org/10.1080/00949655.2020.1792907
12. Zhang, X., Zheng, Y., **Wang, S. D.** +**, Li, Q.**, Li, B. W., and Qin, H. T., "Correlation approaches for quality assurance of additive manufactured parts based on optical metrology", *Journal of Manufacturing Processes (IF 5.684, Q1),* 53: 310-317 (2020). https://doi.org/10.1016/j.jmapro.2020.02.037
13. **Li, Q.***, **Yao, K. H.** +**,** and **Zhang, X. Y.** +, "A change-point detection and clustering method in the recurrent-event context", *Journal of Statistical Computation and Simulation (IF 1.422, Q2),* 90 (6): 1131-1149 (2020). https://doi.org/10.1080/00949655.2020.1718149

14. Allen, M. L., Norton, A. S., Stauffer, G., Roberts, N., **Luo, Y. S.** [+]**, Li, Q.** [+], MacFarland, D., and Van Deelen, T. R., "A Bayesian state-space model using age-at-harvest data for estimating the population of black bears (Ursus americanus) in Wisconsin", *Scientific Reports (IF 4.996, Q1)*, 8 (1): 12440 (2018). https://doi.org/10.1038/s41598-018-30988-4
15. **Li, Q.**, Guo, F., Inyoung, K., Klauer, S., and Simons-Morton, B., "A Bayesian finite mixture change-points model for novice teenage driving risk", *Journal of Applied Statistics (IF 1.439, Q2),* 45: 604-625 (2018). https://doi.org/10.1016/j.aap.2017.08.007
16. **Li, Q.,** Guo, F., Klauer, S., and Simons-Morton, B., "Evaluation of risk change-point for novice teenage drivers", *Accident Analysis & Prevention (IF 6.489, Q1)*, 108: 139-146 (2017). https://doi.org/10.1080/02664763.2017.1288202
17. Gibbons, R., Guo, F., Du, J. H., Medina, A., Terry, T., Lutkevich, P., and **Li, Q.,** "Approaches to adaptive lighting on roadways", *Transportation Research Record: Journal of the Transportation Research Board (IF 2.06, Q2)*, 2485: 26-32 (2015). https://doi.org/10.3141/2485-04
18. Prussin, A. J., **Li, Q.**, Malla, R., Ross, S. D., and Schmale, D. G., "Monitoring the long distance transport of fusarium graminearum from field-scale sources of inoculum", *Plant Disease (IF 4.438, Q2)*, 98 (4): 504-511 (2014). https://doi.org/10.1094/PDIS-06-13-0664-RE
19. Guo, F., **Li, Q.**, and Rakha, H., "Multi-state travel time reliability models with skewed component distributions", *Transportation Research Record: Journal of the Transportation Research Board (IF 2.06, Q2),* 2315: 47-53 (2012). https://doi.org/10.3141/2315-05

Manuscripts in Revision

20. Chen, J. D., Wen, Y. X., **Li, Q.,** Liu, F., "M3T-LM: Multi-modal multi-task learning model for jointly predicting patient length of stay and mortality", *IEEE biomedical and health informatics, (1st round revision).*
21. **Wang, S. D**. [+], **Li, Q.,** and Zhang, W. L., "MD-manifold: A medical distance based manifold learning approach for heart failure readmission prediction", *Information Systems Research (IF 8.55, Q1) (3rd round revision)*
22. **Wang, S. D.** [+]**, Jiang, Y. Q.** [+]**, Li, Q.,** and Zhang, W. L.**,** "ICU mortality prediction: can we do better? A new data science framework based on stochastic signal analysis techniques", *INFORMS Journal on Computing (IF 2.5, Q1) (1st round revision)*

Submitted Manuscripts

23. **Jiang, Y. Q.** [+]**, Huang, Y. L., Li, Q.,** and Zhang, W. L.**,** "Urgency Prediction for Medical Laboratory Tests through Optimal Sparse Decision Tree", *JMIR*
24. **Wang, S. D.** [+]**, Jiang, Y. Q.** [+]**, Li, Q.,** and Zhang, W. L.**,** "ICU outcome predictions using real-time signals with wavelet-transform-based additive convolutional neural network", *Decision Support Systems*
25. **Wang, S. D.** [+]**, Jiang, Y. Q.** [+]**, Li, Q.,** He, C., and Zhang, W. L.**,** "A transfer learning approach for predicting low-frequency medical laboratory test outcomes", *Journal of the American Medical Informatics Association*
26. **Wang, S. D.** [+]**, Jiang, Y. Q.** [+]**, Li, Q.,** and Zhang, W. L., "Real-time ICU

Outcome Prediction Using Stochastic Signal Analysis Techniques and Readily Available Bedside Monitor Vital Sign Data", *Journal of Medical Internet Research*

27. **Wang, S. D.[+], Jiang, Y. Q.[+], Li, Q.,** and Zhang, W. L., "Timely ICU Outcome Prediction Utilizing Stochastic Signal Analysis and Machine Learning Techniques with Readily Available Vital Sign Data", *Journal of Biomedical and Health Informatics*
28. Lei, X., MacKenzie, C, and **Li, Q.,** "Modeling and forecasting mass shootings using Poisson regression and change-point models", *Journal of Quantitative Criminology*

Peer-Reviewed Conference Proceedings (Full Papers) & Government Report (13 have coauthors in underrepresented groups)

