JEONGSUB CHOI

Department of Management Information Systems
John Chambers College of Business and Economics
West Virginia University
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RESEARCH INTERESTS

Machine learning, data mining, system analytics and managerial informatics

APPOINTMENT

09/2020–Present **Assistant Professor**
Management Information Systems, West Virginia University, Morgantown, WV

09/2017–05/2020 **Part-Time Lecturer**
Management Science and Information Systems, Rutgers University, New Brunswick, NJ

08/2013–05/2020 **Graduate Research Assistant**
Industrial and Systems Engineering, Rutgers University, New Brunswick, NJ

08/2017–12/2017 **Graduate Teaching Assistant**
Industrial and Systems Engineering, Rutgers University, New Brunswick, NJ

08/2014–12/2015 **Graduate Teaching Assistant**
Industrial and Systems Engineering, Rutgers University, New Brunswick, NJ

EDUCATION

10/2020 **Ph.D. in Industrial and Systems Engineering**
Rutgers University, New Brunswick, NJ
- Dissertation: Sparse machine learning methods and its application to semiconductor manufacturing processes (advisor: Dr. Myong K. Jeong)

05/2018 **M.S. in Statistics**
Rutgers University, New Brunswick, NJ

05/2014 **M.S. in Industrial and Systems Engineering**
Rutgers University, New Brunswick, NJ

02/2011 **B.S. in Industrial and Information Systems Engineering**
Soongsil University, Seoul, Republic of Korea

PUBLICATION

Refereed/Accepted Papers

19 R. Wang, H. Lin, **J. Choi**, A. Hashemi, and M. Zhu. (2025). Novel differential voltage features based machine learning approach to lithium-ion batteries SOH prediction at various C-rates. *Energy*, *334*, 137651. https://doi.org/10.1016/j.energy.2025.137651

18. K. Jang, **J. Choi**, H. S. Lee, and B. Kim. (2025). A novel similarity-based recommendation for identifying

potential customers in new markets using an inter-firm transaction network. *Technological Forecasting & Social Change*, *216*, 124151. https://doi.org/10.1016/j.techfore.2025.124151

17. **J. Choi**, Y. Son, and J. Kang. (2024). Group-exclusive feature group lasso and applications to automatic sensor selection for virtual metrology in semiconductor manufacturing. *IEEE Transactions on Semiconductor Manufacturing*, *37*(1), 505-517. https://doi.org/10.1109/TSM.2024.3444720

16. **J. Choi**, M. Zhu, J. Kang, and M. K. Jeong. (2024). Convolutional neural network based multi-input multi-output model for multi-sensor multivariate virtual metrology in semiconductor manufacturing. *Annals of Operations Research*, *339*, 185-201. https://doi.org/10.1007/s10479-024-05902-z

15. **J. Choi**, Y. Son, and M. K. Jeong. (2024). Gaussian kernel with correlated variables for incomplete data. *Annals of Operations Research*, *341*, 223-244. https://doi.org/10.1007/s10479-023-05656-0

14. **J. Choi**, B. Kim, and H. S. Lee. (2023). Competitor identification with memory in a dynamic financial transaction network. *Annals of Operations Research*, *341*, 349-374. https://doi.org/10.1007/s10479-023-05552-7

13. S. Lee, **J. Choi**, and Y. Son. (2022). Efficient visibility algorithm for high-frequency time-series: application to fault diagnosis with graph convolutional network. *Annals of Operations Research, 339*, 813-833. https://doi.org/10.1007/s10479-022-05071-x

12. M. Choi, S.-H. Yoo, J. Lee, **J. Choi**, and B. Kim. (2022). A modified gamma/Gompertz/NBD model for estimating technology lifetime. *Scientometrics*, *127*(10), 5731-5751. https://doi.org/10.1007/s11192-022-04489-1

11. **J. Choi**, Y. Son, and M. K. Jeong. (2022). Restricted relevance vector machine for missing data with application to virtual metrology. *IEEE Transactions on Automation Science and Engineering, 19*(4), 3172-3183. https://doi.org/10.1109/TASE.2021.3111096

10. **J. Choi**, A. Tosyali, B. Kim, H. Lee, and M. K. Jeong. (2022). A novel method for identifying competitors using a financial transaction network. *IEEE Transactions on Engineering Management*, *69*(4), 845-860. https://doi.org/10.1109/TEM.2019.2931660

9. B. Tavakkol, **J. Choi**, M. K. Jeong, and S. L. Albin. (2022). Object-based cluster validation with densities. *Pattern Recognition*, *121*, 108223. https://doi.org/10.1016/j.patcog.2021.108223

