CHEOLJOON JEONG

CONTACT INFORMATION

Ph.D. Candidate
University of Michigan
Industrial and Operations Engineering
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RESEARCH INTERESTS

Industrial data science and optimization with application to energy, manufacturing and healthcare systems: computer experiments, statistical machine learning, quality and reliability engineering, nonlinear optimization, and artificial intelligence.

EDUCATION

University of Michigan, Ann Arbor, MI — 9/2020 – Present
Ph.D., Industrial and Operations Engineering
M.A., Statistics

North Carolina State University, Raleigh, NC — 8/2018 – 5/2020
M.Eng., Industrial and Systems Engineering

Yonsei University, Seoul, Korea — 3/2009 – 2/2016
B.S., Information and Industrial Engineering

RESEARCH POSITIONS

Research Assistant, University of Michigan — 9/2020 – Present
- Title: Digital Twin Calibration in the Era of Big Data
- Developed a new multi-block calibration approach using a nonlinear optimization technique reconciled with statistical theories, which guides the sequential design of computer experiments
- Devising a novel stochastic dimensionality reduction calibration method for high-dimensional parameters with explainability and extending the framework to be applicable for a wide range of problems, including functional calibration problems

Research Assistant, North Carolina State University — 1/2019 – 5/2020
- Title: Quality Fault Diagnostics using Multi-Steam High-Dimensional Signals
- Proposed matrix- and tensor-based quality fault diagnostic methods that automatically identify informative process variables and stages in a multi-stage hot rolling mill in the steel-making industry using newly developed regularization formula and efficient optimization algorithms

HONORS AND AWARDS

- The Institute for Energy Solutions Graduate Fellowship, University of Michigan 2024
- Richard C. Wilson Best Paper Prize, University of Michigan 2023
- Seth Bonder Fellowship Winner, University of Michigan 2021 – 2022
- Rackham Travel Grant, 3 times, University of Michigan 2021 – 2023
- Best Paper Award Finalist, DAIS Division, ISERC 2021
- Best Student Paper Award Winner, QCRE Division, ISERC 2020
- IOE Departmental Fellowship, University of Michigan 2020 – 2021
- Edward P. Fitts Fellowship, North Carolina State University 2019 – 2020
- Korea National Science and Technology Scholarship, KOSAF 2013 – 2016
- Academic Excellence Awards, 4 times, Yonsei University 2010 – 2015

PUBLICATIONS

[1] Xu, Z., **Jeong, C.**, Byon, E., & Cetin, K., Season-Dependent Parameter Calibration in Building Energy Simulation, *Proceedings of the 2021 IISE Annual Conference*.
- **Finalist, Best Paper Award in the DAIS Division, ISERC, 2021**

[2] **Jeong, C.** & Fang, X., Two-Dimensional Variable Selection and Its Applications in the Diagnostics of Product Quality Defects, *IISE Transactions*, 54:7, 619-629, 2022. doi: https://doi.org/10.1080/24725854.2021.1904524
- **Winner, Best Student Paper Award in the QCRE Division, ISERC, 2020**

[3] **Jeong, C.**, Xu, Z., Byon, E., Berahas, A. S., & Cetin, K., Multi-Block Parameter Calibration in Computer Models, *INFORMS Journal on Data Science*, 2:2, 116-137, 2023. doi: https://doi.org/10.1287/ijds.2023.0029
- **Winner, Richard C. Wilson Prize, University of Michigan, 2023**

[4] **Jeong, C.** & Byon, E., Calibration of Building Energy Computer Models via Bias-Corrected Iteratively Reweighted Least Squares Method, *Applied Energy*, 360, 122753, 2024. doi: https://doi.org/10.1016/j.apenergy.2024.122753

[5] **Jeong, C.**, Byon, E., He, F., & Fang, X., Tensor-Based Statistical Learning Methods for Diagnosing Product Quality Defects, Minor Revision at *IISE Transactions*, 2024.

Working Papers

[6] **Jeong, C.** & Byon, E., Selective Parameter Calibration via Sliced Sequential Design with Application to Building Energy Systems, Under Review.

[7] **Jeong, C.** & Byon, E., Nonparametric Functional Parameter Calibration using a Kernel Smoothing Approach, In Preparation.