1. Aldrin, J., **Li, Q.,** Engle, B., Kumar, P., Lu, M.Y., Song, J.M, , Mohamed Subair, M., Wendt, S., "Review of Progress on Methods for Model-Assisted Probability of Detection (MAPOD) Evaluation with Reduced Empirical Testing", *Proceedings of the ASNT Research Symposium* (2024)
2. Gansemer-Topf, A., Jiang, S., Ruel, N., Kremer, O. G., Li, Q., and Liang, Y.Q., "Crossing the threshold: Improving STEM graduate student education through professional skills training", *Proceedings of the American Society for Engineering Education (ASEE) Virtual Conference (20-25% acceptance rate)* (2024).
3. **Liu, L. J.[+],** Krishnamurthy, A., Holland, S., **Li, Q.,** Zhang, Z., "Deforming CAD models to match as-built geometry to facilitate fusion of non-destructive evaluation measurements", *Proceedings of the IISE Annual Conference & Expo (2023)*
4. Noh, J. M., Tekeste, M. Z., Eisenmann, D., **Liu, L. J.[+], Li, Q.,** and Hatfield J., "Digitized soil tilth quality for seed-bed precision management", *American Society of Agricultural and Biological Engineers (ASABE)* (2023)
5. Gansemer-Topf, A., Jiang, S., Ruel, N., Kremer, O. G., **Li, Q.,** Mort, R., Liang, Y.Q., and Cheng, D., "Implementing project management skills training through thesis research within STEM graduate education", *Proceedings of the American Society for Engineering Education (ASEE) Virtual Conference (20% acceptance rate)* (2023).
6. **Jiang, Y. Q.[+], Wang, S. D.[+], Li, Q.**, and Zhang, W. L., "ICU outcome prediction using real-time signals with wavelet-transform-based convolutional neural network", *Proceedings of the Hawaii International Conference on System Sciences (HICSS) (~50% acceptance rate)* (2022).
7. **Liu, L. J.[+],** Shen, W. J., **Li, Q.,** Krishnamurthy, A., Holland, S., Zhang, Z., "NDE data fusion between inconsistent geometries", *Proceedings of* the *30th American Society for Nondestructive Testing (ASNT) Research Symposium* (2022).
8. **Liu, L. J.[+],** Shen, W. J., Jiang, Y. Q., Jiang, X. P., **Li, Q.,** Zhang, Z., Qin, H. T., "Recurrent neural network based melt pool temperature prediction for directed energy deposition process"*, Proceedings of the 30th ASNT Research Symposium* (2022).
9. Gansemer-Topf, A., Jiang, S., Ruel, N., Kremer, O. G., Li, Q., Mort, R., and Cheng, D., "Assessing the First Year of GAPS (Graduates for Advancing

Professional Skills) Program", *Proceedings of the American Society for Engineering Education (ASEE) Virtual Conference (20-25% acceptance rate)* (2021)

10. Zhang, X., Shen, W. J., Suresh, V., Hamilton, J., Yeh, L. H., Jiang, X. P., Zhang, Z., **Li, Q.,** Li, B. W., Rivero, I. V., and Qin, H. T., "In-situ monitoring of direct energy deposition via structured light system and its application in remanufacturing", *Proceedings of the 49th SME North American Manufacturing Research Conference (NAMRC 49) (~81% acceptance rate)* (2021)
11. Shen, W. J., Zhang, X., Jiang, X. P., Yeh, L. H., Zhang, Z., **Li, Q.,** Li, B. W., and Qin, H. T., "Surface extraction from micro-computed tomography data for surface metrology of additive manufacturing", *Proceedings of the 49th SME North American Manufacturing Research Conference (NAMRC 49) (~81% acceptance rate)* (2021)
12. **Wang, S. D**.$^{+}$, **Li, Q.,** and Zhang, W. L., "MD-manifold: A medical distance based manifold learning approach for heart failure readmission prediction", *Proceedings of the Hawaii International Conference on System Sciences (HICSS), Virtual (~50% acceptance rate)* (2021)
13. Jiang, S., Mort, R., Gansemer-Topf, A., **Li, Q.,** Ruel, N., and Kremer, O. G., "Implementing professional skills training in STEM: A review of the literature", *Proceedings of the American Society for Engineering Education (ASEE) Virtual Conference (20-25% acceptance rate)* (2020)
14. Jiang, S., Mort, R., Gansemer-Topf, A., **Li, Q.,** Ruel, N., and Kremer, O. G., "A community of practice approach to integrating professional skills training with graduate thesis research", *Proceedings of the American Society for Engineering Education (ASEE) Virtual Conference (20-25% acceptance rate)* (2020)
15. Rajabalizadeh, A., **Wang, S. D.**$^{+}$**,** Javadi, M., Safaei, N., Talafidaryani, M., Zhang, W. L., **Li, Q.,** and Moqri, M., "In-depth evaluation of APACHE scoring system using eICU database", *Proceedings of the International Conference on Information Systems (ICIS) (*~28% acceptance rate) (2020).
16. Suresh, V., Zheng, Y., Zhang, X., **Wang, S. D.**$^{+}$, Qin, H. T., **Li, Q.,** and Li, B. W., "Similarity evaluation of 3D topological measurement results using statistical methods", In *Proceedings of SPIE 11397, Dimensional Optical Metrology and Inspection for Practical Applications IX*, 113970A (2020)
17. Zhang, X., Suresh, V., Zheng, Y., **Wang, S. D.**$^{+}$**, Li, Q.,** Lyu, H., Li, B. W., and Qin, H. T., "Surface roughness measurement of additive manufactured parts using focus variation microscopy and structured light system", *Proceedings of the ASME International Manufacturing Science and Engineering Conference (MSEC) (~24% acceptance rate)* (2019)
18. Gibbons, R., Guo, F., Du, J. H., Medina, A., Terry, T., Lutkevich, P., and **Li, Q.,** "Linking roadway lighting and crash safety", *Proceedings of the Transportation Research Board 94th Annual Meeting.* (The Transportation Research Board meeting is the most influential meeting on transportation research. Papers are peer reviewed with about a 50% acceptance rate.) (2015)
19. Gibbons, R., Guo, F., Medina, A., Terry, T., Du, J. H., Lutkevich, P., and **Li, Q.,** "Design criteria for adaptive roadway lighting", Report no. FHWA-HRT-14-051, Federal Highway Administration (2014)

