

Seungchul Lee

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RESEARCH INTERESTS	Artificial Intelligence Applications to Mechanical Systems, Material Science, Healthcare	
EDUCATION	University of Michigan , Ann Arbor, MI USA Ph.D., Mechanical Engineering – Dissertation: Maintenance Strategies for Manufacturing Systems using Markov Models – Advisor: Jun Ni M.S.E., Mechanical Engineering	Aug. 2010 April 2008
	Seoul National University , Seoul, South Korea B.S.E., Mechanical and Aerospace Engineering	February 2001
RESEARCH EXPERIENCE	Assistant Professor at POSTECH, Korea – Principal Investigator of Industrial AI Lab. – (Adjunct) Department of Industrial and Management Engineering – (Adjunct) Graduate School of Artificial Intelligence – (Adjunct) Graduate School of Information Technology Assistant Professor at UNIST, Korea – Principal Investigator of iSystems Design Lab. Postdoctoral Research Fellow , Ann Arbor, MI USA Graduate Student Research Assistant , Ann Arbor, MI USA	Jan. 2018 - present July 2013 - Dec. 2017 July 2010 - May 2013 2006 - 2010
HONORS AND AWARDS	Rising Researcher Award in KSPHM Best Teaching Award in ME, POSTECH Best Student Paper in IDPP Conference 2019 Best Student Paper in QR2MSE 2019 Certificate of Appreciation from KSME Certificate of Appreciation from Materials Research Society of Korea Certificate of Appreciation from Korean Society for Fluid Machinery Certificate of Appreciation from KSNVE Best Student Paper in Reliability Division of KSME Certificate of Appreciation from Korean Society for Noise and Vibration Engineering (KSNVE) Outstanding Young Researcher in KSME Best Teaching Award in UNIST Certificate of Appreciation from Korean Society of Mechanical Engineers (KSME) NAVER Award in Korea Traffic Data Competition Best Student Paper in Reliability Division of KSME ICORES 2013 Best Student Paper Award Nominated by Ford Motor Company for 2012 Henry Ford Technology Award Program	2020 2019 2019 2019 2019 2019 2018 2018 2017 2017 2017 2016 2016 2016 2016 2013 2012

JOURNAL
PUBLICATIONS

1. K. H. Sun⁺, H. Huh⁺, B. A. Tama, S. Y. Lee, J. H. Jung, and **S. Lee***, 2020, "Vision-based Fault Diagnostics using Explainable Deep Learning with Class Activation Map," *IEEE Access*, 10.1109/ACCESS.2020.3009852. (+ equally contributed)
2. Y. Hwang⁺, H. H. Lee⁺, C. Park, B. A. Tama, J. S. Kim, D. Y. C., W. C. Chung, Y. Cho, K. Lee, M. Choi, **S. Lee***, and B. Lee*, 2020, "Improved Classification and Localization Approach to Small Bowel Capsule Endoscopy Using Convolutional Neural Network," *Digestive Endoscopy*, <https://doi.org/10.1111/den.13787>. (+ equally contributed)
3. C. Lee, J. Na, K. Park, H. Yu, J. Kim, K. Choi, D. Park, S. Park, J. Rho* and **S. Lee***, 2020, "Development of Artificial Neural Network System to Recommend Process Conditions of Injection Molding for Various Geometries," *Advanced Intelligent Systems*, <https://doi.org/10.1002/aisy.202000037>.
4. A. Glaeser, V. Selvaraj, K. Lee, N. Lee, Y. Hwang, S. Lee, **S. Lee**, and S. Min*, 2020, "Remote Machine Mode Detection in Cold Forging using Vibration Signal," *Procedia Manufacturing*, Vol. 48, pp. 908-914
5. B. A. Tama, S. W. Kim, G. Kim, D. Kim*, and **S. Lee***, 2020, "Recent Advances in the Application of Artificial Intelligence in Otorhinolaryngology – Head and Neck Surgery," *Clinical Experimental Otorhinolaryngology*, <https://doi.org/10.21053/ceo.2020.00654>.
6. S. W. Kim, Y. G. Lee, B. A. Tama, and **S. Lee***, 2020, "Reliability-enhanced Camera Lens Module Classification using Semi-supervised Regression Method," *Applied Sciences*, 10(11), 3832, <https://doi.org/10.3390/app10113832>.
7. B. A. Tama, S. Im, and **S. Lee***, 2020, "Improving an Intelligent Detection System for Coronary Heart Disease using a Two-tier Classifier Ensemble," *BioMed Research International*, Vol. 2020, <https://doi.org/10.1155/2020/9816142>.
8. N. Lee, S. Kim, I. Jeong, S. Sohn, and **S. Lee***, 2020, "Ensemble Method of Rule-Based and Deep Learning for Rotating Machine Diagnostics," *The Korean Society for Noise and Vibration Engineering*. [In Korean]
9. K. Lee, J. Na, J. Sohn, S. Sohn, and **S. Lee***, 2020, "Image Recognition Algorithm for Maintenance Data Digitization: CNN and FCN," *The Korean Society for Noise and Vibration Engineering*. [In Korean]
10. J. Lee, S. Kim, **S. Lee**, and W Hwang*, 2020, "Exponential Promotion and Suppression of Bubble Nucleation in Carbonated Liquid by Modification of Surface Wettability," *Applied Surface Science*, Vol. 512, <https://doi.org/10.1016/j.apsusc.2020.145709>.
11. S. Y. Lee, B. A. Tama, C. Choi, J. Y. Hwang, J. Bang, and **S. Lee***, 2020, "Spatial and Sequential Deep Learning Approach for Predicting Temperature Distribution in a Steel-making Continuous Casting Process," *IEEE Access*, 8(1), pp. 2169-3536, 10.1109/ACCESS.2020.2969498.
12. S. Y. Lee, B. A. Tama, S. J. Moon, and **S. Lee***, 2019, "Steel Surface Defect Diagnostics using Deep Convolutional Neural Network and Class Activation Map," *Applied Sciences*, 2019, 9(24), 5449; <https://doi.org/10.3390/app9245449>.

13. G. W. Song, B. A. Tama, J. Park, J. Y. Hwang, J. Bang, S. J. Park, and **S. Lee***, 2019, "Temperature Control Optimization in a Steel-Making Continuous Casting Process Using Multimodal Deep Learning Approach," *Steel Research International*, 90(12), pp. 1900321, <https://doi.org/10.1002/srin.201900321>.
14. W. Choi⁺, H. Huh⁺, B. A. Tama, G. Park, and **S. Lee***, 2019, "A Neural Network Model for Material Degradation Detection and Diagnosis Using Microscopic Images," *IEEE Access*, 7, pp.92151-92160. (+ equally contributed)
15. J. Jeon, Y. J. Han, G. Y. Park, D. G. Sohn, **S. Lee***, and S. Im*, 2019, "Artificial Intelligence in the Field of Electrodiagnosis – A New Threat or heralding a New Era in Electromyography?," *Clinical Neurophysiology*, 130(10), <https://doi.org/10.1016/j.clinph.2019.06.005>.
16. D. Shin, C. Lee, S. Kim, D. Park, J. Oh, C. Gal, J. Koo, S. Park and **S. Lee***, 2019, "Analysis of Cold Compaction for Fe-C, Fe-C-Cu Powder Design based on Constitutive Relation and Artificial Neural Networks," *Powder Technology*, 353, <https://doi.org/10.1016/j.powtec.2019.05.042>.
17. B. Park, H. Jeong, H. Huh, M. Kim and **S. Lee***, 2018, "Experimental Study on the Life Prediction of Servo Motors through Model-based System Degradation Assessment and Accelerated Degradation Testing," *Journal of Mechanical Science and Technology*, 32(11), 5105-5110.
18. S. Park, H. Jeong and **S. Lee***, 2018, "Wavelet-like CNN Structure for Time-Series Data Classification," *Smart Structures and Systems*, 22(2), pp. 175-183.
19. H. Jeong, B. Park, S. Park, and **S. Lee***, 2018, "Fault Detection and Identification Method using Observer-based Residuals," *Reliability Engineering and System Safety*, Vol. 184, 27-40.
20. S. Kim, S. Park, S. Woo, and **S. Lee***, 2017, "Development and Analysis of the Interchange Centrality Evaluation Index Using Network Analysis," *J. Korean Soc. Transp.* Vol.35, No.6, pp.525-544. [in Korean]
21. H. Jeong, S. Kim, S. Woo, S. Kim, and **S. Lee***, 2017, "Real-time Monitoring System for Rotating Machinery with IoT-based Cloud Platform," *Transactions of the KSME A*, [in Korean].
22. H. Jeong, S. Woo, and **S. Lee***, 2016, "Rotating Machinery Diagnostics using Deep Learning on Orbit Plot Images," *Procedia Manufacturing*, Vol. 5, pp. 1107-1118.
23. L. Cui, Y. Zhang, F. Zhang*, J. Zhang, and **S. Lee**, 2016, "Vibration Response Mechanism of Faulty Outer Race Rolling Element Bearings for Quantitative Analysis," *Journal of Sound and Vibration*, 364, pp. 67-76.
24. Z. Zhang, S. Wu*, L. Binfeng, and **S. Lee**, 2015, " (n, N) Type Maintenance Policy for Multi-component Systems with Failure Interactions," *International Journal of Systems Science*, 46(6), pp. 1051-1064.
25. Z. Zhang, S. Wu, **S. Lee***, and J. Ni, 2014, "Modified Iterative Aggregation Procedure for Maintenance Optimization of Multi-component Systems with Failure Interaction," *International Journal of Systems Science*, 45(12), pp. 2480-2489.
26. A. Almuhtady, **S. Lee***, E. Romeijn, M. Wynblatt, and J. Ni, 2014, "A Degradation-Informed Battery Swapping Policy for Fleets of Electric or Hybrid-Electric Vehicles," *Transportation Science*, 48(4), pp. 609-618.
27. W. Cheng, Z. Zhang*, **S. Lee**, and Z. He, 2014, "Investigations of Denoising Source Separation Technique and Its Application to Source Separation and Identification of Mechanical Vibration Signals," *Journal of Vibration and Control*, 20(14), pp. 2100-2117.

