

QING LI

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- Education** Virginia Tech, Blacksburg, VA
Ph.D., Statistics, 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, 2010
Thesis: Music Timing Analysis.
Advisor: Dr. Mark Bocko, GPA: 4.0/4.0
- Tsinghua University, Beijing, China
B.E., Information Electronics and Engineering, 2008
- Academic Appointments** Iowa State University, Dept. of Industrial and Manufacturing Systems Engineering (IMSE)
Assistant Professor, Fall 2018 – present
- University of Wisconsin-Madison, Dept. of Statistics
Visiting Assistant Professor, Jan 2016 – May 2018
- Research Interests** Quality assurance, Data analytics in additive manufacturing, Non-destructive evaluation, Bayesian analysis, Engineering and natural science applications of statistics, Machine learning, Medical data analytics, Recurrent-event change-point detection.
- Publications** (Students in Bold, Corresponding Author *)
Peer-Reviewed Journals
1. 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. (2021). In-situ monitoring of direct energy deposition via structured light system and its application in remanufacturing, *The International Journal of Advanced Manufacturing Technology*, in press
 2. Zheng Y., **Wang, S. D.**, **Li, Q.**, and Li, B. W. (2020). Fringe projection profilometry by conducting deep learning from its digital twin, *Optics Express*, 28(24): 36568-36583 (The first two authors contributed equally)
 3. Allen, M. L., **Wang, S. D.**, Olson L. O., **Li, Q.**, and Miha Krofel (2020). Counting cats for conservation: seasonal estimates of leopard density and drivers of distribution in the Serengeti, *Biodiversity and Conservation*, 29: 3591-3608
 4. **Li, Q.**, Guo, F., and Inyoung, K. (2020). A non-parametric Bayesian change-point detection method in the recurrent-event context, *Journal of Statistical Computation and Simulation*, 90: 2949-2968
 5. Zhang, X., Zheng, Y., **Wang, S. D.**, **Li, Q.**, Li, B. W., and Qin, H. T. (2020). Correlation approaches for quality assurance of additive manufactured parts based on optical metrology, *Journal of Manufacturing Processes*, 53: 310-317
 6. **Li, Q.***, **Yao, K. H.**, and **Zhang, X. Y.** (2020). A change-point detection and