Manuscripts in Preparation

- **Jiang, Y. Q.** [+]**, Wang, S. D.** [+]**, Li, Q.**, and Zhang, W. L., "ICU outcome prediction using real-time signals with wavelet transform-based convolutional neural network"
- **Jiang, Y. Q.** [+]**, Wang, S. D.** [+]**, Li, Q.**, and Zhang, W. L., "Interpretable machine learning based on wavelet transform for mortality predictoin", JAMIA
- **Wang, S. D.** [+]**, Jiang, Y. Q.** [+]**,** Zhang, W. L., **Li, Q.**, He, C. "Anomaly prediction for scarce-resource-lab-test prediction using meta-learning"
- **Liu, L. J.** [+], Krishnamurthy, A., Holland, S., Li, Q., Zhang, Z., "Evaluating distortion between as-designed and as-built geometries from a superposition of resonant mode shapes", In *the IISE Annual Conference*, Canada, May 2024
- **Liu, L. J.** [+]**, Li, Q.,** Krishnamurthy, A., Holland, S., Zhang, Z. (2022). "NDE data fusion between inconsistent geometries",
- **Liu, L. J.** [+]**,** Arterberry, B., and **Li, Q.**, "Biclustering in the polysubstance use"
- Noh, J. M., **Liu, L. J.** [+]**, Li, Q.,** Tekeste, M., "Surface roughness comparison in agricultural soils using LIDAR scans" (First two authors contributed equally)

Grants

(Investigators without indicating institution are from ISU)
Federal (total $1,621,544, my share $277,150, my share as PI $149,994*)*

1. NSF, PI, CMMI-Manufacturing Systems Integration (MSI) & Engineering Design and Systems Engineering, "CADMap: Creating Mapped Solid Models of Deformed As-Manufactured Geometries that Link to an Original Reference" (Award #: 2332264, among the first group of proposals funded under the new MSI program); Co-PIs: Stephen Holland (AERE), Adarsh Krishnamurthy (ME), Yiliang Liao (IMSE), 11/1/2023 – 10/31/2026. (total $599,973, my share 25%: $149,994)
2. Department of the Navy (DON), Co-PI, STEM Education and Workforce Program administered by the Office of Naval Research (ONR), "Navy engineering analytics program (NEAP): Providing engineering students with navy expertise"; PI: Cameron MacKenzie; Co-PIs: Brendan Devine, Michael Dorneich, Michael Helwig, Sarah Ryan, 04/2022 – 04/2025. (total $521,593, my share 10%: $52,159)
3. NSF, Co-PI, Innovations in Graduate Education (IGE), "Learning communities of graduates for advancing professional skills (GAPS): Integrate professional skill training with thesis research" (Award #: 1954946); PI: Shan Jiang (MSE); Co-PIs: Gül E. Okudan Kremer, Ann M. Gansemer-Topf, Nigel F. Reuel (CBE), 07/2020 – 06/2024. (total $499,978, my share 15%: $74,997)

Non-federal external

1. Alzheimer's Association, PI at ISU, Subcontract from Oklahoma State Univ. (PI: Guiping Hu), "Biochemical and neural differences between super-agers and decliners", 10/2023 – 5/2025 (total $15,000)

Internal (total $873,285, my share $250,282)

1. Center for Nondestructive Evaluation (CNDE), Co-PI, "Model-Assisted Probability of Detection (MAPOD) Initiative"; other PIs: John Aldrin, Brady Engle, Pulkit Kumar, Mingyang Lu, Jiming Song, Mohamed Subair, Scott Wendt, 02/01/2024 – 01/31/2025. (total $250K, my share: $30K)
2. Center for Nondestructive Evaluation (CNDE), Co-PI, "NDE data fusion

between inconsistent geometries"; PI: Stephen Holland (AERE); Co-PIs: Adarsh Krishnamurthy (ME), and Zhan Zhang, 08/2022 – 12/2023. (total $60K, my share 75%: $45K)

