

YOUNGJUN CHOE

Curriculum Vitae

Department of Industrial and Systems Engineering
141F AERB
Box 352650
Seattle, WA 98195-2650

Phone: (206) 221-8908
Fax: (206) 685-3072
Email: ychoe@uw.edu

EDUCATIONAL HISTORY

University of Michigan, Ann Arbor, MI
Ph.D., Industrial & Operations Engineering, 2016
(Concentration: Quality Engineering & Applied Statistics)
M.A., Statistics, 2016

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, S. Korea
B.S. (summa cum laude), Physics and Management Science (double major), 2010

EMPLOYMENT HISTORY

University of Washington, Seattle, WA
Assistant Professor, Industrial & Systems Engineering, 9/1/2016 – Present

AWARDS AND HONORS

- **NSF OSEER ECM Fellow**, 2020-2021
NSF-supported Operations and Systems Engineering Extreme Event Research (OSEER) network's Early Career Mentoring (ECM) Program
 - **INFORMS QSR Best Paper Competition Finalist**, 10/21/2019
Quality, Statistics, and Reliability (QSR) Section, INFORMS
 - **ISERC Best Track Paper – Energy Systems Track**, 4/14/2016
Institute of Industrial and Systems Engineers (IISE)
 - **INFORMS QSR Best Paper Competition Finalist**, 11/2/2015
Quality, Statistics, and Reliability (QSR) Section, INFORMS
 - **Mary G. and Joseph Natrella Scholarship**, 5/11/2015
Quality and Productivity Section, American Statistical Association (ASA)
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PUBLICATIONS

(Footnote: Undergraduate students⁰; Graduate students¹; Equally contributed authors[†])

Refereed Archival Journal Publications

1. Liu, Z.¹ and Choe, Y. Data-Driven Sensitivity Indices for Models With Dependent Inputs Using Polynomial Chaos Expansions. (2021). *Structural Safety*. 88:101984. DOI: 10.1016/j.strusafe.2020.101984
2. Cao, Q. D.¹ and Choe, Y. Building Damage Annotation on Post-Hurricane Satellite Imagery Based on Convolutional Neural Networks. (2020). *Natural Hazards*. 103(3): 3357-3376. DOI: 10.1007/s11069-020-04133-2
 - Data (Open Access): <http://dx.doi.org/10.21227/sdad-1e56>