28. L. Cui*, J. Wang, **S. Lee**, 2014, "Matching Pursuit of an Adaptive Impulse Dictionary for Bearing Fault Diagnosis," *Journal of Sound and Vibration*, 333(10), pp. 2840-2862
29. **S. Lee**, J. Ko, X. Tan, I. B. Patel, R. Balkrishnan, J. Chang*, 2014, "Markov Chain Modeling and Analysis of HIV/AIDS Progression: A Race-based Forecast in the United States," *Indian Journal of Pharmaceutical Sciences*, 76(2), pp. 107-115.
30. Z. Zhang, S. Wu, L. Binfeng, **S. Lee***, 2013, "Optimal Maintenance Policy for Multi-Component Systems under Markovian Environment Changes," *Expert Systems With Applications*, 40(18), pp. 7391-7399.
31. **S. Lee***, X. Gu, M. Garcellano, M. Diederichs, and J. Ni, 2013, "Discovery of Hidden Opportunities in Manufacturing Systems: MOW and GMOW," *International Journal of Advanced Manufacturing Technology*, 68(9), pp. 2611-2623.
32. **S. Lee***, X. Gu, and J. Ni, 2013, "Stochastic Maintenance Opportunity Windows for Unreliable Two-Machine One-Buffer System," *Expert Systems With Applications*, 40(13), pp. 5385-5394.
33. X. Gu, **S. Lee***, X. Liang, M. Garcellano, M. Diederichs, and J. Ni, 2013, "Hidden Maintenance Opportunities in Discrete and Complex Production Lines," *Expert Systems with Applications*, 40(11), pp. 4353-4361.
34. **S. Lee**, L. Li*, and J. Ni, 2013, "Markov-based Maintenance Planning Considering Repair Time and Periodic Inspection," *ASME Journal of Manufacturing Science and Engineering*, 135(3), 031013 (12 pages), DOI:10.1115/1.4024152.
35. **S. Lee*** and J. Ni, 2012, "Joint Decision Making for Maintenance and Production Scheduling of Production Systems," *International Journal of Advanced Manufacturing Technology*, 66(5-8), pp. 1135-1146.
36. W. Cheng, **S. Lee**, Z. Zhang*, and Z. He, 2012, "Independent Component Analysis based Source Number Estimation and Its Comparison for Mechanical Systems," *Journal of Sound and Vibration*, 331(2012), pp. 5153-5167.
37. W. Cheng, Z. Zhang*, **S. Lee**, and Z. He, 2012, "Source Contribution Evaluation of Mechanical Vibration Signals via Enhanced Independent Component Analysis," *ASME Journal of Manufacturing Science and Engineering*, Vol. 134(2), pp. 021014 (9 pages).
38. **S. Lee*** and J. Ni, 2012, "Genetic Algorithm for Job Scheduling with Maintenance Consideration in Semiconductor Manufacturing Process," *Mathematical Problems in Engineering*, Volume 2012, Article ID 875641, 16 pages, DOI:10.1155/2012/875641.
39. **S. Lee**, L. Li*, and J. Ni, 2010, "Online Degradation Assessment and Adaptive Fault Detection Using Modified Hidden Markov Model," *ASME Journal of Manufacturing Science and Engineering*, 132(2), pp. 021010-11.

INTERNATIONAL
CONFERENCE
PAPERS

1. S. Y. Lee, Y. H., and **S. Lee**, 2020, "Frequency-driven Convolutional Neural Network for Enhancing Noise-robustness of Bearing Fault Detection," inter-noise 2020, Seoul, Korea.
2. S. Y. Lee, J. Chang, and **S. Lee**, 2020, "Acoustic Source Localization for a Single Point Source using Convolutional Neural Network and Weighted Frequency Loss," inter-noise 2020, Seoul, Korea.
3. B. A. Tama, S. Y. Lee, and **S. Lee**, 2020, "An Overview of Deep Learning Techniques for Fault Detection using Vibration Signal," inter-noise 2020, Seoul, Korea.

4. H. Huh, K. H. Sun, S. Y. Lee, J. H. Jung, and **S. Lee**, 2020, “New Way of Detecting Vibration of Mechanical Systems by Explainable Deep Learning,” *inter-noise 2020*, Seoul, Korea.
5. G. Kim, and **S. Lee**, 2020, “Attention-Based LSTM Network for Unknown Road Input Estimation and Sensor Selection for Applications in Vehicle Suspension Control,” *inter-noise 2020*, Seoul, Korea.
6. J. Jeon, H. Kim, Y. J. Han, Y. Joo, S. Im, and **S. Lee**, 2020, “Artificial Intelligence Approach for Detecting Pathological Voice,” *inter-noise 2020*, Seoul, Korea
7. S. Y. Lee, C. Park, and **S. Lee**, 2019, “Classification of the Steel Surface Defects via Machine Learning and Deep Learning,” *ICMR 2019 (the 5th International Conference on Materials and Reliability)*, Jeju, Korea.
8. H. H. Lee, C. Park, Y. Hwang, **S. Lee**, S. J. Kim, J. S. Kim, B. I. Lee, Y. S. Cho, and M. G. Choi, 2019, “A Convolutional Neural Network Algorithm with Class Activation Map for Detection of Various Lesions during Small Bowel Capsule Endoscopy,” *UEG (United European Gastroenterology) Week 2019*, Fira Gran Via, Barcelona, Spain.
9. S. Kim, Y. Lee and **S. Lee**, 2019, “Camera Lens Module Classification and Recommendation Model based on Deep Neural Network,” *2019 International Conference on Quality, Reliability, Risk, Maintenance, and Safety Engineering (QR2MSE 2019)*, Zhangjiajie, Hunan, China. (Best Paper Award)
10. B. A. Tama, H. Huh, K. Sun, and **S. Lee**, 2019, “A CNN-based Fault Detection Method using Vibration Video,” *The International Conference on the Interface between Statistics and Engineering (ICISE2019)*, Seoul, Korea.
11. H. Jeong, B. Park, S. Park, and **S. Lee**, 2017, “New Approach for Fault Identification using Observer-based Residual,” *PHM Asia Pacific 2017*, Jeju, Korea.
12. S. Park, H. Jeong and **S. Lee**, 2017, “Wavelet-like CNN Structure for Time-Series Data Classification,” *PHM Asia Pacific 2017*, Jeju, Korea.
13. H. Kim, S. Park, E. Park, N. Kim, and **S. Lee**, 2017, “Mechanical Property Estimation for FDM 3D Printed Parts using Gaussian Process Regression,” *PHM Asia Pacific 2017*, Jeju, Korea.
14. H. Jeong, M. Kim, B. Park, and **S. Lee**, 2017, “Vision-based Real-time Layer Error Quantification for Additive Manufacturing,” *SME NAMRC 45*, Los Angeles, CA, USA.
15. H. Kim, E. Park, S. Kim, B. Park, N. Kim, and **S. Lee**, 2017, “Experimental Study on Mechanical Properties of Single- and Dual-Material 3D Printing,” *SME NAMRC 45*, Los Angeles, CA, USA.
16. **S. Lee**, 2016, “Machine Learning and Data Visualization in Manufacturing,” *The 2nd Pacific Rim Statistical Conference for Production Engineering*, Seoul, Korea. (**Invited**)
17. H. Jeong, S. Park, and **S. Lee**, 2016, “Deep Learning based Diagnostics for Rotating Machinery on Orbit Analysis,” *Asian Conference Experimental Mechanics 2016*, Jeju, Korea.
18. H. Jeong, S. Woo, B. Park, and **S. Lee**, 2016, “PHM for Manufacturing Industry with IoT and Cloud Platform,” *Asian Conference Experimental Mechanics 2016*, Jeju, Korea.
19. H. Jeong, S. Woo, S. Kim, S. Park, H. Kim, and **S. Lee**, 2016, “Deep Learning based Diagnostics of Orbit Patterns in Rotating Machinery,” *PHM Conference 2016*, Denver, CO, USA.