8. **J. Choi**, B. Kim, C. H. Han, H. Hahn, H. Park, J. You, and M. K. Jeong. (2021). Methodology for assessing the contribution of knowledge services during the new product development process to business performance. *Expert Systems with Applications*, *167*, 113860. https://doi.org/10.1016/j.eswa.2020.113860

7. A. Tosyali, **J. Choi**, B. Kim, H. Lee, and M. K. Jeong. (2021). A dynamic graph-based approach to ranking firms for the identification of key players using inter-transactions. *Annals of Operations Research*, *303*, 5-27. https://doi.org/10.1007/s10479-021-04100-5

6. A. Tosyali, J. Kim, **J. Choi**, Y. Kang, and M. K. Jeong. (2020). New node anomaly detection algorithm based on nonnegative matrix factorization for directed citation network. *Annals of Operations Research*, *288*, 457-474. https://doi.org/10.1007/s10479-019-03508-4

5. A. Tosyali, J. Kim, **J. Choi**, and M. K. Jeong. (2019). Regularized asymmetric nonnegative matrix factorization for clustering in directed networks. *Pattern Recognition Letters*, *125*, 750-757. https://doi.org/10.1016/j.patrec.2019.07.005

4. **J. Choi** and M. K. Jeong. (2019). Deep autoencoder with clipping fusion regularization on multi-step process signals for virtual metrology. *IEEE Sensors Letters*, *3*(1), 1-4. https://doi.org/10.1109/LSENS.2018.2884735

3. G. Gazzola, **J. Choi**, D. S. Kwak, B. K. Kim, D. M. Kim, S. H. Tong, and M. K. Jeong. (2018). Integrated variable importance assessment in multi-stage manufacturing processes. *IEEE Transactions on Semiconductor Manufacturing*, *31*(3), 343-355. https://doi.org/10.1109/TSM.2018.2853586

2. **J. Choi**, B. Kim, H. Hahn, H. Park, Y. Jeong, J. You, and M. K. Jeong. (2017). Data mining-based variable assessment methodology for evaluating the contribution of knowledge services of a public research institute to business performance of Firms. *Expert Systems with Applications*, *84*, 37-48.

https://doi.org/10.1016/j.eswa.2017.04.057

1. A. Rodriguez, A. Tosyali, B. Kim, **J. Choi**, B. Coh, J. Lee, and M. K. Jeong. (2016). Patent clustering and outlier ranking methodologies for attributed patent citation networks. *IEEE Transactions on Engineering Management*, *63*(4), 426-437. https://doi.org/10.1109/TEM.2016.2580619