3. Kotani, T., Tozato, K., Takase, S., Moriguchi, S., Terada, K., Fukutani, Y., Otake, Y., Nojima, K., Sakuraba, M., **Choe, Y.** Probabilistic Tsunami Hazard Assessment with Simulation-Based Response Surfaces. (2020). *Coastal Engineering*. 160:103719. DOI: 10.1016/j.coastaleng.2020.103719
4. Liu, Z.¹, Banerjee, A. G., and **Choe, Y.** Identifying the Influential Inputs for Network Output Variance Using Sparse Polynomial Chaos Expansion. (2020). Accepted in *IEEE Transactions on Automation Science and Engineering*. DOI: 10.1109/TASE.2020.2993257
 - Selected as the **2019 INFORMS QSR Best Paper Competition Finalist**
5. Starling, J.¹, **Choe, Y.**, and Mastrangelo, C. Identifying DMSMS Availability Risk at the System Level. (2020). Accepted in *International Journal of Production Research*. DOI: 10.1080/00207543.2020.1743894
6. Shang, L., Lee, H. W., Dermisi, S., **Choe, Y.** Impact of Energy Benchmarking and Disclosure Policy on Office Buildings. (2020). *Journal of Cleaner Production*. 250:119500. DOI: 10.1016/j.jclepro.2019.119500
7. Kim, A., Reed, D., **Choe, Y.**, Wang, S., and Recart, C. New Building Cladding System Using Independent Tilted BIPV Panels with Battery Storage Capability. (2019). *Sustainability*. 11(20):5546. DOI: 10.3390/su11205546
8. Chen, Y.[†] and **Choe, Y.[†]** Importance Sampling and its Optimality for Stochastic Simulation Models. (2019). *Electronic Journal of Statistics*. 13(2): 3386-3423. DOI: 10.1214/19-EJS1604
9. Doubleday, A., **Choe, Y.**, Miles, S. B., and Errett, N. A. Daily Bicycle and Pedestrian Activity as an Indicator of Disaster Recovery: A Hurricane Harvey Case Study. (2019). *International Journal of Environmental Research and Public Health*. 16(2836): 1-10. DOI: 10.3390/ijerph16162836
10. Cao, Q. D.¹ and **Choe, Y.** Cross-Entropy Based Importance Sampling for Stochastic Simulation Models. (2019). *Reliability Engineering and System Safety*, 191(106526): 1-12. DOI: 10.1016/j.ress.2019.106526
11. **Choe, Y.**, Lam, H., and Byon, E. Uncertainty Quantification of Stochastic Simulation for Black-box Computer Experiments. (2018). *Methodology and Computing in Applied Probability*, 20(4): 1155–1172. DOI: 10.1007/s11009-017-9599-7
 - Selected for the **Natrella invited session** in the 2015 Quality & Productivity Research Conference at Raleigh, NC.
12. **Choe, Y.**, Guo, W., Byon, E., Jin, J., and Li, J. J. (2016). Change-Point Detection on Solar Panel Performance Using Thresholded LASSO. *Quality and Reliability Engineering International*, 32(8): 2653–2665. DOI: 10.1002/qre.2077
13. **Choe, Y.**, Pan, Q., and Byon, E. (2016). Computationally Efficient Uncertainty Minimization in Wind Turbine Extreme Load Assessments. *ASME Journal of Solar Energy Engineering*, 138(4):041012-041012-8. DOI: 10.1115/1.4033511
14. Byon, E., **Choe, Y.**, and Yampikulsakul, N. (2016). Adaptive Learning in Time-variant Processes with Application to Wind Power Systems. *IEEE Transactions on Automation Science and Engineering*, 13(2):997–1007. DOI: 10.1109/TASE.2015.2440093
15. **Choe, Y.**, Byon, E., and Chen, N. (2015). Importance Sampling for Reliability Evaluation with Stochastic Simulation Models. *Technometrics*, 57(3):351–361. DOI: 10.1080/00401706.2014.1001523

- Selected by the journal's Editor for the **Technometrics invited session** in the 2015 INFORMS Annual Meeting at Philadelphia, PA.

Conference Proceedings and Other Non-journal Articles (Fully Refereed)

1. Starling, J.¹, **Choe, Y.**, and Mastrangelo, C. Optimal Technology Refresh Strategies for Strategic DMSMS Management using Ranking and Selection. (2019). *Proceedings of the 2019 Winter Simulation Conference*.
2. **Choe, Y.**, Guo, W., Byon, E., Jin, J., and Li, J. J. (2016). Change-Point Detection in Solar Panel Performance Analysis. *Proceedings of the 2016 Industrial and Systems Engineering Research Conference (ISERC)*.
 - Selected for the **2016 ISERC Best Track Paper – Energy Systems Track**

Papers Submitted

1. Cao, Q. D.¹, Miles, S., and **Choe, Y.**, Infrastructure Recovery Curve Estimation Using Gaussian Process Regression on Expert Elicited Data. Preprint: <http://arxiv.org/abs/2008.10211>
2. Martell, M.¹, Miles, S., and **Choe, Y.**, Modeling of Lifeline Infrastructure Restoration Using Empirical Quantitative Data. Preprint: <http://arxiv.org/abs/2008.00991>
3. Liu, Z.^{1†}, Maneeikul, P.^{1†}, Pendergrast, C., Doubleday, A., Miles, S. B., Errett, N. A., and **Choe, Y.** Assessing Disaster Recovery Using Physical Activity Monitoring Data.
4. Terry, N.¹ and **Choe, Y.** Splitting Gaussian Process Regression for Streaming Data.
5. Starling, J.¹, Mastrangelo, C, and **Choe, Y.** Improving Weibull Distribution Estimation for Generalized Type I Censored Data Using Modified SMOTE.
6. Doubleday, A., **Choe, Y.**, Busch Isaksen, T. M., Errett, N. A. Urban Bike and Pedestrian Activity Impacts from Wildfire Smoke Events in Seattle, WA.
7. Pendergrast, C., Miles, S. B., **Choe, Y.**, Errett, N. A. Perspectives of Fitness, Parks, and Active Transportation Organizations on Factors Influencing Physical Activity and Wellbeing During Disaster Recovery.
8. Chen, S. A.^{1†}, Escay, A.^{0†}, Haberland, C.^{1†}, Schneider, T.^{1†}, Staneva, V. and **Choe, Y.**, Benchmark Dataset for Automatic Damaged Building Detection from Post-Hurricane Remotely Sensed Imagery.
 - Preprint: <https://arxiv.org/abs/1812.05581>
 - Data (Open Access): <http://dx.doi.org/10.21227/1s3n-f891>
9. **Choe, Y.** Information Criterion for Minimum Cross-Entropy Model Selection. Preprint: <https://arxiv.org/abs/1704.04315>

