Hyunwoong Ko, Ph.D.

School of Manufacturing Systems and Networks
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PROFESSIONAL APPOINTMENTS

- Assistant Professor, School of Manufacturing Systems and Networks, Ira A. Fulton Schools of Engineering, Arizona State University, USA — Jan. 2022 – Present
- Graduate Faculty, Ph.D. Program in Manufacturing Engineering, Arizona State University, USA — Jan. 2023 – Present
- Graduate Faculty, Ph.D. Program in Data Science, Analytics, and Engineering, Arizona State University, USA — Jan. 2022 – Present
- Graduate Faculty, Ph.D. Program in Systems Engineering, Arizona State University, USA — Jan. 2022 – Present
- Postdoctoral Research Associate, Systems Integration Division, Engineering Laboratory, National Institute of Standards and Technology, USA — Oct. 2019 – Sep. 2021
- Research Associate, Systems Integration Division, Engineering Laboratory, National Institute of Standards and Technology, USA — Oct. 2017 – Sep. 2019
- Research and Teaching Assistant, Design Science Laboratory & Singapore Centre for 3D Printing, School of Mechanical and Aerospace, Nanyang Technological University, Singapore — Aug. 2013 – Sep. 2017

EDUCATION

Ph.D., Mechanical and Aerospace Engineering
Nanyang Technological University (NTU), Singapore — Sep. 2019
- Agency for Science Technology and Research (A*STAR) scholar
- Research associate at National Institute of Standards and Technology (NIST), USA

M.S., Industrial and Management Engineering
Hanyang University, South Korea — Feb. 2012

B.S., Industrial Engineering
Hanyang University (ERICA), South Korea — Feb. 2010
- 1st ranked in the graduating class

HONORS AND AWARDS

- Technical Committee Leadership Award, Computers and Information in Engineering, The American Society of Mechanical Engineers (ASME) International Design Engineering & Computers and Information in Engineering Technical Conference — Aug. 2024
- 2023 Best Paper Award, Systems Engineering, Information and Knowledge Management, Computers and Information in Engineering, The American Society of Mechanical Engineers (ASME) International Design Engineering & Computers and Information in Engineering Technical Conference — Aug. 2023
- Faculty of Impact Award, ASU — May 2023

- Recognition, Hackathon Committee Chair, Computers and Information in Engineering, The American Society of Mechanical Engineers — Aug. 2022
- 2020, Best Paper Award, KSME Fall/Spring Online Conference, Korean Society of Mechanical Engineers — Dec. 2020
- 2019 IEEE CASE Student Travel Award — Jun. 2019
- 2017 IJPEM Highly Commended Paper Award — Dec. 2017
- 2nd place, 2013 1st Singapore International 3D Printing Competition — Dec. 2013
- Singapore International Graduate Award (SINGA), Agency for Science Technology and Research (A*STAR) — Aug. 2013 – Aug. 2017
- Scholarship (Excellent & Honor), Hanyang University — Mar. 2010 – Dec. 2011
- Graduated summa cum laude (1st ranked in the graduating class), Hanyang University — Feb. 2010
- 3rd place, 2009 Paper Competition in Applied Science and Technology, College of Science and Technology, Hanyang University — Nov. 2009
- Scholarship (Honor), Hanyang University — Fall 2009
- Scholarship (Excellent), Hanyang University — Spring 2009
- National Science & Technology Scholarship, Korea Student Aid Foundation — Fall 208
- Scholarship (Honor), Hanyang University — Spring 2008
- Scholarship (Top), Hanyang University — Fall 2007
- The Army Achievement Medal, US Army — Oct. 2006

PUBLICATIONS

Scholarly Citation Indexes as of 01/29/2026

- From Google Scholar: Citations **1047**, h-index **13**, i10-index **19**

Legend: (*) Corresponding Author | (+) Equal Contributions | **Bold Font**: Dr. Ko's Ph.D. Student (primary) | Underline Font: Master's Student for whom Dr. Ko is the primary advisor

Refereed Journal and Conference (Journal-Level Machine Learning Conference) Publications

Journal and Conference Rankings Summary	
Name	**Ranking (according to Scimago)**
Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)	Rank 2 in *Computer Vision and Pattern Recognition*; SJR = 4.718; H-index = 601 (from Google Scholar: ranked #1 in Engineering & Computer Science, including journals)
Journal of Manufacturing Systems	Q1; Rank 3 in *Industrial and Manufacturing Engineering*; SJR = 3.380; IF = 14.2
Additive Manufacturing	Q1; Rank 10 in *Industrial and Manufacturing Engineering*; SJR = 2.877; IF = 11.1
Virtual and Physical Prototyping	Q1 in *Industrial and Manufacturing Engineering*; SJR = 1.673; IF = 9.6
IEEE Transactions on Automation Science and Engineering	Q1 in *Control and Systems Engineering*; SJR = 1.918; IF = 6.4
Small	Q1 in *Engineering*; SJR = 3.301; IF = 12.1
Journal of Intelligent Manufacturing	Q1 in *Industrial and Manufacturing Engineering*; SJR = 1.763; IF = 7.4
Journal of Computing and Information Science in Engineering	Q1 in *Industrial and Manufacturing Engineering*; SJR = 0.788; IF = 3.3
Engineering Applications of Artificial Intelligence	Q1 in *Artificial Intelligence*; SJR = 1.652; IF = 8.0
IISE Transactions	Q1 in *Industrial and Manufacturing Engineering*; SJR = 0.851; IF = 2.9
International Journal of Precision Engineering and Manufacturing	Q2 in *Industrial and Manufacturing Engineering*; SJR = 0.570; IF = 3.6
International Journal of AI for Materials and Design	n/a; young journal

Manuscripts Under Development for Q1 Journals and Q1-Level Conferences (Total Number = 10)

P1. **Elhambakhsh, F.**, Yang, Z., Lu, Y., Yeung, H., and **Ko, H.***, "AMDiffusion: Domain-adaptive diffusion modeling for causal data fusion in additive manufacturing digital twins", Virtual and Physical Prototyping, *To be submitted*, 2026.

P2. **Elhambakhsh, F.**[+], **Lee, S. K.**[+], and **Ko, H.***, "Diffusion modeling-based multimodal multiscale data fusion for digital twins in aerosol jet electronics printing", ASME Journal of Computing and Information Science in Engineering, *To be submitted*, Jan. 2026.