PRESENTATION

20. N. Smith and **J. Choi**. Machine learning based business competitor identification. In *2024 INFORMS Annual Meeting*, Oct. 20-23, 2024. Seattle, WA.
19. **J. Choi**. Neural Networks with regularization for automatic sensor selection in semiconductor manufacturing. *Industrial Artificial Intelligence Conference*, Jan. 30, 2024. Hanyang University ERICA, Seoul, South Korea.
18. **J. Choi**. Managerial Informatics and Modeling in Complex System. *MIS Department Research Presentation*, West Virginia University, Nov. 9, 2023. Morgantown, WV.
17. **J. Choi** and B. Kim. Competitor Identification in Interfirm Transaction Networks. In *2023 INFORMS Annual Meeting*, Oct. 15-18, 2023. Phoenix, AZ.
16. B. Kim and **J. Choi**. A new customer recommendation method for identifying potential entrants in a B2B transaction network. In *2023 INFORMS Annual Meeting*, Oct. 15-18, 2023. Phoenix, AZ.
15. **J. Choi**, M. Zhu, J. Kang, and M. K. Jeong. Multi-Sensor Multivariate Virtual Metrology Using Convolutional Neural Networks in Semiconductor Manufacturing. In *2022 INFORMS Annual Meeting*, Oct. 16-19, 2022. Indianapolis, IN.
14. **J. Choi**, Y. Son, and M. K. Jeong. Restricted Relevance Vector Machine for Missing Data and Application to Virtual Metrology. In *2022 IEEE 18th International Conference on Automation Science and Engineering (CASE)*, Aug. 20-24, 2022. Mexico City, Mexico and Chengdu, China.
13. **J. Choi**, Y. Son, and J. Kang. Deep Learning for Virtual Metrology with Automatic Sensor Selection at Semiconductor Manufacturing Process. In *2021 INFORMS Annual Meeting*, Oct. 24-27, 2021. Anaheim, CA.
12. R. Wang, **J. Choi**, and M. Zhu. Deep Learning-Based Review Prediction for Smart Health Monitoring Wearable Device. In *2021 INFORMS Annual Meeting*, Oct. 24-27, 2021. Anaheim, CA.
11. **J. Choi**. Handling Missing Values in Relevance Vector Machines. *Dongguk Data Science Seminar* (D2S2), Data Science Laboratory, Dongguk University, Jan. 6, 2021. Seoul, South Korea.
10. **J. Choi**, Y. Son, and M. K. Jeong. Virtual Metrology Using Restricted Relevance Vector Machine for Incomplete Data. In *2020 Virtual INFORMS Annual Meeting*, Nov. 08-11, 2020. Online.
9. **J. Choi**, J. Kang, and M. K. Jeong. Deep Learning Based Feature Extraction with Fusion Regularization on Sensor Signals of Semiconductor Manufacturing Process. In *2019 INFORMS Annual Meeting*, Oct. 22-25, 2019, Seattle, WA.
8. **J. Choi**, H. Bokadia, and M. K. Jeong. Deep Autoencoder with Regularization on Sensor Signals for Virtual Metrology in Semiconductor Manufacturing. In *2018 INFORMS Annual Meeting*, Nov. 4-7, 2018, Phoenix, AZ.
7. Y. Son, **J. Choi**, J. Lee, M. K. Jeong. Sparse Bayesian Regression Analysis for Handling Missing Values of Incomplete Data. In *2017 Korea Business Intelligence Data Mining Society Conference*, Nov. 24-25, 2017, Busan, South Korea.
6. M. K. Jeong, A. Tosyali, **J. Choi**, B. Kim, and H. Lee. New Data Mining Models to Analyze Big Value Chain Networks Data. In *US-Korea Conference 2017*, Aug. 9-12, 2017, Washington, D.C.
5. M. K. Jeong, **J. Choi**, Y. Son, and J. Kang. Deep Learning Based Virtual Metrology and Yield Prediction in Semiconductor Manufacturing Processes. In *PHM Asia Pacific 2017*, Jul. 12-16, 2017, Jeju, South Korea.
4. Y.-S. Jeong, B. Kim, M. K. Jeong, **J. Choi**, S. Kwon, and J. Kang. A New Bayesian Classification Model for Uncertain Data. In *2016 INFORMS Annual Meeting*, Nov. 13-16, 2016, Nashville, TN.

3. **J. Choi**, S. Hwang, S. Kwon, J. Kang, and M. K. Jeong. Robust Kernel Based Regression with Applications to a Dynamic Virtual Metrology. In *2016 INFORMS International Meeting*, Jun. 12-15, 2016, Waikola Village, HI.

2. A. Tosyali, B. Kim, **J. Choi**, B. Coh, J. Lee, M. K. Jeong, and A. Rodriguez. Ranking Outliers in Patent Citation Network using Attributes and Graph Structure. In *2015 INFORMS Annual Meeting*, Nov. 1-4, 2015, Philadelphia, PA.

1. G. Gazzola, **J. Choi**, M. K. Jeong, and B. Kim. Integrated Variable Importance Assessment in Multi-Stage Manufacturing Processes. In *2015 INFORMS Annual Meeting*, Nov. 1-4, 2015, Philadelphia, PA.

TEACHING

01/2021–Present **Primary Instructor**
John Chambers College of Business and Economics, West Virginia University
- BCOR-330 *Information Systems/Technology* in Fall 2021, Fall 2022
- BUDA-450 *Business Data Mining and Visualization* in Fall 2023, Fall 2024, Fall 2025
- BUDA-452 *Business Simulation Modeling* in Spring 2021, Spring 2022, Spring 2023, Spring 2024
- BUDA-455 *Introduction to Business Intelligence and Artificial Intelligence* in Fall 2023, Spring 2024, Fall 2024, Spring 2025, Fall 2025
- BUDA-497A *Special Topic: Business Intelligence and Artificial Intelligence* in Fall 2021
- BUDA-545 *Business Simulation Modeling* in Spring 2025

09/2017–05/2020 **Primary Instructor**
Rutgers Business School – New Brunswick, Rutgers University
- [33:136:386] *Operations Management* in Fall 2017, Spring 2018, Spring 2020
- [33:136:370] *Management Information Systems* in Spring 2019
- [33:136:385] *Statistical Methods in Business* in Spring 2018, Fall 2018, Fall 2019