OTHER SCHOLARLY ACTIVITY

Invited Lectures and Seminars

1. IISE/QCRE Webinar, *Damage Assessment on Post Hurricane Imagery*, 6 Aug. 2019. (The recording is available at <https://www.iise.org/details.aspx?id=48581>)

Conference Presentations

(Note: Presenter in bold, Undergraduate students⁰, Graduate students¹, Equally contributed authors[†])

1. Liu, Z.^{1†}, Maneekul, P.^{1†}, Pendergrast, C., Doubleday, A., Miles, S. B., Errett, N. A., and **Choe, Y.** "Assessing Disaster Recovery Using Physical Activity Monitoring Data", *Researchers Meeting Following the Annual Natural Hazards Research and Applications Workshop*, Virtual, 15-16 Jul. 2020.
2. **Martell, M.**¹, Miles, S., and Choe, Y., "Modeling of Lifeline Infrastructure Restoration Using Empirical Quantitative Data", *Researchers Meeting Following the Annual Natural Hazards Research and Applications Workshop*, Virtual, 15-16 Jul. 2020.
3. **Cao, Q. D.**¹, Miles, S., and Choe, Y., "Infrastructure Recovery Curve Estimation using Gaussian Process Regression on Expert Elicited Data", *Researchers Meeting Following the Annual Natural Hazards Research and Applications Workshop*, Virtual, 15-16 Jul. 2020.
4. **Wartman, J., Silver, B., Errett, N. A., and Choe, Y.**, "The COVID-19 Pandemic and the Seattle, Washington Street View Campaign", *Annual Natural Hazards Research and Applications Workshop*, Virtual, 12-15 Jul. 2020.
5. **Pedersen, K.**, Grover, H., Choe, Y., and Errett, N. A. "Documenting The Impact Of Lifeline Service Disruptions On Healthcare System Performance Following Earthquakes Since 2000: A Reconnaissance Report Analysis", *Annual Natural Hazards Research and Applications Workshop*, Virtual, 12-15 Jul. 2020.
6. Martell, M.¹, Miles, S., and **Choe, Y.**, "Literature Review on Modeling of Lifeline Infrastructure Restoration Using Empirical Quantitative Data", *NHERI SimCenter Workshop on Simulation and Data Needs to Support Disaster Recovery Planning*, Berkeley, CA, USA, 30-31 Jan. 2020.
7. **Starling, J.**¹, Choe, Y., and Mastrangelo, C. "Optimal Technology Refresh Strategies for Strategic DMSMS Management Using Ranking and Selection", *Winter Simulation Conference 2019*, National Harbor, MD, USA, 8-11 Dec. 2019.
8. **Starling, J.**¹, Mastrangelo, C., and Choe, Y., "Optimal Life of Need Buy Policy Algorithms for Strategic DMSMS Management", *Diminishing Manufacturing Sources and Material Shortages (DMSMS) 2019 Conference*, Phoenix, AZ, USA, 2-5 Dec. 2019.
9. **Starling, J.**¹, Mastrangelo, C., and Choe, Y., "Optimal Technology Refresh Strategies Using Infinite Horizon Optimization", *INFORMS Annual Meeting*, Seattle, WA, USA, 20-23 Oct. 2019.
10. **Liu, Z.**¹, Banerjee, A. G., and Choe, Y., "Identifying the Influential Inputs For Network Output Variance Using Sparse Polynomial Chaos Expansion", *INFORMS Annual Meeting*, Seattle, WA, USA, 20-23 Oct. 2019.
11. **Maneekul, P.**^{1†}, Liu, Z.^{1†}, Miles, S., Errett, N. and **Choe, Y.**, "Personal Fitness Monitoring App Data to Assess Community Recovery at Scale: Case Study on Post-hurricane Harvey Recovery of Harris County, Texas", *INFORMS Annual Meeting*, Seattle, WA, USA, 20-23 Oct. 2019.
12. **Cao, Q. D.**¹ and Choe, Y., " Hurricane-damaged Building Identification Using Satellite Imagery and Geographical Features", *INFORMS Annual Meeting*, Seattle, WA, USA, 20-23 Oct. 2019.
13. **Starling, J.**¹, Mastrangelo, C., and Choe, Y., "Optimal Life of Need Buy Policies for Strategic DMSMS Management", *The 2019 Joint Undersea Warfare Technology Fall Conference*. Groton, CT, USA, 16-18 Sep. 2019.
14. Cao, Q. D.¹ and **Choe, Y.**, "Post-Hurricane Damage Assessment with Satellite Imagery Data", *The Second Conference on Risk Analysis, Decision Analysis and Security*, Buffalo/Niagara Falls, NY, USA, 30 Jul.-2 Aug. 2019.
15. Doubleday, A.[†], Pendergrast, C.[†], Miles, S. B., Choe, Y., and **Errett, N. A.**, "Understanding the Impact of Hurricane Harvey on Bike and Pedestrian Path Usage, and Examining Factors