P3. **Elhambakhsh, F.**, Lugaresi, G., Xie, J., Lu, Y., Lu, Y., Zhao, Y. F., and **Ko, H.***, "Machine learning-driven digital twin construction for additive manufacturing: A review", *Under Development*, 2026.

P4. **Elhambakhsh, F.**, Grandi, D., and **Ko, H.***, "A domain adaptation of large language models for classifying mechanical assembly components", *Under Development*, 2026.

P5. **Taheri, Z., Lee, S. K.,** and **Ko, H.***, "Physics-informed graph transformer for virtual metrology in semiconductor etching manufacturing", *Under Development*, 2026.

P6. **Lee, S. K.**, **Taheri, Z.**, and **Ko, H.***, "Integrated diffusion and graph transformer for virtual metrology in semiconductor etching manufacturing", *Under Development*, 2026.

P7. **Han, T.**, **Taheri, Z.**, and **Ko, H.***, "Physics-informed neural networks for semiconductor film deposition: A review", *Under Development*, 2026.

P8. Mutta, V. S. D., and Ko, H.*, "Multi-Agent Development for Multi-Robot Collaboration: Integrated Multi-Agent Reinforcement Learning and Diffusion Architecture," *Under Development*, 2025.

P9. Nguyen, K., and **Ko, H.***, "Generative topology optimization for aerosol jet printed solid-state batteries", *Under Development*, 2025.

P10. Kumbhar, B. S., **and Ko, H.***, "Physics-aware graph construction for aerosol jet printing via generative language models", *Under Development*, 2025.

Submitted (Total Number = 3)

S1. **Elhambakhsh, F.**, Ameta, G., Roy, A., and **Ko, H.***, "MP-GFormer: A 3D-Geometry-Aware Dynamic Graph Transformer Approach for Machining Process Planning", IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2026), Submitted, 2026.

S2. **Lee, S. K.**, Stone, R. F. P., Gao, M., Zhang, W., Sha, Z., and **Ko, H.***, "Generative model predictive control in manufacturing processes: A review", ASME Journal of Computing and Information Science in Engineering, Under Second Round Review, 2026.

S3. Yang, Z., Yeung, H., **Ko, H.**, Zhang, X., and Neira, J., "Influence of scan pattern on melt pool formation in laser powder bed fusion additive manufacturing", ASME International Manufacturing Science and Engineering Conference (MSEC 2026), Submitted.

Book Chapter (Total Number = 1, At ASU = 1)

B1. Kitt, A.*, **Ko, H**., "Data Analytics and Machine Learning in Metal Additive Manufacturing: Challenges, Segmentations, and Applications," Additive Manufacturing Design and Applications, Vol 24A, ASM Handbook, Edited By Mohsen Seifi, David L. Bourell, William Frazier, Howard Kuhn, ASM International, 2023, p 177–183.

Journals

Published, In Press, or Accepted (Total Number = 17, at ASU = 12)

J1. Lee, S. K., Kim, W., Lee, S., Park, J., Chun, S., Yeung, H., & Ko, H. (2026). "Graph attention-based dynamical and causal spatiotemporal learning for anomaly detection in additive manufacturing", Virtual and Physical Prototyping, 21(1).

J2. Xie, J., Safdar, M., Mircea, A., Zhao, B. C., Lu, Y., **Ko, H.**, Yang, Z., and Zhao, Y. F., "Towards reproducible machine learning-based process monitoring and quality prediction research for additive manufacturing", *Engineering Applications of Artificial Intelligence*, **161**, Part C, 2025.

J3. Li, Y., **Ko, H.***, and Ameri, F., "Integrating Graph Retrieval-Augmented Generation With Large Language Models for Supplier Discovery", *Journal of Computing and Information Science in Engineering*, **25**(2), 021010, 2025.
J4. Lee, S., **Ko, H.***, "AMTransformer: A Koopman Theory-Based Transformer to Learn Laser Additive Manufacturing Dynamics", *International Journal of AI for Materials and Design*, **1**(2), 76–91, 2024.
J5. Safdar, M., Xie, J., **Ko, H.**, Lu, Y., Lamouche, G., and Zhao, Y. F.*, "Transferability Analysis of Data-Driven Additive Manufacturing Knowledge: A Case Study Between Powder Bed Fusion and Directed Energy Deposition", *Journal of Computing and Information Science in Engineering*, **24**(5), 051010, 2024.
J6. Yang, Z., Kim, J., Lu, Y., Jones, A., Witherell, P., Yeung, H., and **Ko, H.**, "Enhancing Part Quality Management Using a Holistic Data Fusion Framework in Metal Powder Bed Fusion Additive Manufacturing", *Journal of Computing and Information Science in Engineering*, **24**(5), 051007, 2024.
J7. Fonseca, N., Thummalapalli, S. V., Jambhulkar, S., Ravichandran, D., Zhu, Y., Patil, D., Thippanna, V., Ramanathan, A., Xu, W., Guo, S., **Ko, H.**, Kannan, A. M., Nian, Q., Asadi, A., Guillaume, M., Anna, D., Hassan, M. K., AliAl-Maadeee, M. A., El-Dessouky, H. M., Stan, F., and Song, K.*, "3D Printing-enabled Design and Manufacturing Strategies for Batteries: A Review", *Small*, e2302718, 2024.
J8. Guo, S.*, **Ko, H.**, and Wang, A., "Applications and prospects of machine learning for aerosol jet printing: A review", *IISE Transactions*, **56**(10), 1038–1057, 2023.
J9. Kim, J., Yang, Z., **Ko, H.**, Choi, J., Cho, H., and Lu, Y.*, "Deep Learning Based Data Registration for Melt Pool Monitoring of Laser Powder Bed Fusion Additive Manufacturing", *Journal of Manufacturing Systems*, **68**, 117–129, 2023.
J10. **Ko, H.***, Yang, Z., Ndiaye, N. Y., Witherell, P., and Lu, Y., "A Framework Driven by Physics-Guided Machine Learning for Process-Structure-Property Causal Analytics in Additive Manufacturing", *Journal of Manufacturing Systems*, **67**, 213–228, 2023.
J11. Feng, S.*, Moges, T., Park, H., Yakout, M., Jones, A., **Ko, H.**, and Witherell, P., "Functional Requirements of Software Tools for Laser-based Powder Bed Fusion Additive Manufacturing for Metals", *Journal of Computing and Information Science in Engineering*, **23**(3), 2023.
J12. Park, H., **Ko, H.**, Lee, Y. T. T., et al., "Collaborative knowledge management to identify data analytics opportunities in additive manufacturing", *Journal of Intelligent Manufacturing*, **34**, 541–564, 2023.