- clustering method in the recurrent-event context, *Journal of Statistical Computation and Simulation*, 90 (6): 1131-1149
7. Zheng, Y., Zhang, X., **Wang, S. D., Li, Q.**, Qin, H. T., and Li, B. W. (2020). Similarity evaluation of topography measurement results by different optical metrology technologies for additive manufactured parts, *Optics and Lasers in Engineering*, 126: 105920
 8. Allen, M. L., Norton, A. S., Stauffer, G., Roberts, N., **Luo, Y. S., Li, Q.**, MacFarland, D., and Van Deelen, T. R. (2018). A Bayesian state-space model using age-at-harvest data for estimating the population of black bears (*Ursus americanus*) in Wisconsin, *Scientific Reports*, 8 (1): 12440
 9. **Li, Q.**, Guo, F., Inyoung, K., Klauer, S., and Simons-Morton, B. (2018). A Bayesian finite mixture change-points model for novice teenage driving risk, *Journal of Applied Statistics*, 45: 604-625
 10. **Li, Q.**, Guo, F., Klauer, S., and Simons-Morton, B. (2017). Evaluation of risk change-point for novice teenage drivers, *Accident Analysis & Prevention*, 108: 139-146
 11. Gibbons, R., Guo, F., Du, J. H., Medina, A., Terry, T., Lutkevich, P., and **Li, Q.** (2015). Approaches to adaptive lighting on roadways, *Transportation Research Record: Journal of the Transportation Research Board*, 2485: 26-32
 12. Prussin, A. J., **Li, Q.**, Malla, R., Ross, S. D., and Schmale, D. G. (2014). Monitoring the long distance transport of fusarium graminearum from field-scale sources of inoculum, *Plant Disease*, 98 (4): 504-511
 13. Guo, F., **Li, Q.**, and Rakha, H. (2012). Multi-state travel time reliability models with skewed component distributions, *Transportation Research Record: Journal of the Transportation Research Board*, 2315: 47-53
- Peer Reviewed Conference Proceedings (Full Papers) & Government Report*
14. 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. (2021). In-situ monitoring of direct energy deposition via structured light system and its application in remanufacturing, *49th SME North American Manufacturing Research Conference (NAMRC 49)*, Cincinnati, USA
 15. Shen, W. J., Zhang, X., Jiang, X. P., Yeh, L. H., Zhang, Z., **Li, Q.**, Li, B. W., and Qin, H. T. (2021). Surface extraction from micro-computed tomography data for surface metrology of additive manufacturing, *49th SME North American Manufacturing Research Conference (NAMRC 49)*, Ohio, USA
 16. **Wang, S. D., Li, Q.**, and Zhang, W. L. (2021). MD-manifold: A medical distance based manifold learning approach for heart failure readmission prediction, *Hawaii International Conference on System Sciences (HICSS), Virtual*
 17. Jiang, S., Mort, R., Gansemer-Topf, A., **Li, Q.**, Ruel, N., and Kremer, O. G. (2020). Implementing professional skills training in STEM: A review of the literature, *The American Society for Engineering Education (ASEE) Virtual Conference*
 18. Jiang, S., Mort, R., Gansemer-Topf, A., **Li, Q.**, Ruel, N., and Kremer, O. G. (2020). A community of practice approach to integrating professional skills training with graduate thesis research, *The American Society for Engineering Education (ASEE) Virtual Conference*
 19. Rajabalizadeh, A., **Wang, S. D.**, Javadi, M., Safaei, N., Talafidaryani, M.,

- Zhang, W. L., **Li, Q.**, and Moqri, M. (2020). In-depth evaluation of APACHE scoring system using eICU database, *International Conference on Information Systems (ICIS) (Virtual, Papers are peer reviewed with about a 28% acceptance rate.)*
20. Suresh, V., Zheng, Y., Zhang, X., **Wang, S. D.**, Qin, H. T., **Li, Q.**, and Li, B. W. (2020). Similarity evaluation of 3D topological measurement results using statistical methods, *Proceedings of SPIE 11397, Dimensional Optical Metrology and Inspection for Practical Applications IX*, 113970A
 21. Zhang, X., Suresh, V., Zheng, Y., **Wang, S. D.**, **Li, Q.**, Lyu, H., Li, B. W., and Qin, H. T. (2019). Surface roughness measurement of additive manufactured parts using focus variation microscopy and structured light system, *ASME 2019 International Manufacturing Science and Engineering Conference (MSEC)*
 22. Gibbons, R., Guo, F., Du, J. H., Medina, A., Terry, T., Lutkevich, P., and **Li, Q.** (2015). 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.)
 23. Gibbons, R., Guo, F., Medina, A., Terry, T., Du, J. H., Lutkevich, P., and **Li, Q.** (2014). Design criteria for adaptive roadway lighting, Report no. FHWA-HRT-14-051, Federal Highway Administration

Manuscripts in Revision

24. **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 (minor revision)*
25. **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 (3rd round major revision)*
26. **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 (1st round major revision)*
27. **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, *Measurement (1st round major revision)*
28. Lei, X., MacKenzie, C, and **Li, Q.**, Analysis and forecasting of mass shootings using change point detection, *Risk Analysis (1st round major revision)*
29. **Wang, S. D.**, Rajabalizadeh, A., Javadi, M., Safaei, N., Talafidaryani, M., **Li, Q.**, Zhang, W. L., and Moqri, M. (2020). Predictive performance analysis of the APACHE scoring system using the eICU collaborative research database, *Computer Methods and Programs in Biomedicine-Update (major revision)*