- Influencing Physical Activity and Wellbeing During Disaster Recovery", *Annual Natural Hazards Research and Applications Workshop*, Broomfield, CO, USA, 14-17 Jul. 2019.
16. Liu, Z.^{1†}, Maneeikul, P.^{1†}, Miles, S., Errett, N. and **Choe, Y.**, "Personal Fitness Monitoring App Data to Assess Community Recovery at Scale: Case Study on Post-Hurricane Harvey Recovery of Harris County, Texas", *Annual Natural Hazards Research and Applications Workshop*, Broomfield, CO, USA, 14-17 Jul. 2019.
 17. **Starling, J.**¹, Choe, Y., and Mastrangelo, C., "Identifying DMSMS Availability Risk at the System Level", *The 87th Military Operations Research Society (MORS) Symposium*, Colorado Springs, CO, USA, 17-20 Jun. 2019.
 18. Cao, Q. D.¹ and **Choe, Y.**, "Detecting Damaged Buildings on Post-Hurricane Satellite Imagery", *IISE Annual Conference & Expo 2019*, Orlando, FL, USA, 18-21 May. 2019.
 19. Liu, Z.^{1†}, Maneeikul, P.^{1†}, **Choe, Y.**, Miles, S. B., and Errett, N. A., "Assessing Community Recovery Using Personal Health Monitoring Data", *IISE Annual Conference & Expo 2019*, Orlando, FL, USA, 18-21 May. 2019.
 20. **Starling, J.**¹, Choe, Y., and Mastrangelo, C., "Simulating DMSMS Risk: Identifying and Prioritizing DMSMS Risk at the Platform Level", *Diminishing Manufacturing Sources and Material Shortages (DMSMS) 2018 Conference*, Nashville, TN, USA, 3-6 Dec. 2018.
 21. **Cao, Q. D.**¹ and Choe, Y., "Deep Learning Based Damage Detection on Post-hurricane Satellite Imagery", *INFORMS Annual Meeting*, Phoenix, AZ, USA, 4-7 Nov. 2018.
 - Selected for **the 3rd place winner** in the INFORMS Poster Competition
 22. **Cao, Q. D.**¹ and Choe, Y., "Machine Annotation of Post-hurricane Satellite Imagery for Identifying Damages", *INFORMS Annual Meeting*, Phoenix, AZ, USA, 4-7 Nov. 2018.
 23. **Liu, Z.**¹, Banerjee, A. G., and Choe, Y., "Sensitivity Analysis on a Network using the Polynomial Chaos Expansion", *INFORMS Annual Meeting*, Phoenix, AZ, USA, 4-7 Nov. 2018.
 24. **Liu, Z.**¹ and Choe, Y., "Data-Driven Sensitivity Indices for Models with Dependent Inputs using the Polynomial Chaos Expansion", *INFORMS Annual Meeting*, Phoenix, AZ, USA, 4-7 Nov. 2018.
 25. **Chen, S. A.**¹, Escay, A.⁰, **Haberland, C.**¹, Schneider, T.¹, Yan, A.¹, Cao, Q. D.¹, Staneva, V. and Choe, Y., "Automatic Detection of Damaged Buildings on Post-Hurricane Remotely Sensed Imagery", *Cascadia Innovation Corridor Conference*, Vancouver, BC, Canada, 9-10 Oct. 2018.
 26. **Wang, S.**, Kim, A., Reed, D. and Choe, Y., "Risk Reduction Through Building Energy Resiliency", *Lloyd's Day Houston at Rice University: "The Smart and Resilient City"*, Houston, TX, USA, 4 Oct. 2018.
 27. **Xu, A.**⁰, Aquiningoc, T.⁰, Choe, Y., Miles, S. B., and Errett, N. A., "Measuring Short Term Community Recovery from the Santa Rosa Wildfires", *Washington NASA Space Grant Consortium's Annual Space Grant Awards Reception and Poster Session*, Seattle, WA, USA, 21 Sep. 2018.
 28. **Aquiningoc, T.**⁰, Choe, Y., Miles, S. B., and Errett, N. A., "Tracking Wildfire Recovery in Santa Rosa", *Washington NASA Space Grant Consortium's Annual Space Grant Awards Reception and Poster Session*, Seattle, WA, USA, 21 Sep. 2018.
 29. Cao, Q. D.¹ and **Choe, Y.**, "Machine Annotation of Post-Hurricane Satellite Imagery for Identifying Damages", *Annual Natural Hazards Research and Applications Workshop*, Broomfield, CO, USA, 8-11 Jul. 2018.
 30. Choe, Y., **Guo, W.**, Byon, E., Jin, J., and Li, J. J., "Change-point Detection on Solar Panel Performance Using Thresholded Lasso", *INFORMS Annual Meeting*, Nashville, TN, USA, 13-16 Nov. 2016.
 31. **Choe, Y.**, Guo, W., Byon, E., Jin, J., and Li, J. J., "Change-Point Detection in Solar Panel Performance Analysis", *Industrial & Systems Engineering Research Conference (ISERC)*, Anaheim, CA, USA, 21-24 May. 2016.