↑ **Articles published with ASU affiliation**
↓ **Articles published Prior to ASU Appointment**

J13. Oh, Y., **Ko, H.**, Sprock, T., Bernstein, W. Z., and Kwon, S.*, "Part Decomposition and Evaluation Based on Standard Design Guidelines for Additive Manufacturability and Assemblability", *Additive Manufacturing*, **37**, 101702, 2021.
J14. **Ko, H.***, Witherell, P., Lu, Y., Kim, S., and Rosen, D. W., "Machine Learning and Knowledge Graph based Design Rule Construction for Additive Manufacturing", *Additive Manufacturing*, **37**, 101620, 2021.
J15. Kim, S.*, Rosen, D. W., Witherell, P., and **Ko, H.**, "A Design for Additive Manufacturing Ontology to Support Manufacturability Analysis", *Journal of Computing and Information Science in Engineering*, **19**(4), 041014, 2019.
J16. **Ko, H.**, Moon, S. K.*, and Otto, N. K., "Design Knowledge Representation to Support Personalized Additive Manufacturing", *Virtual and Physical Prototyping*, **10**(4), 217–226, 2015.
J17. **Ko, H.**, Moon, S. K.*, and Hwang, J., "Design for Additive Manufacturing in Customized Products", *International Journal of Precision Engineering and Manufacturing*, **16**(11), 2369–2375, 2015.

Refereed Conference Papers (Total number = 24, At ASU = 10)

RC1. **Han, T.**, **Taheri, Z.**, and **Ko, H.***, "Physics-informed neural networks for semiconductor film deposition: A review", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025.

RC2. **Elhambakhsh, F**., Grandi, D., and **Ko, H.***, "A domain adaptation of large language models for classifying mechanical assembly components", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025.

RC3. **Elhambakhsh, F.**$^{+}$, **Lee, S.**$^{+}$, and **Ko, H.***, "Generative multimodal multiscale data fusion for digital twins in aerosol jet electronics printing", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025.

RC4. **Lee, S.**, and **Ko, H.***, "Generative machine learning in adaptive control of dynamic manufacturing processes: A review", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025 , Paper No. V02BT02A029, ASME.

RC5. Pushparajan, R., Ameri, F., and **Ko, H.***, "A comparative study of zero-shot multimodal retrieval-augmented generation for image labeling in manufacturing: GPT-4o-Mini vs. Llama 3.2 Vision", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025, Paper No. V02BT02A029, ASME.

RC6. Xie, J., Safdar, M., Romascanu, A., Lu, Y., **Ko, H.**, Yang, Z., and Zhao, Y.*, "Towards reproducible machine learning-based process monitoring and quality prediction research for additive manufacturing", *ASME 2024 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2024)*, Washington, D.C., USA, August 25–28, 2024, , Paper No. V02AT02A033, ASME.

RC7. Lu, Y.*, Xie, J., Safdar, M., Yang, Z., **Ko, H.**, Shengyen, L., **Elhambakhsh, F.**, and Zhao, Y., "An overarching quality evaluation framework for additive manufacturing digital twin", *IEEE 20th International Conference on Automation Science and Engineering (CASE 2024)*, Bari, Italy, 2024, pp. 676–682.

RC8. Safdar, M., Xie, J., **Ko, H.**, Lu, Y., Lamouche, G., and Zhao, Y. F.*, "Transferability analysis of data-driven additive manufacturing knowledge: A case study between powder bed fusion and directed energy deposition", *ASME 2023 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2022)*, Boston, Massachusetts, USA, August 20–23, 2023.

RC9. Yang, Z., Kim, J., Lu, Y.*, Jones, A., Witherell, P., Ho, Y., and **Ko, H.**, "Enhancing part quality management using an extended data fusion framework in metal powder bed fusion additive manufacturing", *ASME 2023 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2022)*, Boston, Massachusetts, USA, August 20–23, 2023.

RC10. **Ko, H.***, Kim, J., Lu, Y., Shin, D., Yang, Z., and Oh, Y., "Spatial–temporal modeling using deep learning for real-time monitoring of additive manufacturing", *ASME 2022 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2022)*, St. Louis, Missouri, USA, August 14–17, 2022, Paper No. V002T02A019, ASME.

↑ **Articles published with ASU affiliation**

↓ **Articles published Prior to ASU Appointment**

RC11. Milaat, F. A.*, Yang, Z., **Ko, H.**, and Jones, A. T., "Prediction of melt pool geometry using deep neural networks", *ASME 2021 International Design Engineering Technical Conferences*

and Computers and Information in Engineering Conference (IDETC/CIE 2021), Virtual (Online), August 17–19, 2021, Paper No. V002T02A037, ASME.

RC12. Oh, J., **Ko, H.**, and Kwon, S.*, "Optimization of part decomposition for efficient 3D printing", *Korean Society of Mechanical Engineers (KSME) 2020 Fall/Spring Online Conference*, December 20, 2020 (in Korean) (Best Paper Award).

RC13. Park, H., **Ko, H.**, Lee, Y. T., Cho, H.*, and Witherell, P., "A framework for identifying and prioritizing data analytics opportunities in additive manufacturing", *IEEE International Conference on Big Data (BigData 2019)*, Los Angeles, California, USA, December 9–12, 2019.

RC14. **Ko, H.***, Witherell, P., Ndiaye, N. Y., and Lu, Y., "Machine learning-based continuous knowledge engineering for additive manufacturing", *IEEE 15th International Conference on Automation Science and Engineering (CASE 2019)*, Vancouver, British Columbia, Canada, August 22–26, 2019 (First-round Nomination for Best Student Paper).

RC15. Kim, S.*, Rosen, D. W., Witherell, P., and **Ko, H.**, "A design for additive manufacturing ontology to support manufacturability analysis", *ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2018)*, Quebec City, Canada, August 26–29, 2018.