20. H. Jeong, S. Park, S. Woo, and **S. Lee**, 2016, "Rotating Machinery Diagnostics using Deep Learning on Orbit Plot Images," *SME NAMRC 44*, Blacksburg, VA, USA.
21. S. Park, H. Jeung, H. Min, and **S. Lee**, 2015, "System Diagnostics using Kalman Filter Estimation Error," *The 3rd International Conference on Materials and Reliability*, Jeju, Korea.
22. A. Almuhtady, **S. Lee**, and J. Ni, 2013, "Planning by Maintenance-optimal Swapping for System-level Manufacturing Utilization," *Proc. of ASME 2013 International Manufacturing Science and Engineering Conference*, Madison, WI. (MSEC2013-1076)
23. A. Almuhtady, **S. Lee**, E. Romeijn, and J. Ni, 2013, "A Maintenance-optimal Swapping Policy for a Fleet of Electric or Hybrid-Electric Vehicles," *The 2nd International Conference on Operations Research and Enterprise Systems (ICORES 2013)*, Barcelona, Spain. (**ICORES 2013 Best Student Paper Award**)
24. **S. Lee**, 2012, "Hidden Markov Model with Independent Component Analysis," *US-Korea Conference on Science, Technology and Entrepreneurship*, Los Angeles, CA. (UKC2012-131)
25. **S. Lee**, H. Cui, M. Rezvanizani, and J. Ni, 2012, "Battery Prognostics: SoC and SoH Prediction," *Proc. of ASME 2012 International Manufacturing Science and Engineering Conference*, Notre Dame, IN. (MSEC2012-7345)
26. X. Gu, **S. Lee**, and J. Ni, 2012, "Extension of Maintenance Opportunity Windows to General Manufacturing Systems," *Proc. of ASME 2012 International Manufacturing Science and Engineering Conference*, Notre Dame, IN. (MSEC2012-7346)
27. W. Cheng, **S. Lee**, Z. S. Zhang, and Z. J. He, 2012, "Dissimilarity Measures for ICA-Based Source Number Estimation," *Proc. of ASME 2012 International Manufacturing Science and Engineering Conference*, Notre Dame, IN. (MSEC2012-7340)
28. A. Almuhtady, **S. Lee**, and J. Ni, 2012, "Degradation-based Swapping Policy with Application to System-Level Manufacturing Utilization," *Proc. of ASME 2012 International Manufacturing Science and Engineering Conference*, Notre Dame, IN. (MSEC2012-7280)
29. **S. Lee**, 2011, "Development and Implementation of Optimal Maintenance Strategies at Automotive Assembly Plants," *US-Korea Conference on Science, Technology and Entrepreneurship*, Park City, UT. (UKC2011-423)
30. M. Rezvani, **S. Lee**, M. AbuAli, J. Lee, and J. Ni, 2011, "A Comparative Analysis of Techniques for Electric Vehicle Battery Prognostics and Health Management (PHM)," *SAE 2011 Commercial Vehicle Engineering Congress and Exhibition*, Rosemont, IL. (11CV-0191)
31. **S. Lee**, A. Brzezinski, and J. Ni, 2011, "Plant Layout Optimization Considering the Effect of Maintenance," *Proc. of ASME 2011 International Manufacturing Science and Engineering Conference*, Corvallis, OR. (MSEC2011-50233)
32. **S. Lee**, L. Li, and J. Ni, 2010, "Adaptive Anomaly Detection Using a Hidden Markov Model," *Proc. of ASME 2010 International Manufacturing Science and Engineering Conference*, Erie, PA. (MSEC2010-34169)
33. J. Ni, **S. Lee**, and L. Li, 2009, "Predictive Modeling for Intelligent maintenance in Complex Semiconductor Manufacturing Processes," *Proc. of Advanced Equipment Control/Advanced Process Control Symposium Asia*, Tokyo, Japan.
34. **S. Lee**, L. Li, and J. Ni, 2009, "Modeling of Degradation Processes to Obtain an Optimal Solution for Maintenance and Performance," *Proc. of ASME 2009 International Manufacturing Science and*

Engineering Conference, West Lafayette, IN. (MSEC2009-84166)

35. **S. Lee**, D. Djurdjanovic, and J. Ni, 2007, "Optimal Condition-Based Maintenance Decision-Making For a Cluster Tool," *Proc. of 9th Semiconductor Research Cooperation Technical Conference* (SRC TechCon).
1. **S. Lee**, 2020, "AI for Healthcare in Industrial AI Lab.," The Korean Society for Prognostics Health Management, Seoul, Korea.
2. **S. Lee**, 2020, "PHM and Industrial AI," The Korean Society for Prognostics Health Management, Seoul, Korea. (invited)
3. Taewan Kim, Yunseob Hwang, Hanhee Lee, and **S. Lee**, 2020, "Deep Learning-based Smart Reading System for Small Bowel Capsule Endoscopy," The Korean Society for Prognostics Health Management, Seoul, Korea.
4. Juwon Na, Se Jong Kim, Jaimyun Jung, and **S. Lee**, 2020, "Deep Learning-based Refocusing and Super-resolution for Microstructural Image," The Korean Society for Prognostics Health Management, Seoul, Korea.
5. Hyunsuk Huh, Hyoungcheol Kwon, and **S. Lee**, 2020, "Deep Learning for Inverse Problem: Etching-Mask Design," The Korean Society for Prognostics Health Management, Seoul, Korea.
6. Gyuwon Kim, Changyun Choi, Do Hyun Kim, Sung Won Kim, and **S. Lee**, 2020, "Deep Learning-based Stem Cell Image Analysis: Cell Classification and Functional Structure Interpretation," The Korean Society for Prognostics Health Management, Seoul, Korea.
7. **S. Lee**, 2020, "Industrial AI," Reliability Division in the Korean Society of Mechanical Engineers, Jeju, Korea.
8. Sung Wook Kim, Young Gon Lee, Bayu Adhi Tama, and **S. Lee**, 2020, "Camera Lens Module Classification using Semi-supervised Regression Method," Reliability Division in the Korean Society of Mechanical Engineers, Jeju, Korea.
9. Juwon Na, Se Jong Kim, Jaimyun Jung, and **S. Lee**, 2020, "Deep Learning-based Image Quality Enhancement for Materials Science: Super-resolution for Microstructure Image and Refocusing for SEM Image," Reliability Division in the Korean Society of Mechanical Engineers, Jeju, Korea.
10. Iljeok Kim, Juwon Na, Kyongho Park, Hyeonjae Yu, Jongsun Kim, Kwonil Choi, **S. Lee**, 2020, "AI-based Optimization for Process Conditions of Injection Molding and Feature Relevance Analysis," Reliability Division in the Korean Society of Mechanical Engineers, Jeju, Korea.
11. Changyun Choi, Sooyoung Lee, Bayu Adhi Tama, **S. Lee**, 2020, "Prediction for Temperature Distribution and Coolant Quantity in Steel-Making Continuous Casting Process using Deep Learning," Reliability Division in the Korean Society of Mechanical Engineers, Jeju, Korea.
12. Changyun Choi, SooYoung Lee, and **S. Lee**, 2020, "AI-based Temperature Prediction Model for Continuous Casting Secondary Cooling," The Korean Society for Noise and Vibration Engineering, E-Conference, Korea
13. Hyunsuk Huh, Hyoungcheol Kwon, and **S. Lee**, 2020, "Etch-Mask Design using Generative Adversarial Network," The Korean Society for Noise and Vibration Engineering, E-Conference, Korea.

14. Iljeok Kim, Juwon Na, Kyongho Park, Hyeonjae Yu, Jongsun Kim, Kwonil Choi, and **S. Lee**, 2020, "AI-based Optimization for process conditions of Injection Molding and Feature Relevance Analysis," *The Korean Society for Noise and Vibration Engineering*, E-Conference, Korea. (Best Paper Award)
15. Juwon Na, Se Jong Kim, Jaimyun Jung, and **S. Lee**, 2020, "Deep Learning-based Image Restoration for Materials Science: Super-resolution and Refocusing of SEM Image," *The Korean Society for Noise and Vibration Engineering*, E-Conference, Korea.
16. **S. Lee**, 2019, "Deep Learning for Power Plant Equipment," *The Korean Society of Pressure Vessels and Piping*, Changwon, Korea. (Invited)
17. **S. Lee**, 2019, "Artificial Intelligence Applications to Mechanical Engineering," *The Korean Society of Mechanical Engineers*, Jeju, Korea. (Invited)
18. **S. Lee**, J. Jeon, S. Y. Lee, K. Lee, T. Choi, and J. Kim, 2019, "Deep Learning-based Anomaly Detection of Bearing Faults," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
19. K. Lee, J. Na, J. Sohn, S. Sohn, and **S. Lee**, 2019, "Image Recognition to Digitalize Maintenance Logs: CNN and FCN," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
20. J. Na, S. W. Kim, K. Park, H. Yu, J. Kim, K. Choi, and **S. Lee**, 2019, "Domain Adaptation from Simulation Data to Experimental Data via Transfer Learning: Case Study on Injection Molding," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
21. J. Na, S. W. Kim, K. Park, H. Yu, J. Kim, K. Choi, and **S. Lee**, 2019, "AI-based Recommender System for Process Conditions of Injection Molding," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
22. H. Huh, S. Y. Lee, J. Jeong, K. Sun, and **S. Lee**, 2019, "Study on Localizing the Most Vibrating Regime on Images using Explainable Deep Learning," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
23. S. Y. Lee, J. Jeon, K. Lee, J. Kim, T. Choi, and **S. Lee**, 2019, "Data Preprocessing and Machine Learning Techniques for Detection and Classification of Bearing Faults," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
24. S. Y. Lee, J. Jeon, K. Lee, J. Kim, T. Choi, and **S. Lee**, 2019, "Transfer Learning for Enhancing Bearing Fault Detection Performance under Time-varying Speed," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
25. Y. Hwang, H. H. Lee, **S. Lee**, and B. I. Lee, 2019, "Explainable Deep Learning-based Smart Diagnostics for Capsule Endoscopy Images," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
26. S. W. Kim, J. Na, S. J. Kim, and **S. Lee**, 2019, "Phase Analysis of Multi-phase Steel using Unsupervised Deep Learning," *The Korean Society of Mechanical Engineers*, Jeju, Korea.
27. **S. Lee**, 2019, "AI in Medicine: What are the New Roles of Surgeon?," *Annual Congress of the Korean Surgical Society*, Seoul, Korea. (Invited)
28. J. Na, and **S. Lee**, 2019, "AI-based Recommender System for Process Conditions of Injection Molding," *The Korean Society of Die & Mold Engineers*, Incheon, Korea
29. **S. Lee**, 2019, "AI Applications to Material Science," *Material Research Society of Korea*, Samcheok, Korea.