[8] **Jeong, C.** & Byon, E., Direction-Dependent Parameter Calibration for Wake Models in Multi-Turbine Wind Farm, In Preparation.

Technical Report

[9] **Jeong, C.**, The Effect of Real Estate Auction Events on Mortality Rate (Korean), CRO Report, *Credit Insight*, Summer Vol., 22-34, 2017.

Invited Talks

- Selective/Explainable Parameter Calibration via Sliced Sequential Design
  - IISE Annual Conference, Montréal, Canada 2023
  - INFORMS Annual Meeting, Phoenix, AZ 2023
  - INFORMS DMDA Workshop, Phoenix, AZ 2023
- Multi-Block Parameter Calibration in Computer Models
  - Hyundai Vision Conference (Poster), Seoul, Korea 2023
  - INFORMS Conference on QSR, Raleigh, NC 2023
  - INFORMS Annual Meeting, Indianapolis, IN 2022
  - IMS/ASA Spring Research Conference, Virtual 2022
- Modularized Bias-Corrected Parameter Calibration
  - MSSISS Statistical Symposium, Ann Arbor, MI 2024
  - INFORMS Annual Meeting, Indianapolis, IN 2022
- Season-Dependent Parameter Calibration in Building Energy Models
  - INFORMS Annual Meeting, Anaheim, CA/Virtual 2021
  - IEEE CASE Conference, Lyon, France/Virtual 2021
  - IISE Annual Conference, Virtual 2021
- Two-Dimensional Variable Selection and Its Applications in the Diagnostics of Product Quality Defects
  - IISE Annual Conference, Virtual 2020

Teaching Experience

Graduate Student Instructor, University of Michigan 8/2022 – 12/2023
- IOE 565: Time Series Analysis, Winter 2024
- IOE 591: Statistical Learning for Data Science, Fall 2023
- IOE 591: Introduction to Data Analytics, Fall 2022

Teaching Assistant, North Carolina State University 8/2018 – 5/2019
- ISE 361: Deterministic Models in OR, Spring 2019
- ISE 311: Economic Decision Analysis, Fall 2018

Professional Experience

Data Scientist, National Information and Credit Evaluation 1/2016 – 6/2018
- Developed a new business based on large-scale real estate data

KATUSA Soldier, Eighth U.S. Army 3/2011 – 12/2012
- Managed an effective training program with the U.S. Commander

Relevant Coursework

- Statistics: Probability and Distribution Theory, Statistical Inference, Regression Analysis, Statistical Learning, Monte Carlo Methods, Bayesian Inference, Time Series Analysis, Categorical Data Analysis, Statistical Theory I (Grad)
- Operations Research: Linear Programming, Nonlinear Programming, Stochastic Programming, Dynamic Programming, Convex Optimization, Stochastic Process I-II, Stochastic Simulation (Grad)
- Mathematics: Calculus, Advanced Calculus, Linear Algebra (Undergrad), Mathematical Analysis (Grad)

Technical Skills

- Computer Programming: R, Python, MATLAB, SAS, C, MySQL, Prolog, LaTeX
- Solver: Gurobi, CPLEX, CVX

Services

- Faculty Advisor, Engineering Honors Capstone Project, University of Michigan 2024
- Mentor, Graduate Application Mentoring Program, University of Michigan 2023
- Session Chair, INFORMS Annual Meeting 2023
  - Modern Design and Analysis of Computer Experiments
  - Applied Paper Presentation for DMDA Workshop
- Department Representative, MSSISS, University of Michigan 2021 – 2022
- Team Leader, Global Engineer Program, Yonsei University 2014
- Officer, Supply Chain Student Society (MSC), Yonsei University 2010 – 2011
- Staff, University Student Unions, Yonsei University 2009

References

Dr. Eunshin Byon (e-mail: ebyon@umich.edu; phone: +1-734-764-6565)
Associate Professor
Department of Industrial and Operations Engineering
2773 IOE Building, 1205 Beal Avenue
University of Michigan, Ann Arbor, MI 48109

Dr. Albert S. Berahas (e-mail: aberahas@umich.edu; phone: +1-847-730-7519)
Assistant Professor
Department of Industrial and Operations Engineering
2783 IOE Building, 1205 Beal Avenue
University of Michigan, Ann Arbor, MI 48109

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