RC16. Kim, S.*, Rosen, D. W., Witherell, P., and **Ko, H.**, "Linking part design to process planning by design for additive manufacturing ontology", *3rd International Conference on Progress in Additive Manufacturing (Pro-AM 2018)*, Singapore, May 14–17, 2018.

RC17. **Ko, H.**, and Moon, S. K.*, "Contradicting functions with affordances in design for additive manufacturing", *ASME 2017 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2017)*, Cleveland, Ohio, USA, August 6–9, 2017.

RC18. **Ko, H.**, Moon, S. K.*, Wood, K. L., and Oh, H. S., "An integration of function- and affordance-based methods for product–service systems utilizing finite state automata", *9th IEEE International Conference on Industrial Engineering and Engineering Management (IEEM 2016)*, Bali, Indonesia, December 4–7, 2016.

RC19. Moon, S. K., Tan, Y. E., **Ko, H.**, Chua, Z. Y., Ngo, T. H., Hwang, J. H., and Baek, J. W.*, "A customized 3D printed sensor development framework for component condition monitoring", *18th International Conference on Industrial Engineering (IJIE 2016)*, Seoul, South Korea, October 10–12, 2016.

RC20. **Ko, H.**, Sacco, E., Chua, Z. Y., and Moon, S. K.*, "User-centered design for additive manufacturing as a customization strategy", *2nd International Conference on Progress in Additive Manufacturing (Pro-AM 2016)*, Singapore, May 16–19, 2016.

RC21. **Ko, H.**, Lee, S. W., Shin, D. M., and Moon, S. K.*, "A formal model of human interactions for service ecosystem design", *ASME 2014 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2014)*, Buffalo, New York, USA, August 17–20, 2014.

RC22. **Ko, H.**, and Moon, S. K.*, "Customization design knowledge representation to support additive manufacturing", *1st International Conference on Progress in Additive Manufacturing (Pro-AM 2014)*, Singapore, May 26–28, 2014.

RC23. **Ko, H.**, and Shin, D.*, "s-Scape: A service prototype testing space for innovation of service quality improvement", *IIE Asian Conference (AIIE 2011)*, Shanghai, China, June 10–12, 2011.

RC24. Ko**, H.***, and Shin, D., "Formal modeling of quality-measurable service systems using affordance-based finite state automata", *Korean Institute of Industrial Engineers (KIIE) Conference*, Seoul, South Korea, November 5, 2011 (in Korean).

Non-Refereed Conference Papers (Total Number = 2, At ASU = 0)
↓ Articles published Prior to ASU Appointment

NRC1. Monnier, L.*, and **Ko, H.**, "HDF5 hierarchies for additive manufacturing digital representations and enhanced analytics", *33rd Annual International Solid Freeform Fabrication Symposium – An Additive Manufacturing Conference*, Austin, Texas, USA, July 25–27, 2022.

NRC2. Gibbons, D. W.*, and **Ko, H.**, "Configuration control for additive manufacturing digital twins", *32nd Annual International Solid Freeform Fabrication Symposium – An Additive Manufacturing Conference*, Austin, Texas, USA, August 2–4, 2021.

PRESENTATIONS

Legend: (~) Presenting author, ‡ High School Student for whom Dr. Ko is the primary advisor

Invited Presentations (Total Number = 38, At ASU = 25)

1. **Ko, H.**~, "Toward Advanced Physical AI and Digital Twins for Manufacturing and Design: Generative, Graph, and Attention-based Learning," SIE Seminar Series, University of Arizona, Tucson, United States, Nov. 20, 2025
2. **Ko, H.**~, "Machine-Learning-Driven Manufacturing & Design: Toward Advanced Physica AI," Hanyang University, South Korea, Nov. 5, 2025
3. **Ko, H.**~, "Generative Modeling for Predictive Digital Twins in Additive Manufacturing: A Process–Structure–Property Approach," MFG 598: AI in Additive Manufacturing, ASU, April 2025.
4. **Ko, H.**~, "Generative Modeling for Predictive Manufacturing Digital Twins" Workshop: Data Management and Digital Twins for Advanced Manufacturing, ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025), Anaheim, California, USA, Aug. 17, 2025
5. **Lee, S.** and **Ko, H.**~, "AM Transformer: A Koopman Theory-Based Transformer to Learn Additive Manufacturing Dynamics," Webinar: Advanced Data Analysis and Knowledge Models in Smart Manufacturing, International Journal of AI for Materials and Design, Nov. 11, 2024.
6. **Ko, H.**~, "Generative and Transformer Modeling Approaches for Additive Manufacturing," Hanyang University, South Korea, Oct. 28, 2024.
7. **Ko, H.**~, "Generative and Transformer Modeling Approaches for Advanced Manufacturing," Sungkyunkwan University, South Korea, Oct. 24, 2024.
8. **Ko, H.**~, "Generative and Transformer Modeling Approaches for Advanced Manufacturing," Chung-Ang University, South Korea, Oct. 24, 2024.
9. **Ko, H.**~, "Generative and Transformer Modeling Approaches for Advanced Manufacturing," Keynote Speaker, LG 2024 Laser Technology Forum, LG Electronics, South Korea, Sept. 26, 2024.
10. **Ko, H.**~, "Generative Diffusion Modeling for Predictive Digital Twins of Sustainable Nanoparticle Electronics Printing," The 18th U.S.-Korea Forum on Nanotechnology, Tempe, Arizona, Sept. 23, 2024.
11. **Ko, H.**~, "Predictive Digital Twin: Generative and Transformer Modeling Approaches," Workshop on Machine-learning-driven Digital Twin Construction for Advanced Manufacturing, 2024 IEEE 20th International Conference on Automation Science and Engineering (CASE), Bari, Italy, Sept. 1, 2024.
12. **Ko, H.**~, "Diffusion and Transformer Modeling for Predictive Digital Twins in Advanced Manufacturing: A Process-Structure-Property Approach," Metrology & Inspection, A-FAB T/F, Samsung Electronics, South Korea, Aug. 14, 2024.
13. **Ko, H.**~, "Diffusion and Transformer Modeling for Predictive Digital Twins in Additive Manufacturing: A Process-Structure-Property Approach," Dong-A University, South Korea, Aug. 08, 2024.