30. **S. Lee**, K. Lee, J. Na, J. Sohn and S. Sohn, 2019, "Image Recognition to Digitalize Maintenance Logs: CNN and FCN," *The Korean Society for Noise and Vibration Engineering*, Jeju, Korea.
31. **S. Lee**, J. Jeon, Y. Hwang, I. Jeong, Y. Han and S. Im, 2019, "Pathological Voice Diagnostics using Deep Learning," *The Korean Society for Noise and Vibration Engineering*, Jeju, Korea.
32. **S. Lee**, J. Jeon, S. Y. Lee, K. Lee, T. Choi and J. Kim, 2019, "Deep Learning-based Anomaly Detection of Bearing Faults," *The Korean Society for Noise and Vibration Engineering*, Jeju, Korea.
33. **S. Lee**, N. Lee, I. Jeong, S. Kim and S. Shon, 2019, "Ensemble Methods of Rule-based Expert System and Data-driven AI Model: Case Study of Rotating Machinery," *The Korean Society for Noise and Vibration Engineering*, Jeju, Korea.
34. **S. Lee**, H. Huh, S. Y. Lee, J. Jeong, K. Sun, 2019, "Study on Localizing the Most Vibrating Regime on Images using Explainable Deep Learning," *The Korean Society for Noise and Vibration Engineering*, Jeju, Korea.
35. **S. Lee**, S. Y. Lee, J. Jeon, K. Lee, J. Kim and T. Choi, 2019, "Data Preprocessing and Machine Learning Techniques for Detection and Classification of Bearing Faults," *The Korean Society for Noise and Vibration Engineering*, Jeju, Korea.
36. **S. Lee**, S. Y. Lee, J. Jeon, K. Lee, J. Kim and T. Choi, 2019, "Transfer Learning for Enhancing Bearing Fault Detection Performance under Time-varying Speed," *The Korean Society for Noise and Vibration Engineering*, Jeju, Korea.
37. N. Lee, I. Jeong, S. Kim, and **S. Lee**, 2019, "Ensemble Method of Rule-Based and Deep Learning for Rotating Machine Diagnostics," *IDPP Conference 2019*, Daejeon, Korea. (Best Student Paper Award)
38. K. Lee, J. Na, J. Son, and **S. Lee**, 2019, "Image Recognition Algorithm for Maintenance Data Digitization: CNN and FCN," *IDPP Conference 2019*, Daejeon, Korea.
39. **S. Lee**, 2019, "AI Shapes the Future of Steel Making Industry," *POSCO Annual Conference on Technology*, Pohang, Korea. (Invited)
40. J. Na, C. Lee and **S. Lee**, 2019, "Development of Process Recommender System for Injection Molding Based on AI," *The Korea Society of Die & Mold Engineering*, Gongju, Korea.
41. **S. Lee**, 2019, "Industrial AI for Material Science," *Material Research Society of Korea*, Pyeongchang, Korea. (Invited Keynote Speech)
42. **S. Lee**, 2019, "The Future of Industrial AI," *The Korean Society for Technology of Plasticity*, Daegu, Korea. (Invited)
43. **S. Lee**, 2019, "AI Shapes the Future of Steel Making Industry," *The Korean Institute of Metals and Materials*, Changwon, Korea. (Invited)
44. J. Jeon, H. Huh, D. Lim, and **S. Lee**, 2019, "Deep learning based diagnostics algorithm for rotating machinery," *The Korean Society for Prognostics & Health Management*, Seoul, Korea.
45. S. W. Kim, H. Huh, and **S. Lee**, 2019, "Deep Learning based Diagnostics and Prediction for Camera Lens Module Assembly," *The Korean Society for Prognostics & Health Management*, Seoul, Korea.

46. H. Huh, D. Lim, S. W. Kim, J. Jeon and **S. Lee**, 2019, "Sensor Selection in Time Series Data using Class Activation Map," *The Korean Society for Prognostics & Health Management*, Seoul, Korea.
47. J. Jeon, H. Huh, D. Lim, **S. Lee**, 2019, "Smart Diagnostics System: Deep Learning Model for Time Series Analysis of Rotating Machinery, *Reliability Division in the Korean Society of Mechanical Engineers*, Jeju, Korea.
48. **S. Lee**, 2019, "Deep Learning for Noise and Vibration Engineering," KSNVE, Pyeongchang, Korea. (Invited Keynote speech)
49. **S. Lee**, 2018, "AI-based Diagnostics and Prognostics for Fluid Machinery," *The Korean Society of Fluid Machinery*, Yeosu, Korea. (Invited Keynote Speech)
50. **S. Lee**, 2018, "AI for Mechanical Engineering," *Pohang Division of KSME*, Pohang, Korea.
51. S. Kim, and **S. Lee**, 2017, "Artificial Intelligence in Mechanical Engineering," *CAE and Applied Mechanics Division of KSME conference*, Busan, Korea.
52. S. Park, S. Kim, and **S. Lee**, 2017, "Deep Learning Classification Models for Sequential Data," *The Korean Society for Noise and Vibration Engineering*, Gwangju, Korea.
53. H. Jeong, S. Park, and **S. Lee**, 2017, "Observer-based Fault Detection and Isolation for Rotating Machinery," *The Korean Society for Noise and Vibration Engineering*, Gwangju, Korea.
54. H. Lee, S. Park, S. Kim, and **S. Lee**, 2017, "Vibration Comparison between High Speed Trains (KTX and SRT) in Korea," *The Korean Society for Noise and Vibration Engineering*, Gwangju, Korea.
55. H. Jeong, S. Park, and **S. Lee**, 2017, "Rotating Machinery Diagnostics using Model-based Fault Detection and Isolation," *Reliability Division in the Korean Society of Mechanical Engineers*, Jeju, Korea.
56. B. Park, H. Jeong, and **S. Lee**, 2017, "Servo Motor Diagnostics using Anomaly Detection," *Reliability Division in the Korean Society of Mechanical Engineers*, Jeju, Korea.
57. S. Kim, S. Park, and **S. Lee**, 2017, "Deep Learning Structures for Time Series Data in Manufacturing: RNN Focus," *Reliability Division in the Korean Society of Mechanical Engineers*, Jeju, Korea. (Best Student Paper Award)
58. S. Park, S. Kim, and **S. Lee**, 2017, "Interpretable CNN Structure for Time Series Data in Manufacturing," *Reliability Division in the Korean Society of Mechanical Engineers*, Jeju, Korea.
59. H. Kim, S. Kim, E. Park, N. Kim, and **S. Lee**, 2017, "Experimental Study on Improvement and Estimation of Mechanical Properties of FDM-based 3D Printing Products," *Reliability Division in the Korean Society of Mechanical Engineers*, Jeju, Korea.
60. M. Kim, H. Jeong, B. Park, and **S. Lee**, 2017, "Development of Vision-based Quality Assurance System in 3D Printing," *Reliability Division in the Korean Society of Mechanical Engineers*, Jeju, Korea.
61. **S. Lee**, 2016, "Mechanical Systems with Artificial Intelligence," *the Korean Society of Mechanical Engineers 2016*, Jeongseon, Korea. (**Invited**)
62. H. Jeong, and **S. Lee**, 2016, "Real-time Monitoring System for Power Plant with IoT-based Cloud Platform," *Reliability Division in the Korean Society of Mechanical Engineers*, Pusan,

Korea. (Best Student Paper Award)

63. H. Jeong, and **S. Lee**, 2016, "Real-time Monitoring for Rotating Machinery with IoT and Cloud Platform," *The Korean Society for Noise and Vibration Engineering*, Gyeongju, Korea.
64. S. Woo, and **S. Lee**, 2016, "Visualization Method of PCA Algorithm for Machine Health Diagnostics," *The Korean Society for Noise and Vibration Engineering*, Gyeongju, Korea.
65. **S. Lee**, H. Min, H. Jeong, S. J. Lee, and C. Kim, 2015, "Anomaly Detection in Rotating Machinery based on Orbit Image Eigen-analysis," *The Korean Society for Noise and Vibration Engineering*, Jeju, Korea.
66. H. Min, H. Jeong, S. Park, and **S. Lee**, Y. Lee, 2015, "Misalignment Detection Algorithm in Stacking Processes," *Korean Institute of Industrial Engineering*, Jeju, Korea.
67. H. Jeong, S. Park, H. Min, **S. Lee**, R. Koo, Y. Bae, 2015, "Rotational Machinery Diagnostics via Singular Value Decomposition of Orbit Images," *Korean Institute of Industrial Engineering*, Jeju, Korea.
68. H. Min, H. Jeong, S. Park, and **S. Lee**, S. J. Lee, 2015, "Anomaly Detection in Rotating Machinery based on Machine Learning of Orbits' Eigenvalues," *Reliability Division in the Korean Society of Mechanical Engineers*, Jeju, Korea.
69. H. Min, Y. Lee, H. Jeong, S. Park, and **S. Lee**, 2014, "Condition Monitoring in Multilayer Stacking Processes," *The Korean Society for Noise and Vibration Engineering*, Mokpo, Korea.
70. **S. Lee**, 2014, "Intelligent Fault Detection and Prediction System on Wind Turbine Gearboxes," *The Korean Society for Noise and Vibration Engineering*, Gangchon, Korea.
71. **S. Lee**, 2014, "Diagnostics of Automated Manufacturing Processes Using Event Time Durations," *Korean Society of CAD CAM Engineers*, Pyeongchang, Korea.