32. **Choe, Y.**, Pan, Q., and Byon, E., "Computationally Efficient Uncertainty Minimization in Wind Turbine Extreme Load Assessments", *Industrial & Systems Engineering Research Conference (ISERC)*, Anaheim, CA, USA, 21-24 May. 2016.
33. **Choe, Y.** and Byon, E., "Importance Sampling With a Novel Information Criterion for Efficient Reliability Evaluation", *INFORMS Annual Meeting (QSR Best Refereed Paper Competition Session)*, Philadelphia, PA, USA, 1-4 Nov. 2015.
34. **Choe, Y.** and Byon, E., "Importance Sampling With a Novel Information Criterion for Efficient Reliability Evaluation", *INFORMS Annual Meeting (Joint Session QSR/Energy: Data Analytics in Energy Systems)*, Philadelphia, PA, USA, 1-4 Nov. 2015.
35. **Choe, Y.**, Lam, H., and Byon, E., "Towards Understanding Distributional Properties of Importance Sampling Estimators with Stochastic Simulations", *INFORMS Annual Meeting*, Philadelphia, PA, USA, 1-4 Nov. 2015.
36. **Choe, Y.**, **Byon, E.**, and Chen, N., "Importance Sampling for Reliability Evaluation with Stochastic Simulation Models", *INFORMS Annual Meeting (Technometrics Invited Session)*, Philadelphia, PA, USA, 1-4 Nov. 2015.
37. **Choe, Y.** and Byon, E., "Data Analytics for Wind Energy Systems" (Poster Presentation), *INFORMS Annual Meeting (QSR Best Student Poster Competition Session)*, Philadelphia, PA, USA, 1-4 Nov. 2015.
38. **Choe, Y.** and Byon, E., "Data Analytics for Wind Energy Systems" (Poster Presentation), *From Industrial Statistics to Data Science: A Conference in Honor of Vijay Nair*, Ann Arbor, MI, 1-3 Oct., 2015.
39. **Choe, Y.**, **Byon, E.**, and Chen, N., "Importance Sampling for Reliability Evaluation with Stochastic Simulation Models", *ASCE EMI (Engineering Mechanics Institute) Conference*, San Francisco, CA, USA, 16-19 Jun. 2015.
40. **Choe, Y.**, Lam, H., and Byon, E., "Towards Understanding Distributional Properties of Importance Sampling Estimators with Stochastic Simulations", *Quality & Productivity Research Conference*, Raleigh, NC, USA, 10-12 Jun. 2015.
41. **Choe, Y.**, Byon, E., and Chen, N., "Importance Sampling for Reliability Evaluation with Stochastic Simulation Models", *Quality & Productivity Research Conference*, Raleigh, NC, USA, 10-12 Jun. 2015.
42. **Choe, Y.**, Lam, H., and Byon, E., "Towards Understanding Distributional Properties of Importance Sampling Estimators with Stochastic Simulations", *Industrial & Systems Engineering Research Conference (ISERC)*, Nashville, TN, USA, 30 May - 2 Jun. 2015.
43. Byon, E. and **Choe, Y.**, "Data-driven Modeling and Analyses for Wind Power Systems" (Poster Presentation), *The 3rd Biennial Wind Energy Systems Engineering Workshop*, Boulder, CO, 15 Jan., 2015.
44. **Choe, Y.**, Byon, E., and Chen, N., "Importance Sampling for Reliability Evaluation with Stochastic Simulation Models", *INFORMS Annual Meeting*, San Francisco, CA, USA, 9-12 Nov. 2014.
45. **Choe, Y.**, Byon, E., and Chen, N., "Importance Sampling for Reliability Evaluation with Stochastic Simulation Models", *INFORMS Southeast Michigan Symposium*, East Lansing, MI, USA, 3 Oct. 2014.
46. **Choe, Y.**, **Byon, E.**, and Chen, N., "Importance Sampling for Reliability Evaluation with Stochastic Simulation Models", *INFORMS Annual Meeting*, Minneapolis, MN, USA, 6-9 Oct. 2013.
47. **Choe, Y.**, Byon, E., and Chen, N., "Importance Sampling for Reliability Evaluation with Stochastic Simulation Models", *The 59th World Statistics Congress*, Hong Kong, China, 25-30 Aug. 2013.
48. **Choe, Y.**, Byon, E., and Chen, N., "Importance Sampling for Reliability Evaluation with Stochastic Simulation Models", *The workshop of System Informatics and Analytics, The 9th*