14. **Ko, H.**~, "Diffusion and Transformer Modeling for Predictive Digital Twins in Additive Manufacturing: A Process-Structure-Property Approach," Pusan National University, Aug. 7, 2024.
15. **Ko, H.**~, "Unraveling Supply Chains: The Transformative Power of Knowledge Graphs," 2024 Open Industrial Digital Eco System Summit, Tempe, Arizona, Feb. 6, 2024.
16. **Ko, H.**~, "A Framework Driven by Physics-guided Machine Learning for Process-Structure-Property Causal Analytics in Digital Additive Manufacturing," 2nd IEEE Workshop on Reliable and Resilient Manufacturing (R2DM2), New York University, New York, New York State, May 1 – 2, 2023.
17. **Ko, H.**~, "A Framework Driven by Physics-guided Machine Learning of Process-Structure-Property Causality for Digital Additive Manufacturing," Korea Institute of Machinery & Materials, Korea, Nov. 30, 2022.
18. **Ko, H.**~, "A Framework Driven by Physics-guided Machine Learning of Process-Structure-Property Causality for Digital Additive Manufacturing," National University of Singapore, Singapore, Nov. 28, 2022.
19. **Ko, H.**~, "AI-Driven Digital Additive Manufacturing," Korea Institute of Industrial Technology, Korea, Nov. 20, 2022.
20. **Ko, H.**~, "A Framework Driven by Physics-guided Machine Learning for Process-Structure-Property Causal Analytics in Digital Additive Manufacturing," Ulsan National Institute of Science & Technology, Korea, Nov. 17, 2022
21. **Ko, H.**~, "AI-Driven Digital Additive Manufacturing," Hanyang University, Korea, Nov. 9, 2022
22. **Ko, H.**~, "A Framework Driven by Physics-guided Machine Learning for Process-Structure-Property Causal Analytics in Digital Additive Manufacturing," Korea University, Korea, Nov. 8, 2022.
23. **Ko, H.**~, "Machine-Learning-Driven Spatial-Temporal Modeling for In-Situ Monitoring of Laser Powder Bed Fusion," Hack3D Symposium, New York University, Jul. 15, 2022
24. **Ko, H.**~, "Machine Learning in Additive Manufacturing: Opportunities and Challenges," New York University, Jul. 5, 2022
25. **Ko, H.**~, "Design for Additive Manufacturing and Machine-learning-driven Opportunities," Keynote Speaker, Workshop of Professional Manpower Training for New-materials 3D Printing, Korea Electronics Technology Institute, Gyeongju, Gyeongsangbuk-do, South Korea, Feb. 9, 2022

↑ **Invited Presentations with ASU affiliation**

↓ **Invited Presentations Prior to ASU Appointment**

26. **Ko, H.**~, "A Framework driven by Physics-informed Machine Learning for Causality Analytics for Additive Manufacturing," Kyunghee University, Suwon, South Korea, Dec. 16, 2021.
27. **Ko, H.**~, "AI-driven Design for Additive Manufacturing in Medical Applications," 8th Annual Winter Congress of the Korean Medical 3D Printing Society, Sejong University, Seoul, South Korea, Dec. 11, 2021.
28. **Ko, H.**~, "Additive Manufacturing, Design for Additive Manufacturing, and Machine-learning-driven Potential," Kyonggi University, Suwon, South Korea, Nov. 15, 2021.
29. **Ko, H.**~, "Machine Learning and Artificial Intelligence Opportunities in Additive Manufacturing," Dong-A University, Busan, South Korea, Jul. 13, 2021.
30. **Ko, H.**~, "Machine-learning-driven Process-structure-property Analytical Framework for Additive Manufacturing," National Institute of Standards and Technology, Gaithersburg, Maryland, USA, Jun. 30, 2021.
31. **Ko, H.**~, "Process-structure-property Modeling and Machine Learning in Additive Manufacturing," NIST AM Seminar Series w/ Nuclear Regulatory Commission – Data, Information, and Modeling

Considerations, Session: Using Predictive Analytics to Establish Part Conformity, National Institute of Standards and Technology, Gaithersburg, Maryland, USA, Apr. 14, 2021.

32. **Ko, H.**~, "Machine Learning and AI driven Process-structure-property Analytics and Decision-support for Additive Manufacturing," Joint Seminar, IEEE Technology Engineering Management Society, Nanyang Technological University, Singapore, Apr. 1st, 2021,
33. **Ko, H.**~, "Machine-learning-driven Process-structure-property Analytical Framework for Additive Manufacturing," Invited Lecture, Hanyang University, South Korea, Feb. 23, 2021.
34. **Ko, H.**~, "Artificial Intelligence driven Laser Powder Bed Fusion Additive Manufacturing," Industrial AI Seminar, Hanyang University, South Korea, Aug. 31, 2020.
35. **Ko, H.**~, "Continuous Knowledge Engineering for Additive Manufacturing," National Institute of Standards and Technology, Gaithersburg, Maryland, USA, April 15, 2019.
36. **Ko, H.**~, Witherell, P., Rosen, D. W., and Kim, S., "A Methodology for Modular Design Rule Representation and Ontology Development for Additive Manufacturing," NIST Presentations on Additive Manufacturing from the 2018 Solid Freeform Fabrication Symposium., National Institute of Standards and Technology, Gaithersburg, Maryland, USA, Sept. 4, 2018.
37. **Ko, H.**~ and Kim, S., "Developing Design Rules for Additive Manufacturing," National Institute of Standards and Technology, Gaithersburg, Maryland, USA, Dec. 20, 2017.
38. **Ko. H.**~, "Design for Additive Manufacturing in Customized Products", Singapore Centre for 3D Printing (SC3DP) Technical Talks, Nanyang Technological University, Singapore, March 25, 2015.

Peer-reviewed Conference Presentations (Total Number = 25, At ASU = 14)

1. **Han, T.**~, **Taheri, Z.**, and **Ko, H.**, "Physics-informed neural networks for semiconductor film deposition: A review", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025.
2. **Elhambakhsh, F.**~, Grandi, D., and **Ko, H.**, "A domain adaptation of large language models for classifying mechanical assembly components", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025.
3. **Elhambakhsh, F.**~, **Lee, S.**, and **Ko, H.**, "Generative multimodal multiscale data fusion for digital twins in aerosol jet electronics printing", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025.
4. **Lee, S.**~, and **Ko, H.**, "Generative machine learning in adaptive control of dynamic manufacturing processes: A review", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025 , Paper No. V02BT02A029, ASME.
5. Pushparajan, R.~, Ameri, F., and **Ko, H.**, "A comparative study of zero-shot multimodal retrieval-augmented generation for image labeling in manufacturing: GPT-4o-Mini vs. Llama 3.2 Vision", *ASME 2025 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2025)*, Anaheim, California, USA, August 17–20, 2025, Paper No. V02BT02A029, ASME.
6. Xie, J.~, Safdar, M., Romascanu, A., Lu, Y., **Ko, H.**, Yang, Z., and Zhao, Y.*, "Towards reproducible machine learning-based process monitoring and quality prediction research for additive manufacturing", *ASME 2024 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2024)*, Washington, D.C., USA, August 25–28, 2024, , Paper No. V02AT02A033, ASME.