Submitted Manuscripts

30. **Wang, S. D.**, **Zhang, X.**, **Zheng, Y.**, **Li, B. W.**, **Qin, H. T.**, and **Li, Q.** (2021). Similarity evaluation of 3D surface topography measurements, *Measurement Science and Technology*
31. **Wang, S. D.**, **Jiang, Y. Q.**, **Li, Q.***, and Zhang, W. L. (2021). ICU mortality prediction: can we do better? A new model based on machine learning and stochastic signal analysis techniques, *Journal of the Association for Information*

Systems

32. Bazargania, B., **Li, Q.**, and Smadia, O. (2020). Application of power analysis in pavement condition data, *Transportation Research Part B: Methodological*
33. Safaei, N., Seyedhouman, S., Talafidaryani, M., Masoud, A., **Wang, S. D.**, Moqri, M., **Li, Q.**, and Zhang, W. L. (2021), An interpretable machine learning approach for predicting ICU mortality using the eICU collaborative research database, *PLOS ONE*

Manuscripts in Preparation

- **Liu, L. J.**, Li, B. W., Qin, H. T., and **Li, Qing.***, Quantify different sources of variations by conducting measurement studies based on the similarity scores of surface topography data in a process
- **Liu, L. J.**, **Wang, S. D.**, and **Li, Q.***, Hypothesis testing of change-points in recurrent-event context
- Zhang, Y. L., **Li, Q.**, Franklin, C., and Rohe, K., Differential non-response in election polls
- Zhang, W. L., **Wang S. D.**, and **Li, Q.**, Sepsis management and prevention by natural language processing
- Zhang, W. L., **Wang S. D.**, and **Li, Q.**, Feature extraction from irregular temporal data of vital signs in clinical records using Fourier transform

Grants*Federal*

- 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), National Science Foundation (NSF), Shan Jiang (PI), Gül E. Okudan Kremer, Ann M. Gansemer-Topf, Nigel F. Reuel (Co-PI), 07/2020 – 06/2023. (total \$499,978, my share 15%)

Internal

- Co-PI, Research Bootstrap Grants (RBG): Unravel high-dimensional, underutilized, and spare clinical records for accurate risk prediction, Debbie and Jerry Ivy College of Business at ISU, Wenli Zhang (PI), 04/2021 – 04/2022. (total \$6,000)
- Co-PI, Research Mini-Grants: A fast-adjustable and interpretable intensive care units (ICU) outcome prediction model based on machine learning and stochastic signal analysis, Debbie and Jerry Ivy College of Business at ISU, Wenli Zhang (PI), 07 – 12/2020. (total \$750)
- PI, Data Analytics Proposal: Detecting abnormalities in the swine disease reporting system, IMSE Exploratory Research Program (ERP), Cameron MacKenzie and Daniel Linhares (PI), 01 – 05/2020. (total \$16,000)
- PI, 3D Surface topography consistency evaluation: Hunter Barnhart, Vandi Hartanto, Industrial & Manufacturing Systems Engineering Undergraduate Research Assistantships (IMSE URA), Iowa State University, Hantang Qin (PI), 09/2019 – 05/2020. (total \$ 4,000)
- PI, Data Analytics Proposal: Statistical approaches for firearms and toolmark identification – 3D surface topography comparison methods in forensics, IMSE ERP, Hantang Qin (PI), 08 – 12/2019. (total \$14,847)
- PI, Data Analytics Proposal: Asthma Management and Prevention Using

Machine Learning, Natural Language Processing and Big Data, IMSE ERP, Wenli Zhang (PI), 05 – 08/2019. (total \$7,800)

- PI, Investigation of correlations behind point cloud data between structure light scanning system and depth from defocus system for surface roughness analysis, IMSE ERP, Hantang Qin (PI), 01 – 05/2019. (total \$14,847)
- PI, Engineering Problem Solving with R course for on-line delivery, Engineering-LAS Online Learning (ELO) course development grants, 01/2019 – 06/2020. (total \$9,000)