TALKS

1. "인공지능/신호분석 융합 진단/예측 기술의 Connected Car 분야 활용 방향," Hyundai Namyang Technology Research Center, Hwaseung, Korea 09/11/20
2. "산업에 적용 가능한 인공지능 기술: 제조, 재료, 의료 사례 중심으로," AI Week Festival, Daejeon, Korea 09/03/20
3. "산업에 적용 가능한 인공지능 기술: 제조, 재료, 의료 사례 중심으로," 포항강소특구 기업, Pohang, Korea 08/26/20
4. "Industrial AI: Manufacturing, Materials, and Healthcare," Mechanical Engineering and Robotics Research Information Center, Webinar 08/13/20
5. "산업 인공지능 연구실 소개: 기계, 재료, 의료," ME, POSTECH, Pohang, Korea 04/29/20
6. "산업 인공지능 기술의 현재와 미래," Korea Electrotechnology Research Institute (KERI), Changwon, Korea. 02/06/20
7. "AI for Noise/Vibration Engineering," KSNVE, Daejeon, Korea. 01/21/20
8. "인공지능의 현재와 미래, 그리고 교육 혁신," Gachon University, Seongnam, Korea. 12/04/19
9. "산업 인공지능 기술의 현재와 미래," 설비진단기술 강습회, 대전 11/28/19
10. "인공지능과 ICBM," 경북SW융합인력양성센터, 대구 11/23/19
11. "산업 인공지능 기술의 현재와 미래: 재료 응용 사례 중심으로," Korea Institute of Industrial Technology (KITECH), Jeonju, Korea. 10/18/19

12. “산업에 적용가능한 인공지능,” IME, POSTECH, Pohang, Korea. 09/18/19
13. “기계분야의 AI 기술 개발사례 (PHM 포함) 및 미래전망,” Doosan Infracore, Incheon, Korea. 09/04/19
14. “기계공학 관점에서 바라본 인공지능,” SHRM, Seoul National University, Seoul, Korea. 08/02/19
15. “인공지능 기반 상태감시 및 진단,” Doosan Heavy Industries, Suji, Korea. 07/24/19
16. “산업 인공지능 적용 사례,” POSCO, Pohang, Korea. 07/08/19
17. “지능정보기술을 활용한 3D프린팅 기술 고도화 연구 동향,” Korea Information Society Development Institute (KISDI), Seoul, Korea. 06/25/19
18. “산업에 적용 가능한 인공지능이란?,” Research Institute of Industrial Science & Technology (RIST), Pohang, Korea. 06/21/19
19. “강화학습은 과연 산업에 적용 가능한가?,” Research Institute of Industrial Science & Technology (RIST), Pohang, Korea. 06/13/19
20. “산업 인공지능 적용 사례,” LG Electronics, Pyeongtaek, Korea. 05/29/19
21. “산업 인공지능 적용 사례,” SK Hynix, Pohang, Korea. 05/20/19
22. “산업 인공지능 기술의 현재와 미래,” Samsung Heavy Industries, Pangyo, Korea. 05/13/19
23. “기계공학과 인공지능,” Ajou University, Suwon, Korea. 03/22/19
24. “산업 인공지능 기술 개발 현황,” 스마트 재료공정 심포지엄, Korea Institute of Materials Science (KIMS), Changwon, Korea. 01/31/19
25. “Introduction to AI and AI-based PHM,” Hyundai Namyang Technology Research Center, Hwaseung, Korea. 12/20/18
26. “Computational Mechanics and AI,” Korea Institute of Science and Technology Information (KISTI), Seoul, Korea. 12/19/18
27. “4차 산업혁명과 인공지능,” 대구경북 중소기업 연합회, 대구 12/12/18
28. “기계공학과 인공지능,” Gangneung-Wonju National University, Wonju, Korea. 11/27/18
29. “Deep Learning for Smart Manufacturing Digital plant,” Korea Institute of Industrial Technology (KITECH), Seoul, Korea 11/22/18
30. “Make it Smarter with Deep Learning,” Department of Creative IT Engineering, POSTECH, Pohang, Korea. 11/21/18
31. “AI Helps Make Nuclear Power Plants Safer,” Division of Advanced Nuclear Engineering, POSTECH, Pohang, Korea. 11/15/18
32. “4차 산업혁명과 인공지능,” 경상북도 인공지능 거점센터, 경산상공회의소, 경상 11/15/18
33. “인공지능을 활용한 설비관리,” BIXPO 2018, Gwangju, Korea. 11/01/18
34. “인공지능 소개,” 과학기술정보통신부 중앙전파관리소, 서울 09/19/18
35. “인공지능 기반 상태감시 및 진단,” Samsung Electro-Mechanics, Suwon, Korea. 09/14/18
36. “4차 산업혁명과 인공지능,” 경상북도 인공지능 거점센터, 영천상공회의소, 영천 08/29/18
37. “인공지능 기반 상태감시 및 진단에 대한 고찰,” KEPIC Week, Busan, Korea. 08/28/18
38. “AI for Shipbuilding Industry,” Samsung Heavy Industries, Daejeon, Korea. 08/27/18
39. “인공지능 기술과 조선해양 ICT 융합,” Korea Maritime and Ocean University, Gyeongju, Korea. 08/17/18

40. "AI Technology and Shipbuilding ICT," Smart Ship and Shipbuilding Forum, Ulsan, Korea. 07/24/18
41. "Introduction to AI for Automotive Manufacturing," Hyundai KEFICO, Gunpo, Korea. 07/18/18
42. "Deep Learning for Engineered Systems," University of Ulsan, Ulsan, Korea. 07/12/18
43. "Introduction to AI for PHM," Korea Hydro and Nuclear Power (KHNP), Gyeongju, Korea. 07/11/18
44. "Smart Mechanical Engineering – Big Data and AI," POSTECH Summer Program, Pohang, Korea. 07/03/18
45. "AI for Automotive Manufacturing," Hyundai Motor Company, Ulsan, Korea. 06/25/18
46. "인공지능, 기계공학에서 이렇게 쓰인다," ME, KAIST, Daejeon, Korea. 05/29/18
47. "Deep Learning for Mechanical Engineering," ME, POSTECH, Pohang, Korea. 04/25/18
48. "Deep Learning for Engineered Systems," Korea Aerospace Research Institute (KARI), Daejeon, Korea. 04/24/18
49. "AI for Engineered Systems," Korea Institute of Industrial Technology (KITECH), Incheon, Korea. 04/20/18
50. "Deep Learning for Healthcare and Medical Applications," Catholic University of Korea Seoul St. Mary's Hospital, Seoul, Korea. 04/16/18
51. "AI/Big Data for Energy and Utilities," SK E & S, Pohang, Korea. 04/06/18
52. "AI for Engineered Systems," Korea Institute of Materials Science (KIMS), Changwon, Korea. 03/30/18
53. "Deep Learning for PHM and Smart Factory," POSCO, Pohang, Korea. 03/26/18
54. "Deep Learning for Semiconductor Equipment PHM," Tokyo Electron Ltd. (TEL), Suwon, Korea. 03/22/18
55. "Deep Learning for Engineered Systems," Korea Atomic Energy Research Institute (KAERI), Daejeon, Korea. 03/21/18
56. "Deep Learning for Automotive Industry," Hyundai Motor Company, Namyang, Korea. 03/16/18
57. "Deep Learning for Engineered Systems," Korea Railroad Research Institute, Uiwang, Korea. 02/13/18
58. "PHM using Deep Learning," Korea Hydro and Nuclear Power, Seoul, Korea. 01/30/18
59. "AI and Smart Factory," Computational Design and Engineering Conference, Hoengseong, Korea. 01/25/18
60. "Introduction to PHM for Smart Plant Monitoring and Maintenance," Engineering Development Research Center (EDRC), Seoul, Korea. 01/23/18
61. "Monitoring and Diagnostics in Manufacturing using Deep Learning," Global Technology Center of Samsung Electronics, Suwon, Korea. 12/18/17
62. "Deep Learning for Smart Manufacturing," Research Institute of Industrial Science and Technology (RIST), Pohang, Korea. 12/08/17
63. "Deep Learning and Smart Manufacturing," Pusan National University, Pusan, Korea. 12/01/17
64. "Machine Learning and Deep Learning," Korea East-West Power, Ulsan, Korea. 11/28/17
65. "Deep Learning for Smart Diagnostics," Korea Hydro and Nuclear Power (KHNP), Daejeon, Korea. 11/09/17

