PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Industrial and Operations Engineering

Eunshin Byon, associate professor of industrial and operations engineering, with tenure, Department of Industrial and Operations Engineering, College of Engineering, is recommended for promotion to professor of industrial and operations engineering, with tenure, Department of Industrial and Operations Engineering, College of Engineering.

Academic Degrees:
Ph.D.   2010   Texas A&M University, Industrial and Systems Engineering, College Station, TX
M.S.   1996   Korea Advanced Institute of Science and Technology (KAIST), Industrial and System Engineering, Daejeon, South Korea
B.S.   1994   Korea Advanced Institute of Science and Technology (KAIST), Industrial and System Engineering, Daejeon, South Korea

Professional Record:
2017 – present   Associate Professor (with tenure), Industrial and Operations Engineering, University of Michigan
2017 – 2018   Associate Professor (without tenure), Department of Civil and Environmental Engineering, University of Michigan
2015 – 2017   Assistant Professor, Civil and Environmental Engineering, University of Michigan
2011 – 2017   Assistant Professor, Department of Industrial and Operations Engineering, University of Michigan
2010 – 2011   Post-Doctoral Research Associate, Department of Industrial and Systems Engineering, Texas A&M University, College Station, TX, United States

Summary of Evaluation:
Teaching: The bulk of Professor Byon's teaching has been in two courses, IOE 366 and IOE 565. Her Q1 and Q2 averages are 3.98 and 4.17, respectively. She has taught IOE 565 nine times, and her Q1 and Q2 averages are 4.40 and 4.47, respectively. She created a new course, IOE 591 *Statistical Learning for Data Analytics*, and is currently teaching this course for the second time. Her Q1 and Q2 scores were 4.47 and 4.86, respectively. In 2018, she co-chaired an IOE department task force on revamping computational and data analytics curriculum for undergraduate majors, an important undertaking that resulted in substantial changes in how IOE teaches data analytics and computing across multiple courses. Professor Byon has graduated five Ph.D. students, with another four in progress. She and her students have received a number of best paper awards (or finalists) over the years. She also received the Richard C. Wilson Faculty Scholar Award in 2023.

Research: Professor Byon has established a consistent record of rigorous research and is one of the national leaders in using industrial engineering methods in wind energy applications. She

has also made solid contributions in the area of importance sampling, particularly for engineering applications. Professor Byon has published 39 journal papers in leading journals in her field, including *Technometrics*, *IEEE Transactions on Power Systems*, and *IIE Transactions*. Professor Byon has received five NSF grants for which she was the PI and two as a co-PI, together with five industry grants.

Recent and Significant Publications:

Jeong, C., Berahas, A., Byon, E., Centin, K., "Multi-block Parameter Calibration in Computer Models," *INFORMS Journal on Data Science*, 2023, Accepted, in press.

Liu, B., Yue, X., Byon, E., Kontar, R., "Parameter calibration in wake effect simulation model with stochastic gradient descent and stratified sampling," *Annals of Applied Statistics*, 2022; 16(3): 1795-1821.

Li, S., Ko. Y, Byon, E., "Nonparametric importance sampling for wind turbine reliability analysis with stochastic computer models," *Annals of Applied Statistics*, 2021; 15: 1850-1871

Ko. Y, Byon, E., "Condition-based joint maintenance optimization for a large-scale system with homogeneous units," *IISE Transactions* (Focus on Quality and Reliability Engineering), 2017; 49: 493-504.

Choe, Y., Byon, E., Chen, N., "Importance sampling for the reliability evaluation with stochastic simulation models," *Technometrics*, 2015; 57(3): 351-361.

Service: Professor Byon has a strong record of service. At the university level, she has been a member of the Faculty Senate Assembly, served as a faculty advisor to the Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS), and on the MIDAS committee. At the college level, she has been a member of the CoE IT Faculty Council. Within the department, she has been a member of the IOE Department Committee, co-chair of the faculty search committee, and helped lead the creation of the Data Analytics and Statistics area in the education program. Externally, Professor Byon has taken a leadership role in service to the profession. She has served as the chair, chair-elect, and elected council board member for the INFORMS Quality, Statistics, and Reliability (QSR) Section, and is active in the INFORMS Energy, Natural Resources and the Environment Section. She is a department editor for *IISE Transactions* and an associate editor for *INFORMS Journal on Data Science*, *IISE Transactions*, and *IEEE Transactions on Automation Science and Engineering*.

External Reviewers:

Reviewer A: "The momentum of her research and professional activities has been very high which will continue to propel her to future research work and more accomplishments. ...the overall teaching and research performance of Professor Byon is outstanding. I believe that her qualifications and contributions warrant her promotion to the Full Professor rank at [my institution] and at other leading institutions."

Reviewer B: "I think of Eunshin as someone who has had impact in an applied area through sustained focus while also developing innovative and powerful mathematical methods that are driven by application need…Eunshin is clearly deserving of promotion to full professor, based on her sustained impact and the quality of her work."

Reviewer C: "As a summary, Eunshin is a strong researcher who has contributed tremendously to several research areas, including complex data modeling for systems engineering, importance sampling, optimal O&M, and more. She has an international reputation in these areas…With Eunshin's research contributions, I believe that she is well qualified to be promoted to the rank of tenured full professor in any industrial engineering department around the world."

Reviewer D: "…Dr. Byon has demonstrated that she is the foremost expert in IE in applying data science methods to problems in the energy domain…Her membership in the International Energy Agency has allowed her to translate her research findings into wind turbine design guidelines, a significant practical research impact… …I am extremely excited by the fact that Dr. Byon is in our field and am looking forward to watching her career grow."

Reviewer E: "Dr. Byon is one of the best accomplished and most exciting researchers in the field of quality, reliability, and data science from an engineering perspective…I am confident that she would be promoted at [my institution]."

Summary of Recommendation: Professor Byon is one of the foremost experts in the development and application of rigorous data science, statistical quality, and reliability methods to complex problems in energy and sustainability. She has developed an internationally recognized, well-respected, and rigorous research program, a strong teaching record, and strong service, particularly external service. It is with the support of the College of Engineering Executive Committee that I recommend Eunshin Byon for promotion to professor of industrial and operations engineering, with tenure, Department of Industrial and Operations Engineering, College of Engineering.

_____
Steven L. Ceccio, Ph.D.
Interim Dean of Engineering
Vincent T. and Gloria M. Gorguze Professor
of Engineering
College of Engineering

May 2024