CHEOLJOON JEONG

CONTACT INFORMATION

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

Data science and operations research with application to energy and manufacturing systems: computational statistics, nonlinear optimization, design and analysis of computer experiments, statistical machine learning, quality and reliability engineering

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

[2] 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**

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

[4] **Jeong, C.**, Byon, E., He, F., & Fang, X., Tensor-Based Quality Fault Diagnosis using Multi-Stream High-Dimensional Signals, Conditionally Accepted at *IEEE Transactions on Automation Science and Engineering*, 2023.

[5] **Jeong, C.** & Byon, E., Parameter Calibration in Building Energy Computer Models via Bias-Corrected Iteratively Reweighted Least Squares Method, Under Review at *Applied Energy*.

Working Papers

[6] **Jeong, C.** & Byon, E., Explainable Parameter Calibration via Gaussian Process-Based Sliced Sequential Design, In Preparation for Submission.

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

Invited Talks

- Explainable Parameter Calibration via GP-Based Sliced Sequential Design
  - 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
  - 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

- Chair, Session for Modern Design and Analysis of Computer Experiments: Methodologies and Applications, INFORMS Annual Meeting 2023
- Chair, Session for Applied Paper Presentation, INFORMS DMDA Workshop 2023
- Department Representative, MSSISS, University of Michigan 2021 – 2022
- Team Leader, Global Engineer Program, Yonsei University 2014
- Staff, 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)
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Department of Industrial and Operations Engineering
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Dr. Albert S. Berahas (e-mail: aberahas@umich.edu; phone: +1-847-730-7519)
Assistant Professor
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