66. "Deep Learning and its Applications to Smart Manufacturing," GIST, Gwangju, Korea. 10/11/17
67. "Make it Smarter via Deep Learning," K-Scool, KAIST, Korea. 09/27/17
68. "The 4th Industrial Revolution and Smart Manufacturing," Ulsan, Korea. 09/18/17
69. "Data Analytics in Manufacturing and Transportation: Deep Learning and PageRank," KAIST, Daejeon, Korea. 09/14/17
70. "Deep Learning Applications to Smart Factory," Korea Institute of Communication and Information Science, Pusan, Korea 08/21/17
71. "Make it Smarter with Deep Learning," Chung-Ang University, Seoul, Korea. 08/10/17
72. "AI-based Smart Manufacturing," Hyundai Mobis, Mabuk, Korea. 07/26/17
73. "Deep Learning and its Applications to Smart Manufacturing," Hanwha Techwin, Pangyo, Korea. July 2017
74. "Deep Learning and its Applications to Smart Manufacturing," Samsung Electro-Mechanics, Suwon, Korea. June 2017
75. "AI for the Future of Production," UNIST, Ulsan, Korea. June 2017
76. "PHM with IoT Smart Sensors," Hyundai Heavy Industries, Ulsan, Korea. May 2017
77. "Intelligent Mechatronic Systems with Signal Processing, Control, and Optimization," Hongik University, Seoul, Korea. April 2017
78. "How to Teach Engineering Mechanics," as a recipient of outstanding teaching award at UNIST, Ulsan, Korea. April 2017
79. "Mechatronics with Machine Learning and Deep Learning," Inha University, Incheon, Korea. April 2017
80. "Machine Learning and Deep Learning in Manufacturing," KIMM, Daejeon, Korea. March 2017
81. "Bayesian Machine Learning and Data Visualization in PHM," Korea Atomic Energy Research Institute, Daejeon, Korea. Jan. 2017
82. "Machine Learning and Data Visualization in Manufacturing," the department of Industrial and Management Engineering at POSTECH, Pohang, Korea. Nov. 2016
83. "Intelligent Mechanical Systems with Machine Learning," KIMM, Daejeon, Korea. Aug. 2016
84. "IoT and Cloud Platform for Monitoring," Signallink, Daejeon, Korea, July 2016
85. "IoT-based PHM in Power Plants," KEPCO, Daejeon, Korea. July 2016
86. Introduction to PHM and Big Data Visualization," The Korea Aerospace University, Seoul, Korea. Dec. 2015
87. "Machine Learning for Machine Healthcare Systems," the Korea Institute for Machine Diagnostics, Gwangju, Korea. Sep. 2015
88. "Big Data Mining and IoT-based PHM," Seoul National University, Seoul, Korea. Aug. 2015
89. "Big Data Visualization," ASPM Business Analytic Program, UNIST, Ulsan, Korea. May 2015
90. "Big Data Visualization in Manufacturing," UNIST Big Data Symposium, UNIST, Ulsan, Korea. Mar. 2015
91. "Issues on Intelligent PHM," the Korea Certification Institute for Machine Diagnostics, Kyeongju, Korea. Sep. 2014

92. "Diagnostics and Prognostics of Battery Management Systems," Samsung Advanced Institute of Technology, Suwon, Korea. Dec. 2013
93. "Guest Lecture on Self-Healing Engineering Systems," Ajou University, Suwon, Korea. Nov. 2013
94. "Issues on Intelligent Prognostics," KEPCO, Daejeon, Korea. Oct. 2013
95. "Introduction to iSystem Design Laboratory," UNIST, Ulsan, Korea. Oct. 2013
96. "Die Monitoring in Progressive Stamping Process," IAB 25, P&G Mason Business Center, Mason, OH. May 2013
97. "Diagnostics, Prognostics, and Decision-Making for Next Generation Manufacturing Factories," University of Maryland, College Park, MD. Mar. 2013
98. "Diagnostics, Prognostics, and Decision-Making for Next Generation Manufacturing Factory," University of Toronto, Toronto, ON, Canada. Feb. 2013
99. "Introduction to Intelligent Maintenance with Industrial Case Studies," Samsung Electro-mechanics, Suwon, Korea. Jan. 2013
100. "Smart Factory of the Future: Diagnostics, Prognostics, and Decision-Making," UNIST, Ulsan, Korea. Jan. 2013
101. "Linear Systems Theory for Prediction with Industrial Applications," UNIST, Ulsan, Korea. Jan. 2013
102. "Self-diagnostic Module Development for MLCC Stacker," IAB 24, National Instruments, Austin, TX. Nov. 2012
103. "Diagnostics and Prognostics for Machine Health and Decision-making towards Predictive Manufacturing Factory," Ajou University, Suwon, Korea. Oct. 2012
104. "IMS Introduction with Industrial Case Studies," Samsung Electro-mechanics, Suwon, Korea. Oct. 2012
105. "Remaining Useful Life Prediction and Optimal Replacement Policy for Battery," 2011 INFORMS Annual Meeting Conference, Charlotte, NC. Nov. 2011
106. "Job Scheduling Considering the Effect of Maintenance in Semiconductor Manufacturing," 2011 INFORMS Annual Meeting Conference, Charlotte, NC. Nov. 2011
107. "Maintenance Opportunity Windows in Manufacturing Systems," KSEA MI Local Chapter Technical Seminar, Ann Arbor, MI. Nov. 2011
108. "Introduction to Intelligent Maintenance Systems – Advanced Prognostics for Smart Systems," LG Electronics, Seoul, Korea. Oct. 2011
109. "Introduction to Intelligent Maintenance Systems," Samsung SDS, Seoul, Korea. Sep. 2011
110. "Development and Implementation of Maintenance Strategies for Assembly Line," IAB 21, Boeing, St Louis, MO. May 2011
111. "Decision Making for Joint Maintenance and Product Policies," 2010 INFORMS Annual Meeting Conference, Austin, TX. Oct. 2010
112. "Integrated Production and Maintenance Planning for a Multiple Product System," IAB 19, GE Aviation, Cincinnati, OH. May 2010
113. "Maintenance Strategies for Manufacturing Systems using Markov Models," Ph.D. Oral Defense, University of Michigan, Ann Arbor, MI. May 2010

114. "Degradation Modeling, Fault Detection, and Maintenance Planning," Eaton Innovation Center, Southfield, MI. Dec. 2009
115. "Machine Degradation Estimation and Maintenance for Multiple Product System," IAB 18, Avetec, Springfield, OH. Oct. 2009
116. "Online Self-Adaptive Fault Learning and Pattern Discovery Method," IAB 17, Ford, Dearborn, MI. May 2009
117. "An Overview of the Maintenance Decision Support Tool," IAB 17, Ford, Dearborn, MI. May 2009
118. "Modeling of Degradation Processes to Obtain an Optimal Solution for Maintenance," Engineering Graduate Symposium, University of Michigan, Ann Arbor, MI. Nov. 2008
119. "Degradation Modeling and Buffer Management: A Maintenance Perspective," IAB 15, Caterpillar, Peoria, IL. April 2008
120. "Optimal Maintenance Solution for Degradation System," IAB 14, Chrysler, Warren, MI. Oct. 2007
121. "Modeling of Degradation Processes to Obtain an Optimal Solution for Maintenance and Performance," Ph.D. Preliminary Examination, University of Michigan, Ann Arbor, MI. Sep. 2007
122. "Optimal Condition-Based Maintenance Decision-Making for a Cluster Tool," 2007 Semiconductor Research Cooperation Technical Conference, Austin, TX. Sep. 2007
123. "Predictive Modeling and Intelligent Maintenance Tools for High Yield Next Generation Fab," 2007 SRC FORCeII Research Review, Durham, NC. July 2007
124. "Optimal Condition-Based Maintenance Decision-Making and Production Dispatching," IAB 13, P&G, Cincinnati, OH. May 2007
125. "Intelligent Maintenance Decision-Making," IAB 12, Boeing, Saint Louis, MO. Nov. 2006

TUTORIALS

1. "Hands-on AI," The Korean Society for Technology of Plasticity, Changwon 08/28/20
2. "Intro. to AI," KITECH, Incheon 08/20/20
3. "Hands-on Deep Learning," University of Ulsan, Ulsan 08/10/20 ~ 08/14/20
4. "Intro. to AI," POSCO, Pohang 08/07/20 ~ 08/25/20
5. "Hands-on Deep Learning," The Reliability Division of KSME, Jeju 07/16/20
6. "Deep Learning for Materials Science and Engineering," The Korean Institute of Metals and Materials, Seoul 07/01/20 ~ 07/03/20
7. "Deep Learning for Noise and Vibration Engineering," KSNVE E-Conference 06/04/20 ~ 06/05/20
8. "Intro. to AI," 경북 혁신아카데미사업, Pohang 01/22/20 ~ 01/30/20
9. "PHM: AI Applications," KSPHM, Seoul 01/17/20
10. "Deep Learning," Samsung Heavy Industries, Pangyo 01/07/20
11. "Deep Learning," Dong-A University, Pusan 01/06/20 ~ 01/10/20
12. "RNN and Reinforcement Learning," KIMM, Daejeon 12/13/19
13. "RNN and Reinforcement Learning," KIMM, Daejeon 08/29/19
14. "AI Summer School," KSME, Seoul 08/21/19 ~ 08/23/19
15. "Intro. to AI," SK Hynix, Pohang 04/24/19 ~ 04/30/19