3. New England Statistical Society travel grant, 6/2023. (total $458)
4. Multidisciplinary Digital Publishing Institute (MDPI) travel grant, 5/2023. (total $325.48)
5. Debbie and Jerry Ivy College of Business, Co-PI, Research Bootstrap Grants (RBG); Wenli Zhang (PI):
    1) "Diagnosis of Attention-Deficit/Hyperactivity Disorder using Multi-Modal and Multi-Channel Polysomnography Data: A Multimodal Data Fusion Machine Learning Framework", 04/2024– 04/2025 (total $6,000, my share 75%: $5,000)
    2) "Intensive care unit outcome prediction using real-time signals", 04/2023 – 04/2024. (total $6,000, my share 100%: $6,000)
    3) "Unravel underutilized, and sparse clinical records for accurate risk prediction", 04/2021 – 04/2023. (total $12,000, my share 100%: $12,000)
6. Office of the Vice President for Research, Co-PI, The presidential cost-sharing program for research tools (CoSPRT): "Acquisition of a mobile, robotic arm 3D concrete printer to support research and advance applications of additive manufacturing in construction"; PI: Kejin Wang; Co-PIs: Matthew Frank, Reza Zoughi, Paul Kremer, 04/2022 – 04/2024. (total $401,758, my share 20%: $80,352; Transferred)
7. Debbie and Jerry Ivy College of Business, Co-PI, Research Mini-Grants, Wenli Zhang (PI): (total $6,000, my share 100%: $6,000)
    1) "Predicting ICU Length of Stay Based on Vital Signs only Using a Novel Wavelet Deep Learning Model", 01 – 06/2024. (total $750)
    2) Seven others since 2020
8. IMSE, PI, Exploratory Research Program (ERP):
    1) "Bovine tuberculosis risk prognosis by combining network analysis and machine learning"; Co-PIs: Wenli Zhang; Tavis Anderson (USDA), Paola Boggiatto (USDA), Jason Lombard (USDA), 08 – 12/2022. (total $16,000, my share 100%: $16,000)
    2) "Data Analytics Proposal: Asthma management and prevention using machine learning, natural language processing and big data"; Wenli Zhang (Co-PI), 05 – 08/2019. (total $7,800, my share 100%: $7,800)
    3) "Investigation of correlations behind point cloud data between structure light scanning system and depth from defocus system for surface roughness analysis"; Hantang Qin (Co-PI), 01 – 05/2019. (total $14,847, my share 50%: $7,424)
9. IMSE, Co-PI, Exploratory Research Program (ERP):
    1) "Data Analytics Proposal: Detecting abnormalities in the swine disease re-porting system"; Cameron MacKenzie (PI), and Daniel Linhares (Co-PI), 01 – 05/2020. (total $16,000, my share 100%: $16,000)
    2) "Data Analytics Proposal: Statistical approaches for firearms and toolmark identification – 3D surface topography comparison methods in forensics"; Hantang Qin (PI), 08 – 12/2019. (total $14,847, my share 50%: $7,424)

10. Engineering-LAS Online Learning (ELO) course development grants, PI, "Engineering Problem Solving with R course for on-line delivery", 01/2019 – 06/2020. (total $9,000, my share 100%: $9,000)

Honors & Awards

External

- M&D Best Track Paper Award of the Manufacturing and Design Division (an award which recognizes excellence in the IISE annual conference proceedings under the M&D Division), "In-situ monitoring of direct energy deposition via structured light system and its application in remanufacturing industry", IISE, 2021
- Taylor Technical Talent Award (an award which recognizes superior application papers), "Impact of Roadway Lighting on Crash Safety", The Illuminating Engineering Society of North America (IES), 2015

Internal

- Building a World of Difference Faculty Fellows in Engineering Award ($22,500), 07/2022 – 06/2025
- Omurtag Research Excellence Award (IMSE), 2024

Awards for advisees

- Research Excellence Award, Yiqun Jiang, ISU, Fall 2023
- Graduate Recruiting Initiative Grant, Qizheng Xia, ISU, 2023 ($16,000)
- Reihman Graduate Scholar Award ($3,000)**,** Qizheng Xia, ISU, 2023
- Research Excellence Award, Shaodong Wang, ISU, 2022
- R. Bruce Thompson Graduate Fellowship, Lijie Liu, CNDE (ISU), 2022 -2024 ($10,000)
- **First place** in the 20th Data Mining Cup International Data Mining Competition, prudsys AG | Member of the GK Software Group, Shaodong Wang (against 149 teams from 114 universities in 28 countries on the subject of fraud detection), Berlin, 2019
- Reihman Graduate Scholar Award ($3,000)**,** Yiqun Jiang, ISU, 2019
- Reihman Graduate Scholar Award ($3,000), Shaodong Wang, ISU, 2018

Teaching Experience

Iowa State University, IMSE

(unless indicated, all the courses are 3 credits)

New Course Developed

- IE 519 **–** "Simulation Modeling and Analysis", Spring 2025
- MSE/IE/CBE 580X **–** "Introduction of Project Management for Thesis Research" (A component of the NSF IGE grant #1954946), 1 credit, co-developed with other PIs, Fall 2020 (Student evaluation above department average)
- IE 420/520X **–** "Engineering Problem Solving Using R", physical and online, Spring 2019 (Adapted from John Gillet's course from Univ. of Wisconsin-Madison.)