7. Lu, Y.~, Xie, J., Safdar, M., Yang, Z., **Ko, H.**, Shengyen, L., **Elhambakhsh, F.**, and Zhao, Y., "An overarching quality evaluation framework for additive manufacturing digital twin", *IEEE 20th International Conference on Automation Science and Engineering (CASE 2024)*, Bari, Italy, 2024, pp. 676–682.
8. **Lee, S.~**, **Ko, H.**, "AM Transformer: A Koopman Theory-Based Transformer to Learn Additive Manufacturing Dynamics," ASME 2024 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Washington, DC, USA Aug. 28, 2024
9. **Elhambakhsh, F.~**, **Ko, H.**, Yang, Z., Lu, Y., "Denoising Diffusion Probabilistic Modeling Based Causal Data Fusion for Predictive Additive Manufacturing Digital Twins," ASME 2024 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Washington, DC, USA Aug. 28, 2024.
10. **Ko, H.~** and **Elhambakhsh, F.**, "A Framework for Physics-guided Machine Learning to Extract and Transfer Process-structure-property Knowledge in Additive Manufacturing," 34th Annual International Solid Freeform Fabrication Symposium - An Additive Manufacturing Conference, Austin, Texas, USA, Aug. 14-16, 2023.
11. **Elhambakhsh, F.~**, and **Ko, H.**, "Machine-learning-driven Digital Twin Construction for Additive Manufacturing," 34th Annual International Solid Freeform Fabrication Symposium - An Additive Manufacturing Conference, Austin, Texas, USA, Aug. 14-16, 2023.
12. **Ko, H.~**, "Explainable Machine Learning for Causality Analytics in Additive Manufacturing," 2022 INFORMS Annual Meeting, Indianapolis, IN, USA, Oct. 16-19, 2022.
13. **Ko, H.~**, Kim, J., Lu, Y., Shin, D., Yang, Z., and Oh, Y., "Spatial-temporal Modeling Using Deep Learning for Real-Time Monitoring of Additive Manufacturing," ASME 2022 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, St. Louis, Missouri, USA, Aug. 14-17, 2022.
14. **Ko, H.~**, "A Review on Machine Learning Interpretation for Additive Manufacturing," 33rd Annual International Solid Freeform Fabrication Symposium - An Additive Manufacturing Conference, Austin, Texas, USA, July. 25-27, 2022.

↑ Peer-reviewed Conference Presentations with ASU affiliation

↓ Peer-reviewed Conference Presentations Prior to ASU ASU

15. **Ko, H.~**, Lu, Y., Yang, Z., and Witherell, P., "Being Real-time in Process-structure-property Analytics for Additive Manufacturing using Machine Learning and Knowledge Representation," Mechanistic Machine Learning and Digital Twins for Computational Science Engineering & Technology, San Diego, CA, USA, Sept. 26-29, 2021.
16. **Ko, H.~**, Witherell, P., Ndiaye, N. Y., and Lu, Y., "Machine Learning based Continuous Knowledge Engineering for Additive Manufacturing," 2019 IEEE 15th International Conference on Automation Science and Engineering (CASE), Vancouver, British Columbia, Canada, Aug. 22-26, 2019.
17. **Ko, H.~**, Witherell, P., Rosen, D. W., and Kim, S., "A Methodology for Modular Design Rule Representation and Ontology Development for Additive Manufacturing," 29th Annual International Solid Freeform Fabrication Symposium - An Additive Manufacturing Conference, Austin, Texas, USA, Aug. 13-15, 2018.
18. **Ko, H.~** and Moon, S. K., "Contradicting Functions with Affordances in Design for Additive Manufacturing," ASME 2017 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Cleveland, Ohio, USA, Aug. 6-9, 2017.
19. **Ko, H.~**, Moon, S. K., Wood, K. L., & Oh, H. S., "An Integration of Function- and Affordance-based Methods for Product-service System Utilizing Finite State Automata," 9th IEEE International

Conference on Industrial Engineering and Engineering Management (IEEM), Bali, Indonesia, Dec. 4-7, 2016.

20. **Ko, H.**~, Sacco, E., Chua, Z. Y., Moon, S. K., and Otto, K., "User-centered Design for Additive Manufacturing as a Customization Strategy," 2nd International Conference on Progress in Additive Manufacturing (Pro-AM), Singapore, May. 16-19, 2016.
21. **Ko, H.**~, Moon, S. K., & Hwang, J., "Design for Additive Manufacturing in Customized Products," International Symposium on Green Manufacturing and Applications, Busan, South Korea, Jun. 24-28, 2014.
22. **Ko, H.**~, Moon, S. K., and Otto, K., "Customization Design Knowledge Representation to Support Additive Manufacturing," 1st International Conference on Progress in Additive Manufacturing (Pro-AM), Singapore, May. 26-28, 2014.
23. **Ko, H.**~ and Shin, D. M., "Affordance-based Interaction Design and Its Implications on Systems Design," HCI Korea 2012, Alpensia Convention Center, Gangwon-do, Korea, Jan. 11-13, 2012.
24. **Ko, H.**~ and Shin, D. M., "s-Scape: a Service Prototype Testing Space for Innovation of Service Quality Improvement," 2011 IIE Asian Conference AIIE, Shanghai, China, Jun. 10-12, 2011.
25. **Ko, H.**~ and Shin, D. M., "Formal Modeling of Quality-Measurable Service Systems using Affordance-based Finite State Automata," Korean Institute of Industrial Engineers, Seoul, Korea, Nov. 5, 2011.