16. "Signal Processing for PHM," KSPHM, Seoul 01/28/19
17. "Machine Learning and Deep Learning," Kumoh National Institute of Technology, Gumi 01/12/19
18. "Signal Processing and Deep Learning," KSNVE, Yeosu 10/17/18
19. "Signal Processing for PHM," KSPHM, Seoul 08/23/18
20. "Intro. to AI," SK Hynix, Pohang 07/23/18 ~ 07/27/18
21. "Intro. to Deep Learning," Global FinTech Industry Promotion Center, Pusan 05/05/18
22. "Machine Learning and Deep Learning," Computational Structural Engineering Institute of Korea, Seoul 02/08/18
23. "Machine Learning and Deep Learning," Hanwha Techwin, Seoul 02/01/18 ~ 02/02/18
24. "Deep Learning," Pusan National University, Pusan 01/29/18
25. "AI Winter School, KSME," Seoul 01/16/18 ~ 01/19/18
26. "Machine Learning and Deep Learning," Hanwha Techwin, Seoul 12/14/17 ~ 12/15/17
27. "Machine Learning and Deep Learning," Hanwha Techwin, Seoul 11/22/17 ~ 11/23/17
28. "Coding for Deep Learning," KSVNE, Yesan 10/18/17
29. "머신러닝에서 딥러닝까지," 기계학회 CAE및응용역학부문, Seoul 08/25/17
30. "AI Summer School," KSME, Seoul 08/21/17 ~ 08/23/17
31. "Deep Learning for PHM," PHMAP, Jeju 07/14/17
32. "Coding for Machine Learning and Deep Learning with Vibration Signals," KSNVE, Gwangju 04/26/17

GRANTED
RESEARCH
PROJECTS

On-going

1. co-PI, "고령 환자의 흡인성 폐렴 위험 예측을 위한 기침신호 기반 기계학습모델 개발," 한국연구재단
2. co-PI, "환자 맞춤형 진단 및 치료 시스템 개발 및 사업화," 한국연구재단 2020.06.01 ~ 2029.05.31
3. co-PI, "발전소 안전환경 정착을 위한 IoT기반 작업안전관리 플랫폼 개발," 한국에너지기술평가원 2020.05.01 ~ 2024.04.30
4. co-PI, "골절 영상 가상 정복 시스템 및 원형 맞춤형 골절 내고정 금속판 개발," 포-가 공동연구지원사업 2020.03 ~ 2021.02
5. co-PI, "인공지능 기반 기능성 줄기세포 평가 및 특성 분석을 위한 모델 개발," 포-가 공동연구지원사업 2020.03 ~ 2021.02
6. co-PI, "디지털 기기를 활용한 치매 환자의 AI 진단기술 개발," 포-가 공동연구지원사업 2020.03 ~ 2021.02
7. co-PI, "인공지능기반 소장 캡슐내시경 스마트 판독시스템 공동개발," 포-가 공동연구지원사업 2020.03 ~ 2021.02
8. PI, "인공지능 기반 건전성 관리 지능화: 유사/비유사 환경에서의 강건성 증대를 위한 딥러닝 기반 진단·예지 요소 기술 개발," 한국연구재단 2020.03 ~ 2022.12
9. PI, "풍력터빈 기어박스 Subscale 모델 고장시험 및 진단 알고리즘 개발," 두산중공업 2020.02 ~ 2020.11
10. PI, "열연 조압연에서의 바 상향 예측을 위한 데이터 기반 모델 개발," 포스코 2020.01 ~ 2020.11
11. PI, "IIoT와 인공지능 기반의 지속 가능한 스마트 제조 모델 구축," 정보통신기획평가원 2019.07 ~ 2020.12

12. co-PI, “상호연동 모듈형 허리, 어깨, 무릎 근력보조 엑소수트 기술 개발,” 국방과학연구소
2019.06 ~ 2024.05
13. co-PI, “산업인공지능 전문인력양성사업,” 산업통상자원부
2019.03 ~ 2024.02
14. co-PI, “조건적중율 60%이상의 인공지능형 사출성형 시스템 개발,” 산업통상자원부
2019.01 ~ 2020.12
15. PI, “기계시스템 진단 및 제어를 위한 차세대 인공지능 기초 연구,” 한국기계연구원
2018.01 ~ 2020.12
16. co-PI, “IoT 기반 보조기기 원격 진단지원 툴킷 개발,” 한국전력연구원
2017.06 ~ 2020.05

Completed

1. PI, “제동시 발생하는 일시적 브레이크 노이즈 검출의 AI 활용,” 현대자동차
2019.08 ~ 2019.12
2. PI, “딥러닝을 이용한 다상 조직상의 미세조직 분류기술 개발,” 재료연구소
2019.07 ~ 2019.12
3. PI, “진동 Wavelet 신호 학습 알고리즘 진단성능 검증,” 두산중공업
2019.04 ~ 2019.07
4. co-PI, “음성 신호를 기반으로 인공지능을 이용한 질병의 진단 및 임상예측 모델 개발,”
포-가 공동연구지원사업
2019.03 ~ 2020.02
5. co-PI, “인공지능 기반 스포츠 빅데이터 분석 알고리즘 및 원천기술 개발,” 중소벤처기업부
2019.01 ~ 2019.12
6. PI, “지능형 학습기반 대상조건 조향계 이음판별 장치개발,” 현대모비스
2018.05 ~ 2018.12
7. co-PI, “인공지능 딥러닝 기반 소장캡슐 내시경 스마트 판독 시스템 개발,”
포-가 공동연구지원사업
2018.04 ~ 2020.02
8. PI, “연주기 2차냉각 기계학습 모델 확대 적용 기술개발,” 포스코
2019.03 ~ 2020.02
9. PI, “종합 설비데이터 진단을 위한 딥러닝 플랫폼 개발,” 삼성전자
2018.03 ~ 2019.02
10. co-PI, “선박 회전기기 상태기반 유지보수를 위한 스마트 모니터링 시스템 개발,”
산업기술평가관리원
2017.07 ~ 2019.12
11. PI, “가스터빈 통합 데이터 기반 상태 진단 및 예측 시스템 개발,” 한국전력연구원
2017.07 ~ 2018.09
12. co-PI, “AI-based Unconventional Architecturing Technologies for Hybrid-scale Micro-/Nano-
structures,” UNIST
2017.01 ~ 2017.12
13. PI, “A Deep Learning Framework for Human Motion Classification,” Samsung Electronics, Korea.
Feb. 2017 ~ Aug. 2017
14. co-PI, “Development of an Intelligent Diagnosis and Automatic Control Software Platform for
Smart Factory,” UNIST, Korea.
Feb. 2017 ~ Dec. 2017
15. PI, “Industrial Robot Health Monitoring Systems using Big Data and IoT Sensors (Phase II),”
National IT Industry Promotion Agency (NIPA), Korea.
Jan. 2017 ~ Dec. 2017
16. PI, “Vision-based BIW ID Recognition at Automotive Painting Shop (Phase I),” Small and
Medium Business Administration, Korea.
Nov. 2016 ~ Oct. 2017
17. PI, “Development of Diagnostics Algorithm using Deep Learning on Acoustic Signals,” Samsung
Electronics, Korea.
Sep. 2016 ~ Sep. 2017

18. PI, "3D Printing Monitoring Systems and Control Algorithms for Minimal Manufacturing Deformation in Automotive Industries (Phase I)" National Research Foundation of Korea (NRF)
June 2016 ~ May 2017
19. co-PI, "Program for Creative and Innovative Design Engineering," Korea Institute of Advancement of Technology (KIAT), Korea.
Mar. 2016 ~ June 2020
20. co-PI, "R&BD Infrastructure for Environment-friendly 3D Printed Automotive Parts," Korea Institute of Advancement of Technology (KIAT), Korea.
July 2015 ~ June 2020
21. co-PI, "BK21+: Strategic Program of Interdisciplinary Human & Systems Engineer for Technologically Driven Human-Centered Factories of the Future," National Research Foundation of Korea (NRF), Korea.
Sep. 2013 ~ Feb. 2020
22. co-PI, "Ulsan Industry-University Convergence Campus," Korea Institute of Advancement of Technology (KIAT), Korea.
July 2012 ~ June 2017
23. PI, "Industrial Robot Health Monitoring Systems using Big Data and IoT Sensors (Phase I)," National IT Industry Promotion Agency, Korea.
May 2016 ~ April 2017
24. PI, "Development of PHM Algorithms and Monitoring Systems: Virtual Machine for Machine Prognostics," Samsung Electro-Mechanics, Korea.
Nov. 2014 ~ Oct. 2015
25. PI, "Anomaly Detection of Fan Vibration in Power Plants," Korea Electric Power Research Institute, Korea.
Nov. 2014 ~ July 2015
26. PI, "Prognostics of Plant BOP Rotational Machinery using Vibration Signals," Doosan Heavy Industries, Korea.
Nov. 2014 ~ Sep. 2015
27. PI, "Prognostics Health Management (PHM) Algorithm Development and PHM System Implementation," Samsung Electro-Mechanics, Korea.
Feb. 14 ~ Nov. 2015
28. PI, "Development of Self-Diagnostic Algorithm in a MLCC Stacker," UNIST, Korea.
July 2013 ~ Jan. 2015

TEACHING
EXPERIENCE

POSTECH, Korea

Graduate

MECH701 - Deep Learning Spring, 2019, 2020

Undergraduate

MECH490 - Machine Learning Spring, 2018, 2019, 2020

MECH323 - Control Systems Fall, 2018, 2019

MECH202 - 전산제도및설계 Fall, 2019

MECH199 - 새내기연구참여 Fall, 2018, 2019

Spring, 2019

MECH100 - Intro. to Mechanical Engineering Fall, 2019

UNIST, Korea

Graduate

DHE 545 - Machine Learning Spring, 2016

DHE 542 - Advanced Multivariate Analysis and Data Mining Spring, 2015

DHE 573 - Advanced Control and Signal Processing Fall, 2015

DHE 571 - Root Cause Analysis Fall, 2014

<i>DHE 802 - Special Topics in ESD 2 (Optimization Methods)</i>	Winter, 2013
<i>DHE 801 - Special Topics in ESD 1 (Big Data Analytics)</i>	Fall, 2013