Teaching Experience

Iowa State University, IMSE

New Course Developed

- Introduction of Project Management for Thesis Research (MSE/IE/CBE 580X): A component of the NSF IGE grant (#1954946), co-developed with other PIs, Fall 2020
- Engineering Problem Solving Using R (IE 420/520X): physical and online, Spring 2019

Existing Course

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

University of Wisconsin-Madison, Dept. of Statistics

New Courses Developed

- Bayesian Computing (STAT 679): Spring 2018
- Applied Bayesian Methods (STAT 479): the overall evaluation was 4.55/5 (scores above 4.25 indicate excellent teaching), Fall 2016

Existing Courses

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

Virginia Tech, Dept. of Statistics

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

Student Advising

Iowa State University

As Ph.D. Advisor

Lijie Liu (IMSE, expected Spring 2025)
Yiqun Jiang (IMSE, expected Spring 2024)
Shaodong Wang (IMSE, expected Spring 2023)

As Ph.D. Committee Member

Reyhaneh Bijari, Luning Bi, Chih-Yuan Chu, Samira Karimzadeh, Mohsen Shahhosseini, Hanisha Vemireddy, Lei Xue (IMSE, expected Spring 2022)
Bahareh Bazargani, Sharif Gushgari, Ning Zhang (Dept. of Civil, Construction and

Environmental Engineering (CCEE), 2020)
Zhengyang Hu (IMSE, Fall 2019)

As M.S. Committee Member

Li-Hsin Yeh (Mechanical Engineering, 2021)

Wasama Abdullah (CCEE, Fall 2020)

Luning Bi (IMSE, Fall 2019)

Undergraduate students

Shuolin Hu (Dept. of Statistics, Fall 2020)

University of Wisconsin-Madison, Dept. of Statistics

MS students: Yifan Mei, Shaodong Wang, Yanshi Luo, Kehui Yao, Xinyu Zhang, Lijie Liu, Tianqi Li

Presentations (*: Student under my supervision)

Invited Talks

1. A non-parametric Bayesian change-point method for detecting driving risk changes; Similarity evaluation of 3D surface topography measurements in additive manufacturing, In *The Institute of Industrial and Systems Engineers (IISE) Annual Conference*, Virtual, Oct 2020
2. Similarity evaluation of 3D surface topography measurements in additive manufacturing, In *National Institute of Standards and Technology (NIST)*, Gaithersburg, MD, Feb 2020
3. Change-points detection in the recurrent-event context via Bayesian inference, In *Iowa State University, IMSE Seminar, Statistics Dept. Seminar*, Sep 2018

Papers

1. **Li, Q.**, Wang, S.D.*, Zhang, X., Zheng, Y., Li, B.W., and Qin, H.T., Similarity evaluation of 3D surface topography measurements in additive manufacturing, In *Joint Statistical Meetings (JSM)*, Virtual, Aug 2020
2. **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
3. **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
4. **Li, Q.**, Guo, F., Inyoung, K., A non-parametric Bayesian change-point method for detecting driving risk changes, In *JSM*, Baltimore, MD, Aug 2017
5. **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
6. **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

1. Tapia, L., Soo, Y.X., Jiang, L.K., Jiang, X.P., Qin, H.T., Zhang, Z., **Li, Q.**, Defect recognition of additive manufactured parts based on CT reconstruction, In *IMSE 8th Annual Student Research Symposium (Virtual)*, Ames, IA, 2020 (Best poster award for the IMSE URA project)
2. Wang, S.D.*, Zhang, X., Zhang, Y., Li, B.W., Qin, H.T., **Li, Q.**, Similarity evaluation of 3D surface topography measurements in additive manufacturing,