Existing Course

- IE/STAT 533**–** "Reliability", Spring 2024 (Student evaluation: 4.8/5)

- MSE/IE/CBE 580X – "Introduction of Project Management for Thesis Research" (A component of the NSF IGE grant #1954946), co-taught with other PIs, taught twice per year, Spring 2020 – present (Best evaluation: 4.9/5)
- IE 420/520 – "Engineering Problem Solving Using R", taught once or twice per year, Fall 2019 – present (Best evaluation: 4.8/5)
- IE 361 – "Statistical Quality Assurance", taught once per year, Fall 2018 – present (Best evaluation: 4.0/5)

University of Wisconsin-Madison, Dept. of Statistics

New Courses Developed

- STAT 679 – "Bayesian Computing", Spring 2018 (evaluation: 4/5)
- STAT 479 – "Applied Bayesian Methods", Fall 2016 (evaluation:4.55/5; Scores above 4.25 indicate excellent teaching)

Existing Courses

- STAT 327 – "Data Analysis with R", taught introductory, intermediate and advanced "data analysis with R" four times; supervised other instructors, 2017 – Spring 2018
- STAT 371 – "Introductory Applied Statistics for the Life Sciences, taught three sessions, Spring 2016 – 2017

Virginia Tech, Dept. of Statistics

- STAT 3704 – "Statistics for Engineering Applications, taught five sessions (Best evaluation: 5.54/6), 2011 – 2015

Student Advising

Iowa State University

(# indicates students from underrepresented minority groups)

As Ph.D. Advisor (total of 4, 1 underrepresented, 1 graduated)

Name	(Expected) graduation	Initial job placement	Thesis
Qizheng Xia	May 2027		
Lijie Liu	May 2025	-	-
Yiqun Jiang# (Harold and Shirley Reihman Graduate Scholar)	May 2024	Mayo Clinic postdoc	-
Shaodong Wang (Harold and Shirley Reihman Graduate Scholar)	Dec. 2022	Facebook research scientist	Novel clinical outcome models using heterogeneous electronic health record (EHR) data

As Ph.D. Co-Major Advisor (total of 3, 3 underrepresented)

Name	(Expected) graduation	Initial job placement	Thesis	Major advisor

Saiara Samira Sajid[#]	May 2024			Guiping Hu (Oklahoma State Univ.)
Parvin Mohammadi arvejeh[#]	May 2024			Guiping Hu
Zahra Khalilzadeh[#]	May 2024			Lizhi Wang (Oklahoma State Univ.)

As Ph.D. Dissertation Committee Member (total of 24, 10 underrepresented, 9 graduated)
Jia-Hao He, Jong-Myung Noh (Agricultural Engineering, 2024)
Seyedshayan Tohidi, Atefeh Anisi[#], Mohammad Mohammadzadeh, Ghazal Shah Abadi (IMSE, expected 2026)
Farzaneh Ahmadi[#] (ECPE, expected 2026)
Li-Hsin Yeh, Yahya Tawhari[#] (ME, expected 2025)
Mehnuma Tabassum[#], Zheng Ni (IMSE, expected 2025)
Daoping Wu (Computer Science, expected 2024)
Gaurav Arwade, Yanbing Chang, Pallavi Dubey[#] (IMSE, expected 2024)

Reyhaneh Bijari[#], Luning Bi, Chih-Yuan Chu, Hanisha Vemireddy[#], Lei Xue[#] (IMSE, 2022)
Samira Karimzadeh[#], Mohsen Shahhosseini (IMSE, 2021)
Bahareh Bazargani[#], Sharif Gushgari, Ning Zhang[#] (Dept. of Civil, Construction and Environmental Engineering (CCEE), 2020)
Zhengyang Hu (IMSE, 2019)

As M.S. Thesis Committee Member (total of 5, 1 underrepresented, 3 graduated)
Jia-Hao He, Jong-Myung Noh (Agricultural Engineering, 2024)
Li-Hsin Yeh (Mechanical Engineering, 2021)
Wasama Abdullah[#] (CCEE, 2020)
Luning Bi (IMSE, 2019)

IMSE Undergraduate Research Assistantships (URA) (total of 6, 2 underrepresented)
Katie Wyatt[#], 01– 04/2023
Chase Cagle, William Vandyck, 01– 04/2022
Yajaira Navarro[#], 09/2021 – 12/2021
Hunter Barnhart, Vandi Hartanto, 09/2019 – 05/2020

As the supervisor of Undergraduate Honors Program (total of 1, 1 underrepresented)
Katie Wyatt[#] (IMSE, Spring 2023)

Other undergraduate students
Shuolin Hu (Dept. of Statistics, Fall 2020)

University of Wisconsin-Madison, Dept. of Statistics
Students from the Master of Data Science Program (total of 7, 3 from underrepresented groups, 2 became my Ph.D. advisees)
Yifan Mei[#], Shaodong Wang, Yanshi Luo[#], Kehui Yao, Xinyu Zhang[#], Lijie Liu, Tianqi Li

Professional Service

- Proposal review panelist
  - National Science Foundation (NSF) (Reviewed 32 full proposals)
    1) ENG/CMMI/ Manufacturing Systems Integration, 2024
    2) Computer & Information Science & Engineering (CISE)/Information and Intelligent Systems (IIS), 2022, virtual
    3) Mathematical and Physical Sciences (MPS), 2022, virtual
    4) CISE, 2022, virtual
    5) ENG/CMMI/Advanced Manufacturing, 2022, virtual
    6) ENG/CMMI/Dynamics, Control and Systems Diagnostics (DCSD), 2020, Alexandria, VA
  - Swiss National Science Foundation (SNSF) (Switzerland's largest research funding organization), 2021
- Editorial service
  - Guest Editor, the Special Issue "Advances in Data Analytics for Manufacturing Quality Assurance" of Mathematics (Rank Q1; IF2021: 2.592), Nov 2022 – present
  - Associate editor, The New England Journal of Statistics in Data Science, Jan 2022 – present
- Joint workshop organizing, "Advanced manufacturing of flexible electronics and nondestructive testing for quality assurance", IISE Annual Conference & University of Washington, Seattle, WA, 2022
- Math senior honors thesis committee member, Sweet Briar College (A women's college in VA), 2021
- Invited session chair
  - "Statistical machine learning in engineering applications", IISE Annual Conference, Virtual, 2021
  - "Data analytics and statistical learning with engineering & healthcare applications", IISE Annual Conference, Virtual, 2021
- Session chair:
  - Forecasting and Prediction in Healthcare Populations, *IISE Annual Conference*, New Orleans, 2023
  - Healthcare Informatics, *IISE Annual Conference*, Seattle, 2022
  - *JSM*, Virtual, Aug 2020;
  - *The 1st Midwest Statistical Machine Learning Colloquium*, May 2018, Ames, IA
  - *The 2nd Midwest Statistical Machine Learning Colloquium*, May 2019, Ames
- Journal referee (in alphabetical order, reviewed 84 manuscripts in total till 2022):
  1) Accident Analysis & Prevention (IF 4.993);
  2) Algorithms (IF 2.36);
  3) Annals of Applied Statistics (Q1; IF 1.959)