Undergraduate

<i>MEN 230 - Solid Mechanics I</i>	Spring, 2017
<i>SDC 401 - Introduction to Mechatronics</i>	Fall, 2016, Spring, 2017
<i>HSE 402 - Engineering Design Method</i>	Spring, 2015
<i>ESD 201 - Engineering Mechanics</i>	Spring, 2014, 2015, 2016
<i>ESD 301 - Engineering Drawing and Analysis</i>	Spring, 2014
<i>ESD 411 - Introduction to Vehicle Design</i>	Fall, 2013

RESEARCH
SUPERVISOR

Ph.D. Committee

- Member of the doctoral committee for Woongyoung Lee (POSTECH) Fall 2019
Dissertation title: "Development of Torque-controlled Electro-hydraulic Actuators and Stability-guaranteed Interaction Control"
- Member of the doctoral committee for Sunkyum Yoo (POSTECH) Fall 2019
Dissertation title: "Dynamic Interaction Control of Hydraulic Actuation Systems with Inherent Compliance and Backdrivability"
- Member of the doctoral committee for Jaehyeok Doh (Yonsei Univ.) Fall 2017
Dissertation title: "A Study on Structural Prognosis and Design Optimization Considering Uncertainties"
- Member of the doctoral committee for Md Saiful Islam (Univ. of Ulsan) Spring 2016
Dissertation title: "Induction Motor Fault Detection by Advanced Signal Processing Techniques using Vibration Data"
- Member of the doctoral committee for Md Rashedul Islam (Univ. of Ulsan) Spring 2016
Dissertation title: "Discriminant Fault Feature Selection and Reliable Online Bearing Fault Diagnosis System using Signal Processing and Machine Learning Techniques"
- Member of the doctoral committee for Ahmad Almuhtady (Univ. of Michigan) Winter 2013
Dissertation title: "Degradation-Based Swapping Optimization Policy for Fleet-Level Battery Utilization"

M.S. Committee

- Member of the master committee for YoungSin Kim (POSTECH) Fall 2019
Dissertation title: "Development of Diagnostic Method for Heart Disease using Infrasonic Heart Sound"
- Member of the master committee for Seokho Nam (POSTECH) Fall 2019
Dissertation title: "Torque Controlled Hydraulic Actuator with Improved Stiffness using Feedback Spring and Parallel Connecting Mechanism"
- Member of the master committee for Seong Ju Kim (POSTECH) Fall 2019
Dissertation title: "Design of Inkjet Printing Waveform by Machine Learning"
- Co-chair of the master committee for Chihum Lee (POSTECH) Spring 2019
Dissertation title: "Development of Process Recommender System for Injection Molding Based on Artificial Neural Networks"
- Co-chair of the master committee for Giwoung Song (POSTECH) Spring 2019
Dissertation title: "Development of Artificial Intelligence Prediction Model to Substitute Continuous Casting Process Simulation"

- Co-chair of the master committee for Doohee Kim (POSTECH) Spring 2019
Dissertation title: "A Study on the Correlation of Chatter in Rolling Process based on Deep Learning"
- Member of the master committee for Mario Ruttgers (POSTECH) Fall 2018
Dissertation title: "Prediction of Typhoon Tracks using a Generative Adversarial Network with Observational and Meteorological Data"
- Chair of the master committee for Hee-Chang Kim (UNIST) Fall 2017
Dissertation title: "Mechanical Properties Assessment and Reliability Verification for FDM 3D Printed Products"
- Chair of the master committee for Suhyun Kim (UNIST) Fall 2017
Dissertation title: "Deep Learning Applications in Manufacturing: Sound-based Fault Detection and Human Motion Recognition"
- Chair of the master committee for Sunhee Woo (UNIST) Fall 2016
Dissertation title: "Machine Learning Toolbox and Data Visualization for PHM"
- Member of the master committee for Wonil Jeong (UNIST) Fall 2016
Dissertation title: "IIoT-Enabled Manufacturing Process Monitoring and Resource Positioning"
- Member of the master committee for Ikchan Ju (UNIST) Spring 2016
Dissertation title: "A Study on Manufacturing Complexity and Difficulty in a Mixed Model Assembly Line: Application of Automotive Assembly Process"
- Member of the master committee for Hweeyoung Han (UNIST) Spring 2016
Dissertation title: "A Study on Additive Manufacturing Technology as a Manufacturing Tool of Automotive Industry"
- Chair of the master committee for Hyungcheol Min (UNIST) Fall 2015
Dissertation title: "Statistical Approaches for Fault Diagnostics and Root Cause Analysis with Industrial Applications: MLCC and Rotating Machinery"
- Member of the master committee for Wooyeol Lee (UNIST) Fall 2014
Dissertation title: "Analysis of Manufacturing Complexity for Optimal Resource Allocation in Mixed Model Production of the Automotive Industry"
- Member of the master committee for A-Rm Yoo (UNIST) Spring 2014
Dissertation title: "A Framework for a Real-Time Product Quality Monitoring System with the Consideration of Process-Induced Variations"
- Member of the master committee for Amit Kumar Sinha (UNIST) Spring 2014
Dissertation title: "Effects of Part-to-Part Gap and the Variation of Weld Seam on LASER Welding Quality"

PROFESSIONAL
COMMITTEE

- Committee in the CAE & Applied Mechanics Division of the Korea Society of Mechanical Engineers since 2020
- Committee in the Korean Society for Mechanical Engineers since 2019
- Committee in the Korean Society for Prognostics & Health Management since 2018
- Committee in the Korean Society for Noise and Vibration Engineering since 2017
- Committee in the Reliability Division of the Korea Society of Mechanical Engineers since 2015
- The Vibration Technical Committee in the Korea Certification Institute of Machine Diagnostics since 2013
- The Manufacturing Systems Technical Committee (TC) in the Manufacturing Engineering Division (MED) of ASME June 2013

PROFESSIONAL SERVICE	Co-organizing a technical session titled "AI for Noise and Vibration Engineering" at Inter-noise 2020 in Seoul, Korea	Aug. 2020
	Panel Session Chair in the PHM Asia Pacific 2017 Conference	July 2016
	Hosting manufacturing research seminars for Prof. Samuel Kwofie from Kwame Nkrumah University of Science and Technology, Kumasi, Ghana	Nov. 2012
	Co-Chairing a session titled "Manufacturing System Prognostics" at 2012 MSEC/NAMRC in South Bend, IN.	June 2012
	Chairing a session titled "Corrosion/Electrolytic Effects" at 2012 MSEC/NAMRC in South Bend, IN.	June 2012
	Organizing a symposium titled "Integrated Prognostics and Health Management System" at 2012 MSEC/NAMRC in South Bend, IN.	June 2012
	Hosting manufacturing research seminars for Prof. David E. Hart from MIT	Feb. 2012
	Hosting manufacturing research seminars for Prof. Placid M. Ferreira from UIUC	Feb. 2012
	Chair, organizing a session titled "Design and Manufacturing" at 2011 Engineering Graduate Symposium at the University of Michigan	Nov. 2011
	Chair, organizing a session titled "Semiconductor Industry" at 2011 INFORMS in Charlotte, NC	Nov. 2011
	Chair, organizing a session titled "Statistical Decision Making and Quality Estimation in Energy Manufacturing Application" at 2011 INFORMS in Charlotte, NC	Nov. 2011
	Manufacturing Research Seminar Series Committee at the University of Michigan	2011, 2012
	Member, American Society of Mechanical Engineers (ASME)	since 2009
	Member, The Institute for Operations Research and Management Science (INFORMS)	since 2010
	Vice President, Michigan Chapter of Korean-American Scientists and Engineers Association (KSEA)	2011
	President, Korean Students Friday Tennis Club at The University of Michigan	2011
	Vice President, Korean Students Association - Graduate (KSAG) at the University of Michigan	2009, 2010

VIDEO OUTREACH	'iAI POSTECH' YouTube Channel	
	– 899 subscribers and 53,640 views as of 07/28/2020	
	– 300 videos	
	– Topics: Machine Learning, Deep Learning, Control, Discrete Signal Processing	
	Machine Learning at Match-Up platform (MOOC)	
	– 1091 enrollments, 12/17/2018 ~ 06/14/2019	
	– 246 enrollments, 10/14/2019 ~ 12/31/2019	
	POSTECH NanoMaster at Graduate School of Information Technology	
	– Machine Learning	
	– 09/02/2019 ~ 12/28/2019, 03/18/2019 ~ 06/30/2019, 09/03/2018 ~ 12/28/2018	
	– Deep Learning	

- 2019.09.02 ~ 2019.12.28

POSTECH MOOC

- LG Electronics
 - Machine Learning: 586 enrollments, 01/13/2020 ~ 05/03/2020
- KT
 - Deep Learning: 36 enrollments, 09/01/2019 ~ 11/30/2019
 - Machine Learning: 38 enrollments, 09/01/2019 ~ 11/30/2019
 - Machine Learning: 143 enrollments, 02/18/2019 ~ 06/30/2019
 - Machine Learning: 249 enrollments, 09/10/2018 ~ 12/19/2018
- RIST
 - Machine Learning: 111 enrollments, 09/16/2019 ~ 01/31/2020
 - Deep Learning: 52 enrollments, 09/16/2019 ~ 01/31/2020
- Lotte Data Communication
 - Machine Learning: 57 enrollments, 09/16/2019 ~ 01/05/2020