- In ISU *7th Annual Graduate and Professional Student Conference* (Virtual), Ames, IA, 2020 (Outstanding poster award)
3. 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, In *Iowa State Research Day, Undergraduate and Graduate Research Symposium of IMSE, and The 2nd Midwest Statistical Machine Learning Colloquium*, Ames, IA, 2019; In *ASME 2019 International Manufacturing Science and Engineering Conference (MSEC 2019)*, Erie, PA, 2019
 4. **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
 5. **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

Professional Service

- Math senior honors thesis committee member, Sweet Briar College (A women's college), 2021
- Proposal review panelist: Swiss National Science Foundation (SNSF) (Switzerland's largest research funding organization), 2021; NSF ENG/CMMI, 2020, Alexandria, VA
- Invited session chair: Statistical machine learning in engineering applications; Data analytics and statistical learning with engineering & healthcare applications, IISE Annual Conference, Virtual, Nov 2020
- Session chair: JSM, Virtual, Aug 2020; The First & Second Midwest Statistical Machine Learning Colloquium, May 2018 – 2019, Ames, IA
- Preproposal Review Committee, Iowa State University internal submission for the NSF EPSCoR, Nov 2019
- Journal referee: Accident Analysis & Prevention; Chemometrics and Intelligent Laboratory Systems; Computer and Information Science; Environmental and Ecological Statistics; Finance Big Data: Management, Analysis, and Applications, A Special Issue of International Journal of Electronic Commerce; International Journal of Psychology and Counselling; International Journal of Sociology and Anthropology; Journal of Applied Statistics; Journal of Statistical Computation and Simulation; Journal of Quality Technology; Precision Engineering; Sankhyā: The Indian Journal of Statistics, Series B; Stat; Statistica Sinica; Statistical Theory and Related Fields; Technometrics; Transportmetrica A: Transport Science; Transportation Research Record: Journal of the Transportation Research Board
- Conference referee: 48th SME North American Manufacturing Research Conference, IISE Annual Conference 2020, American Society for Engineering Education (ASEE) North Midwest Section Annual Conference 2020

Service

Iowa State University, Dept. of IMSE

- Operational research/data analytics resource management committee, Aug 2020 – present
- Diversity and inclusion committee, Jan 2019 – present
- Teaching lab coordinator search committee, May 2019

University of Wisconsin-Madison, Dept. of Statistics

Undergraduate committee, Aug 2017 – May 2018

**Research
Collaboration**

- Daniel Linhares, Veterinary Diagnostic and Production Animal Medicine, ISU College of Veterinary Medicine; Cameron Mackenzie, IMSE, ISU, *Porcine disease abnormalities detection in the US swine industry*, Oct 2019 – present
- Wenli Zhang, Dept. of Information Systems, ISU, *Medical data analytics using machine learning, natural language processing and statistics*, Sep 2018 – present
- Hantang Qin, IMSE, ISU; Beiwen Li, Dept. of Mechanical Engineering, ISU, *Quality assurance and data analytics in additive manufacturing*, Aug 2018 – present

**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

**Honors/
Affiliations**

- Institute of Industrial and Systems Engineers (IISE), 2019 – present
- IISE 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”, 2021
- International Chinese Statistical Association (ICSA), 2017 – present
- Taylor Technical Talent **Award** (an award which recognizes superior application papers), “Impact of Roadway Lighting on Crash Safety”, 2015
- International Christian Statisticians (ICS), 2014 – present
- American Statistical Association (ASA), 2014 – present
- Mu Sigma Rho (National Statistical Honor Society), 2012 – present
- Secretary, Graduate Organizing Group, University of Rochester, 2008 – 2009
- Second Freshmen Scholarship, Tsinghua University, 2004
- Ranked 5th out of 300,000 students, National College Entrance Examination, Gansu, China, 2004

Skills

- Programming: R, SAS, MatLab, JMP, Minitab, C/C++.
- Applications: LaTeX, Linux, GitHub.