4) Big Data and Cognitive Computing (IF 3.90);
5) Diagnostics (IF 3.992);
6) Electronics (IF 2.690);
7) Environmental and Ecological Statistics (IF 2.13);
8) Expert Systems With Applications (IF 6.954);
9) Healthcare (IF 3.16);
10) IEEE Transactions on Reliability (IF 5.87);
11) IEEE Transactions on Signal Processing (IF 5.23);
12) International Journal of Data Science (IF 2.4)
13) International Journal of Environmental Research and Public Health (Q1, IF 5.4)
14) Journal of Applied Statistics (IF 1.013);
15) Journal of Intelligent Manufacturing (IF 8.3)
16) Journal of Statistical Computation and Simulation (IF 1.424);
17) Journal of Quality Technology (IF 3.946);
18) Life (Q2, IF 3.251);
19) Measurement (IF 5.131);
20) Precision Engineering (IF 3.156);
21) Stat (IF 0.69);
22) Statistica Sinica (IF 1.261);
23) Statistical Theory and Related Fields (IF 0.3);
24) Technometrics (IF 2.333);
25) Transportmetrica A: Transport Science (IF 3.496);
26) Transportation Research Record: Journal of the Transportation Research Board (IF 1.56);
27) Others: Finance Big Data: Management, Analysis, and Applications, A Special Issue of International Journal of Electronic Commerce; Chemometrics and Intelligent Laboratory Systems; International Journal of Psychology and Counselling; International Journal of Sociology and Anthropology; Sankhyā: The Indian Journal of Statistics, Series B;

- Conference referee:
  - ♦ IISE Annual Conference & Expo Data Analytics and Information Systems Division (DAIS), 2024
  - ♦ INFORMS Data Mining Best Paper Competition by INFORMS DATA Mining Society, 2022, 2023
  - ♦ 48th, 49th, and 52th SME North American Manufacturing Research Conference, 2020, 2021
  - ♦ IISE Annual Conference, 2020
  - ♦ American Society for Engineering Education (ASEE) North Midwest Section Annual Conference, 2020

Institutional Service

College of Engineering

- Explorative Research Program (ERP) proposal reviewer, 2024
- IMSE Chair search committee, Aug. 2021 – May 2022

Dept. of IMSE at ISU

- ERP proposal reviewer, 2021– present

- Tenure track faculty search committee, Aug. 2022 – Mar. 2023
- Ad hoc qualify exam committee, twice per year, Spring 2022 – present
- Diversity and Inclusion committee, Jan. 2019 – present
- Operational research/data analytics resource management committee, Aug. 2020 – present
- Teaching lab coordinator search committee, May 2019
- Faculty judge:
  - IMSE Research Symposium, since 2019
  - IE 361 Poster Session, since 2019
- "Professors Without PowerPoints" in-person conversations with students in IE 101 (Industrial Engineering Profession), twice per year, 2020 – present

Dept. of Statistics at University of Wisconsin-Madison,
Undergraduate committee, Aug. 2017 – May 2018

Others
- Participation in the Program for Women in Science and Engineering (WiSE):
  - Go Further Conference Presenter (a STEM conference for female-identifying students in grades 8-10.), Nov. 2023
  - Mentor to a female undergraduate student in the U.S. Diversity course WiSE 201x "Foundations in Development for Women in STEM", Spring 2023
- Faculty judge: 6th annual Three Minute Thesis (3MT) Competition, Fall 2021
- Preproposal Review Committee member, internal submission for the NSF EPSCoR, Nov. 2019

Presentations (Student under my supervision in **bold**$^{+}$, Corresponding author *)

Invited Talks

1. "Novel clinical outcome prediction models using heterogeneous electronic health record data", *Pushing the Boundary of Data Science through Statistical Modeling and Inference Conference*, Virginia Tech, July 2023
2. "A new interpretable real-time ICU mortality prediction method", In the *Institute of Industrial and Systems Engineers (IISE) Annual Conference*, New Orleans, May 2023
3. "Novel clinical outcome prediction models using heterogeneous electronic health record data", Milton S. Hershey Medical Center Seminar, Penn State Univ., April 2023
4. "Similarity evaluation between 3D surface topography & measurement studies based on this evaluation in advanced manufacturing", IMSE Dept. Seminar, ISU, April 2022
5. "A non-parametric Bayesian change-point method for detecting driving risk changes", In *the IISE Annual Conference*, Virtual, May 2020
6. "Similarity evaluation of 3D surface topography measurements in additive manufacturing", In *the IISE Annual Conference*, Virtual, May 2020
7. "Similarity evaluation of 3D surface topography measurements in additive manufacturing", In *National Institute of Standards and Technology (NIST)*, Gaithersburg, MD, Feb. 2020