Non-Refereed Presentations

1. Kumar, A.‡~ "Predicting Melt Pool Size Using Deep Neural Networks for Laser Metal Additive Manufacturing," *Poster Presentation*, *Arizona Science and Engineering Fair (AzSEF 2024)*, 2024.

PROFESSIONAL ACTIVITIES AND SERVICE

Technical and Organizing Committee

TOC1.	Chair, IEEE CASE Hackathon, 2025 IEEE 21st International Conference on Automation Science and Engineering (CASE)	Aug. 2025
TOC2.	Vice Chair, Artificial Intelligence and Machine Learning TC, CIE Division, ASME	Aug. 2025 – Present
TOC3.	Secretary, Artificial Intelligence and Machine Learning TC, CIE Division, ASME	Aug. 2024 – Aug. 2025
TOC4.	Organizer, 18th U.S.–Korea Forum on Nanotechnology (NSF-supported Workshop), ASU	Sept. 2024
TOC5.	Chair, Systems Engineering Information and Knowledge Management (SEIKM) TC, CIE Division, ASME	Aug. 2023 – Aug. 2024
TOC6.	Program Chair, SEIKM TC, CIE Division, ASME	Aug. 2022 – Aug. 2023
TOC7.	Committee Member, Hackathon Committee, CIE Division, ASME	Aug. 2022 – Present
TOC8.	Chair, Hackathon Committee, ASME	Aug. 2021 – Aug. 2022
TOC9.	Member, Public Communication Subcommittee, Quality, Statistics, and Reliability (QSR) Council, INFORMS	Jan. 2022

TOC10. Student Assistant, 2016 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), Bali, Indonesia — Dec. 2016

Conference and Workshop Session

CWS1. Panel Session Organizer and Moderator, Topic: Physics-Informed Machine Learning and Physical AI for Engineering, ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC-CIE) — August 2025

CWS2. Session Organizer, Topic: Knowledge-Informed AI and Machine Learning for Engineering, ASME IDETC-CIE — 2025 – Present

CWS3. Session Organizer, Topic: Physics-Informed Machine Learning for Design and Advanced Manufacturing, ASME IDETC-CIE — 2023 – Present

CWS4. Session Organizer, Topic: Design, Simulation, and Optimization for Additive Manufacturing, ASME IDETC-CIE — 2022 – Present

CWS5. Session Organizer, Topic: Artificial Intelligence and Machine Learning in Design and Manufacturing, ASME IDETC-CIE — 2022 – Present

CWS6. Session Organizer, Topic: Digital Twin Modeling and Analytics for Advanced Manufacturing, ASME IDETC-CIE — 2023 – Present

CWS7. Workshop Organizer, Topic: Digital Twin for Manufacturing, ASME IDETC-CIE — 2025

CWS8. Workshop Organizer, Topic: Machine Learning-Driven Digital Twin Construction for Advanced Manufacturing, IEEE CASE — 2024

CWS9. Session Chair, Open Industrial Digital Eco System Summit — Feb. 2024

CWS10. Session Organizer, Topic: Discovery of Causality in Physical Systems, Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting — Oct. 2022

CWS11. Panel Session Organizer and Moderator, Topic: Digital Twin Modeling and Analytics for Advanced Manufacturing, ASME IDETC-CIE — August 2023

CWS12. Session Organizer, Topic: Smart Manufacturing Informatics, ASME IDETC-CIE — 2022

CWS13. Session Assistant, Interoperability Session, NIST/ASM International Virtual Additive Manufacturing Data Management Workshop, NIST, Gaithersburg, Maryland, USA — Oct. 27 – 28, 2020

CWS14. Judge, QSR Best Case Study Paper Competition, INFORMS Annual Meeting — 2022

CWS15. Judge, ASME-CIE Hackathon, CIE Division, ASME — Aug. 2021

International Standards

1. Chair, Industrial Ontology Foundry (IoF), Working Group – Topic: Machine Learning Life Cycle — Oct. 2025 – Present
2. Additive Manufacturing Technical Committee, Singapore — 2018 – 2021
3. ASTM F42/ISO TC 261 Additive Manufacturing Standards Meetings and Sub-committee Meetings — 2018 – 2021

Editorial Activities

Editorial Board Member, International Journal of AI for Materials and Design 2024 – Present

Peer Review in Academic Journals (List of Journals and Conferences Served)

- Additive Manufacturing Journal
- Advanced Engineering Informatics
- ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference
- IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)
- IEEE Access
- IEEE T-ASE
- Journal of Computing and Information Science in Engineering
- Journal of Mechanical Design
- North American Manufacturing Research Conference (NAMRC)
- NIST Washington Editorial Review Board
- Rapid Prototyping Journal
- Robotics and Computer-Integrated Manufacturing Journal
- Smart and Sustainable Manufacturing Systems Journal
- Virtual and Physical Prototyping Journal

University

1. Member, New Faculty Advisory Council (NFAC), ASU — Fall 2025
2. Panelist, Panel Session for Ph.D. Course on Principles of Independent Research, ASU — Oct. 2024 & 2023
3. Member, Faculty Search Committee, The School of Manufacturing Systems and Networks (MSN), The Ira A. Fulton Schools of Engineering, ASU — Fall 2024 – Spring 2025
4. Member, Graduate Admission Committee, Data Science, Analytics, and Engineering Program, School of Computing and Augmented Intelligence (SCAI), ASU — Spring 2024
5. Member, Faculty Search Committee, The School of Manufacturing Systems and Networks (MSN), The Ira A. Fulton Schools of Engineering, ASU — Fall 2022 – Spring 2022
6. Member, Graduate Student Club, Nanyang Technological University (NTU) — Aug. 2015 – Jun. 2016
7. Undergraduate Mentor, Find-SELF Program, Hanyang University — Feb. 2010 – Aug. 2011

PERSONNEL: STUDENT SUPERVISION/MENTORING, TEACHING, DISSERTATION COMMITTEES, RESEARCHERS, AND OUTREACH

Student Mentoring

Ph.D. Students

1. Fatemeh Elhambakhsh, Data Science, Analytics, and Engineering, SCAI, Spring 2023 ~ Present, Chair
   - Qualification exam completed; preparing for comprehensive exam. Siemens Internship in AI and Manufacturing (Summer 2025). Autodesk Internship in Generative AI for Design (Summer 2024). Student Award, 2024 ASME-CIE Graduate Research Poster Session. NSF Conference Registration Waiver Award, SFF Conference (2022).
2. Suk Ki Lee, Manufacturing Engineering, MSN, Fall 2022 ~ Present, Chair

- Qualification exam completed; preparing for comprehensive exam. Outstanding Contribution Award, 18th U.S.–Korea Forum on Nanotechnology, Tempe, AZ (September 2024). Student Award, 2024 ASME-CIE Graduate Research Poster Session.