10/2017 **Guest Lecturer**
School of Engineering, Rutgers University
- [14:540:694] *Advanced Topic in IE: Data Mining II* in Fall 2017

08/2014–12/2014
08/2015–12/2015 **Laboratory Instructor**
School of Engineering, Rutgers University
- [14:540:202] *Work Design and Ergonomics Lab* (Dr. James T. Luxhøj) in Fall 2014
- [14:540:384] *Simulation Models in IE* (Dr. Hoang Pham) in Fall 2015

08/2017–12/2017
08/2014–12/2015 **Teaching Assistant**
School of Engineering, Rutgers University
- [14:540:694] *Advanced Topic in IE: Data Mining II* in Fall 2017
- [14:540:201] *Work Design and Ergonomics* in Fall 2017
- [14:540:343] *Engineering Economics* in Fall 2014, Spring 2015, and Fall 2015

ADVISING/MENTORING

- Undergraduate research mentorship
  - Nathaniel Smith (10/2023 ~ 10/2024)
  - Andrew Taughinbaugh (01/2023 ~ 05/2023) — RAP at WVU
  - Mahlon Reese (07/2022 ~ 12/2022) — EXCEL at WVU
- Graduate capstone project faculty mentorship
  - Macey Crawford, Mikinna Russell, Casey Skibbe, & Molly Shadle (Summer 2025) — Capstone project in BUDA-555 for Repair King (substituted from Viable Energy)

- Raymond Barley, Mary Major, Luc Tomaswick (Summer 2024) — Capstone project in BUDA-555 for WV High Technology Foundation
- Dakota Wolfe, Zohaib Khan, Noah Adler (Summer 2024) — Capstone project in BUDA-555 for Nest Health
- Nathan Thompson, Alex Quinn, Lucas Hilsbos, Todd Lathrop (Summer 2023) — Capstone project in BUDA-555 for Nest Health

HONORS AND AWARDS

05/2024–05/2025 *WVU Cloud Analytics Fellowship* ($5,000)
High Technology Foundation

04/2020 *2020 Tayfur Altiok Scholarship*, ($1,000)
Department of Industrial and Systems Engineering, Rutgers University

05/2019 *Conference Travel Grants Award*
School of Graduate Studies, Rutgers University

09/2017–01/2018 *Graduate Fellowship* ($5,675)
Department of Industrial and Systems Engineering, Rutgers University

09/2016–06/2017 *Graduate Fellowship* ($9,000)
Department of Industrial and Systems Engineering, Rutgers University

01/2016–06/2016 *Graduate Fellowship* ($9,961)
Department of Industrial and Systems Engineering, Rutgers University

02/2014–05/2014 *Graduate Fellowship* ($2,500)
Department of Industrial and Systems Engineering, Rutgers University

PROFESSIONAL SERVICES AND ACTIVITIES

- Professional Fellows
  - Cloud Analytics Faculty Fellow in the office of the Provost at West Virginia University (06/2024 ~ 05/2025)
- Reviewer/Referee:

  Annals of Operations Research; Engineering Applications with Artificial Intelligence; Engineering Applications of Artificial Intelligence; Expert Systems with Applications; IEEE Transactions on Automation Science and Engineering; IEEE Transactions on Computational Social Systems; IEEE Transactions on Systems, Man and Cybernetics: Systems; *IEEE Transactions on Engineering Management; IEEE Transactions on Semiconductor Manufacturing; Knowledge-Based Systems; International Journal of Production Research; Pattern Recognitions; Pattern Recognitions Letters*

  IEEE Technology & Engineering Management Society Conference (TEMSCON) 2018, 2019, 2020; IEEE Technology and Engineering Management Society Conference International Symposium on Innovation and Entrepreneurship (TEMS-ISIE) 2018; IEEE International Conference on Technology Management, Operations and Decisions (ICTMOD) 2018, 2020; The Workshop on E-Business 2024, 2025
- Session Chair:

  Session (IS), 2024 INFORMS Annual Meeting, with Dr. Tosyali, Ali

  Session (DM), 2023 INFORMS Annual Meeting

  Session (DM), 2022 INFORMS Annual Meeting, with Dr. Baek, Jaeseung

  Special Session (MDS), 2022 IEEE CASE, with Dr. Lee, Chia-Yen

  Regular Session (MMSC), 2022 IEEE CASE, with Dr. Yue, Xiaowei

  Session (DM), 2021 INFORMS Annual Meeting, with, with Dr. Kim, Byunghoon

  Joint session (QSR/DM), 2018 INFORMS Annual Meeting

- Membership:
  IEEE; INFORMS; ACM