8. "Change-points detection in the recurrent-event context via Bayesian inference",
   1) Mathematical Sciences Dept. Seminar, The University of Texas at Dallas, Feb 2022, virtual
   2) IMSE Dept. Seminar, ISU, Sep. 2018
   3) Statistics Dept. Seminar, ISU, Sep. 2018

Podium presentations

1. **Liu, L. J.** +, Krishnamurthy, A., Holland, S., Li, Q., Zhang, Z., "Evaluating distortion between as-designed and as-built geometries from a superposition of resonant mode shapes", In *the IISE Annual Conference*, Canada, May 2024
2. **Jiang, Y. Q.** +**, Wang, S. D.** +**, Li, Q.,** and Zhang, W. L., "Urgency Prediction for Medical Laboratory Tests through Optimal Sparse Decision Tree", In *the IISE Annual Conference*, Canada, May 2024
3. **Jiang, Y. Q.** +**, Wang, S. D.** +**, Li, Q.,** and Zhang, W. L., "ICU outcome predictions using real-time signals with wavelet-transform-based additive convolutional neural network", In *the IISE Annual Conference*, New Orleans, May 2023
4. **Wang, S. D.** +**, Jiang, Y. Q.** +**,** He., C., **Li, Q.,** and Zhang, W. L., "A new transfer learning method for lab outcome prediction with limited training data", In *the IISE Annual Conference*, New Orleans, May 2023
5. **Liu, L. J.** +**,** Holland, S., Krishnamurthy, A., **Li, Q.,** Zhang, Z, "Deforming CAD models to match as-built geometry to facilitate fusion of nondestructive evaluation data", In *the IISE Annual Conference*, New Orleans, May 2023
6. **Liu, L. J.** +**,** Shen, W. J., Jiang, X. P., **Li, Q.,** Qin, H. T., "Melt pool temperature prediction in additive manufacturing with the data-driven models", In *the IISE Annual Conference*, Seattle, May 2022
7. Shen, W. J., **Liu, L. J.** +**,** Jiang, X. P., Zhang, Z., **Li, Q.,** Qin, H. T., "Multi-modal in-situ nondestructive testing of direct energy deposition and AI-enabled data fusion for quality assurance in remanufacturing", In *the IISE Annual Conference*, Seattle, May 2022
8. **Wang, S. D.** +**, Li, Q.,** and Zhang, W. L., "MD-manifold: A medical distance based manifold learning approach for heart failure readmission prediction", In *the IISE Annual Conference*, Seattle, May 2022
9. **Wang, S. D.** +**, Jiang, Y. Q.** +**, Li, Q.,** and Zhang, W. L., "ICU mortality prediction: can we do better? A new model based on machine learning and stochastic signal analysis techniques", In *the IISE Annual Conference*, Seattle, May 2022
10. **Liu, L. J.** +**,** Li, B. W., Qin, H. T., and **Li, Q.**, "Quantifying different sources of variations by conducting measurement studies based on the similarity scores of surface topography data in a process", In *the IISE Annual Conference*, Virtual, May 2021
11. **Jiang, Y. Q.** +**, Wang, S. D.** +**,** Qin, H. T., Li, B. W., and **Li, Q.**, "Similarity evaluation of 3D surface topography measurements via Fourier transformation", In *the IISE Annual Conference*, Virtual, May 2021
12. **Wang, S.D.** +**,** Zhang, X., Zheng, Y., Li, B.W., and Qin, H.T. **Li, Q.**, "Similarity evaluation of 3D surface topography measurements in additive manufacturing", In *Joint Statistical Meetings (JSM),* Virtual, Aug. 2020
13. **Li, Q.**, Guo, F., Inyoung, K., "A non-parametric Bayesian change-point method

for detecting driving risk changes", In *Mid-Continent Transportation Research Symposium*, Ames, IA, Aug. 2019

14. **Li, Q.**, **Yao, K.H.** +, and **Zhang, X.Y.** +, "A change-point detection and clustering method in the recurrent-event context", In *JSM*, Denver, CO, Jul. 2019
15. **Li, Q.**, Guo, F., Inyoung, K., "A non-parametric Bayesian change-point method for detecting driving risk changes", In *JSM*, Baltimore, MD, Aug. 2017
16. **Li, Q.**, Guo, F., Inyoung, K., Klauer, S., and Simons-Morton, B., "Change-points detection in driving risk by hierarchical Bayesian finite mixture model", In *JSM*, Seattle, WA, Aug. 2015
17. **Li, Q.**, Guo, F., Klauer, S., and Simons-Morton, B., "Detecting the change-point of driving risk for novice teenage drivers in recurrent-event context", In *JSM*, Boston, MA, Aug. 2014