3. Tao Han, Manufacturing Engineering, MSN – Chair, Fall 2024 – Present
4. Zahra Taheri, Manufacturing Engineering, MSN – Chair, Spring 2025 – Present
5. Abraham Santamaria, Manufacturing Engineering, MSN – Chair, Fall 2025 – Present

Current M.S. Students

1. Khoa Nguyen - Manufacturing Engineering, School of Manufacturing Systems and Networks (MSN), M.S. Thesis Chair, Summer 2025 - Present.
2. Bhaskar Shivaji Kumbhar - Data Science, Analytics & Engineering, School of Computing and Augmented Intelligence (SCAI), M.S. Thesis Chair, Fall 2025 - Present.

Graduated M.S. Students

1. Hitesh Bhadana - Robotics and Autonomous Systems (Concentration: AI), MSN, Applied Project Chair, Fall 2023 - Spring 2024.
   - Now an Engineer at Dassault Systemes.
2. Uchit Shriyan - Robotics and Autonomous Systems (Concentration: AI), MSN, Applied Project Chair, Fall 2023 - Spring 2024.
   - Now a Business Technology AI Automation Analyst at MoonSlate Consulting.
3. Venkata Sai Deepak Mutta - Robotics and Autonomous Systems (Concentration: AI), MSN, Applied Project Chair, Spring 2024 - Fall 2024.
   - Now a Ph.D. Student at Mississippi State University.

Highschool Students

1. Abhiram Kumar, Basis Chandler, Fall 2023 – Spring 2024.
   - Mentored for the *Arizona Science and Engineering Fair* project on AI for Real-Time Monitoring in Laser Additive Manufacturing.

Other Types of Mentoring and Outreach

1. Host, Local Community College Student Lab Tour, April 2025.
   - Hosted a lab tour and mentoring session for community college students to introduce ongoing research activities and encourage STEM career pathways.
2. Panelist, ASU Korean Exchange Student Mentoring Session, January 2025.
3. Organizer, LG Energy Solution Recruiting Session, Fall 2024.
   - Led and hosted an in-class recruiting and mentoring event where undergraduate and M.S. students directly met with the HR and technical teams from LG Energy Solution to discuss career opportunities.
4. Instructor and Organizer, 2023 Summer Generative AI Seminar, MSN.
   - Led a 10-week series of weekly lectures, discussions, and implementation sessions on foundational generative machine learning methods.
5. Mentored student teams and organized international hackathons sponsored by ASME, NIST, IEEE, the Air Force Research Laboratory, and industry partners, providing $27,100 in total student prize funding and travel support, and engaging over 160 participants both locally and internationally.

Prior To ASU

1. Undergraduate Final Year Project – Customized 3D-Printed Sensor for Structural Health Monitoring of Unmanned Aerial Vehicles (UAVs), School of Mechanical and Aerospace Engineering, Nanyang Technological University (NTU) — Aug. 2016 – Mar. 2017
2. Undergraduate Final Year Project – System Dynamics on Product-Service System and Sustainability, School of Mechanical and Aerospace Engineering, NTU — Aug. 2016 – Mar. 2017
3. Undergraduate Final Year Project – Function- and Affordance-Based Product-Service System, School of Mechanical and Aerospace Engineering, Nanyang NTU — Aug. 2016 – Mar. 2017

TEACHING

Course Taught:

1. Manufacturing Systems Management (MFG 510), ASU — Fall 2025
2. Advanced Simulation (EGR 608), ASU — Spring 2023, 2024, 2025, and 2026
3. Engineering Economics (EGR 598, MFG 461), ASU — Spring 2022, 2023, 2024, 2025; Fall 2025

↑ Teaching with ASU affiliation
↓ Teaching Prior to ASU

4. TA, MA2071 Laboratory Experiments (ME): E2.2 Study of Fan Performance using Dimensional Analysis, School of Mechanical and Aerospace Engineering, Nanyang Technological University — Jan. 2017 – Jun. 2017
5. TA, P3.6AE Familiarisation of Air Traffic Control (ATC) Tower Operations and Flight Sequencing, Air Traffic Management Research Institute, Nanyang Technological University — Aug.– Dec. 2016
6. TA, MA4843 Management of Product Development, School of Mechanical and Aerospace Engineering, Nanyang Technological University — Aug. 2016
7. Computer Integrated Manufacturing, Department of Industrial and Management Engineering, Hanyang University — May 2012, May 2011, Nov. 2010

RESEARCH SUPPORT

External Research Awards (Summary: *TOTAL* ~US$1,668K, *As A PI* ~ US$138K, *In RECOGNITION* ~ US$528K)

1. **Ko, H. (PI)**, "Semiconductor Manufacturing Digital Twins: Integrative Physics-Informed Generative Modeling via Multi-Agent Reinforcement Learning," *awarded $138,000*, Samsung Electronics, 2025
2. Ameri, F., **Ko, H. (co-PI)**, Bansal, S., Starly, B., "Proto-OKN Theme 1 - Supply and Demand Open Knowledge Network (SUDOKN)," *awarded $1,499,996*, NSF, 2023-2026
3. Wang, A., **Ko, H. (co-PI), "**STC MADE: AI-driven Additive Manufacturing Advisor for Manufacturability Prediction," *awarded* $31,000, PADT, 2022 - 2024

Internal Research Support (Not Included in Award Totals)

1. **Ko, H. (PI)**, Start-up Research Support, Arizona State University, 2022 – Present:
   - $510,000 for research activities
   - $15,000 for travel
   - 4 months of summer salary support
   - Two Ph.D. Graduate Research Associates, 20 hours/week each, for 2 years

Proposals Pending Sponsor Approval (Not Included in Award Totals)

1. **Ko, H. (PI)**, "Phase II: Semiconductor Manufacturing Digital Twins—Integrative Physics-Informed Generative Modeling via Multi-Agent Reinforcement Learning," $138,000, Samsung Electronics, 2026.