IEEE International Conference on Automation Science and Engineering (IEEE CASE 2013), Madison, WI, USA, 17-21 Aug. 2013.

Invited Workshop Participation

1. *NSF NHERI DesignSafe and SimCenter Workshop on Artificial Intelligence in Natural Hazards Engineering*, Austin, TX, USA, 18-19 Feb. 2020.
 - Selected for the NSF travel grant.
2. *NSF NHERI SimCenter Workshop on Simulation and Data Needs to Support Disaster Recovery Planning*, Berkeley, CA, USA, 30-31 Jan. 2020.
 - Selected for the NSF travel grant.
3. *NSF NHERI@UC San Diego 5th Users Training Workshop*, San Diego, CA, USA, 16-17 Dec. 2019.
 - Selected for the NSF travel grant.

Press Releases

1. Assessing community well-being after Hurricane Harvey via physical activity data: [UW Population Health](#), [UW School of Public Health](#). Oct. 2019.
2. Energy solutions for public health of remote communities after Hurricane Maria: [UW Boundless](#), [UW Clean Energy Institute](#), [Washington Examiner](#), [Security Management](#), [KING 5](#), [New York Times](#). Dec. 2017.

Professional Society Memberships

- Institute for Operations Research and the Management Sciences (INFORMS), 2013 – Present
- Institute of Industrial and Systems Engineers (IISE), 2013 – Present
- American Statistical Association (ASA), 2016 – Present