*Posters with **Awards***

1. Best Poster Award 2nd place, **Liu, L. J.** +, Krishnamurthy, A., Holland, S., Li, Q., Zhang, Z., "Deforming CAD models to match as-built geometry to facilitate fusion of non-destructive evaluation measurements", In *IMSE 12th Annual Student Research Symposium*, Ames, IA, 2024
2. Best Poster Award 1st place, **Wyatt, K.** +, **Jiang, Y. Q.** +, Zhang, W.L, Huang, Y.L, **Li, Q.,** "Predicting Urgency of Echocardiograms at Mayo Clinic for Improved Scheduling", In *IMSE 11th Annual Student Research Symposium*, Ames, IA, 2023
3. Best Poster Award 3rd place, Jiang, **Y. Q.** +, **Wang, S. D.** +, Li, Q., and Zhang, W. L., "ICU outcome prediction using real-time signals with wavelet transform-based convolutional neural network", In *IMSE 11th Annual Student Research Symposium*, Ames, IA, 2023
4. People's Choice Poster Award, "ICU outcome prediction using real-time signals with wavelet transform-based CNN", **Jiang, Y. Q.** +, **Wang, S. D.** +, Li, Q., Zhang, W. L., In *IMSE 10th Annual Student Research Symposium*, Ames, IA, 2022
5. Outstanding Poster Award, "Similarity evaluation of 3D surface topography measurements in additive manufacturing", **Wang, S.D**. +, Zhang, X., Zhang, Y., Li, B.W., Qin, H.T., Li, Q., ISU 7th Annual Graduate and Professional Student Conference, 2020
6. Best Poster Award for the IMSE URA Project, "Defect recognition of additive manufactured parts based on CT reconstruction", Tapia, L., **Soo, Y.X.** +, Jiang, L.K., Jiang, X.P., Qin, H.T., Zhang, Z., Li, Q., The IMSE 8th Annual Student Research Symposium, 2020

Other Posters

1. **Liu, L. J.** +, Krishnamurthy, A., Li, Q., Holland, S., "Evaluating distortion between as-designed and as-built geometries from a superposition of resonant mode shapes", in Spring IAB meeting of CNDE, Ames, IA, 2024
2. **Liu, L. J.** +, Holland, S., Krishnamurthy, A., Li, Q., Zhang, Z, "Topology preserving fitting of trimmed NURBS CAD model to deform solids", In *IMSE 11th Annual Student Research Symposium*; in Spring IAB meeting of CNDE, Ames, IA, 2023

3. **Liu, L. J.** [+]**, Vandyck, W.** [+]**, Cagle, C.** [+]**,** Tekeste, M., **Li, Q.,** "Surface roughness comparison in agricultural soils using LIDAR scans", In *IMSE 10th Annual Student Research Symposium*, Ames, IA, 2022
4. **Liu, L. J.** [+]**,** Shen, W. J., **Jiang, Y. Q.** [+]**,** Jiang, X. P., **Navarro, Y.** [+]**,** Zhang, Z., Qin, H. T., **Li, Q.,** "Melt pool temperature prediction based on recurrent neural network for directed energy deposition process", In *IMSE 10th Annual Student Research Symposium*, Ames, IA, 2022
5. Zhang, X., Suresh, V., Zhang, Y., **Wang, S.D.** [+]**, Li, Q.,** Lyu, H., Li, B.W., Qin, H.T., "Surface roughness measurement of additive manufactured parts using focus variation microscopy and structured light system",
   1) Iowa State Research Day, Undergraduate and Graduate Research Symposium of IMSE,
   2) The 2nd Midwest Statistical Machine Learning Colloquium, Ames, IA, 2019;
   3) ASME 2019 International Manufacturing Science and Engineering Conference (MSEC 2019), Erie, PA, 2019
6. **Li, Q.***, **Yao, K.H.** [+]**,** and **Zhang, X.Y.** [+]**,** "A change-point detection and clustering method in the recurrent-event context", In *The First Midwest Statistical Machine Learning Colloquium*, Ames, IA, May 201
7. **Li, Q.**, Guo, F., Inyoung, K., "A non-parametric Bayesian change-point detection method in the recurrent-event context", In *Conference on Predictive Inference and Its Applications*, Ames, IA, May 2018

Consulting Experience

Virginia Tech, Dept. of Statistics

- **Lead** collaborator of Laboratory for Interdisciplinary Statistical Analysis (LISA): effectively supervised 24 collaborative projects to assist researchers from diverse research fields, designed the experiments, proposed appropriate statistical methods, performed analysis, and wrote manuscripts; conducted walk-in consulting and taught short courses on statistics; achieved co-authorship out of one project, 2012, Summer 2014
- Associate collaborator of LISA: worked on teams with the LISA lead collaborators on 17 projects, 2011, Spring 2012

Workshops

- The 30th ASNT Research Symposium, St. Louis, MO, June 2022
- DELTA Junior Faculty Institute program, April 2022
- Teaching workshops
  - ♦ National Effective Teaching Institute (NETI)-3 online, Spring 2021
  - ♦ Active learning and inductive teaching, sponsored by the Deans Excellence in Learning and Teaching Grant Project of College of Engineering at ISU, Fall 2019
  - ♦ Team based learning, held by Center for Excellence in Learning and Teaching at ISU, Spring 2019
- Secretary, Graduate Organizing Group, University of Rochester, 2008 – 2009

Affiliations

- The American Society For Nondestructive Testing (ASNT), 2021 – present
- Institute of Industrial and Systems Engineers (IISE), 2019 – present
- International Chinese Statistical Association (ICSA), 2017 – 2019

- International Christian Statisticians (ICS), 2014 –2019
- American Statistical Association (ASA), 2014 – 2019
- Mu Sigma Rho (National Statistical Honor Society), 2012 – 2015