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Experience

Managing Director, AI Group <i>MedicalAI</i>	2021.03 - Present Seoul, Republic of Korea
Manager, Data R&D Team <i>Lifeseantics</i>	2020.09 - 2021.03 Seoul, Republic of Korea
Researcher, HealthCare AI Team <i>National Cancer Center</i>	2018.03 - 2020.09 Seoul, Republic of Korea
Visiting Scholar <i>Baylor University</i>	2016.08 - 2016.09 Texas, United States

Education

Hanyang University Ph.D. <i>Department of Computer and Software</i> Advisor: Prof. Sang-Wook Kim	2013.03–2018.02 Seoul, Republic of Korea
Hanyang University M.S. <i>Department of Electronics Computer Engineering</i>	2011.03–2013.02 Seoul, Republic of Korea
Hanyang University B.S. <i>Department of Computer Engineering</i>	2007.03–2011.02 Seoul, Republic of Korea

Professional Service

- **2026:** AAAI, CIKM, ICASSP, ICLR, IJCAI, KDD, ML4H, NeurIPS, TheWebConf
- **2025:** CHIL, ICML, IJCAI, IJCNN, KDD, NeurIPS
- **2024:** AAAI, ICASSP
- **2023:** ICASSP

Publications

Dong-hyuk Seo, Ui Jong Kim, **Yong-Yeon Jo**, Joon-myung Kwon, Won-Yong Shin, Sang-Wook Kim, “Accurate Reconstruction of the Standard 12-Lead ECG from a Single Lead based on Inherent Principles of ECG”, *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2026.

Hak Seung Lee, Junho Song, Moonki Jung, **Yong-Yeon Jo**, Joon-myung Kwon, Jun Hwan Cho, “Prediction of vasovagal syncope using artificial intelligence-enabled smartwatch photoplethysmography-derived heart rate variability”, *European Heart Journal - Digital Health*, 2026.

Yong-Yeon Jo, Jong-Hwan Jang, JaeHo Park, Jin Yu, Joon-myung Kwon, Junho Song, “Can Meta-Learning Address The Challenges of Biosignal Personalization?”, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2026.

Jong-Hwan Jang, Junho Song, **Yong-Yeon Jo**, “CoFE: A Framework Generating Counterfactual ECG for Explainable Cardiac AI-Diagnostics”, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2026.

Tae-Min Rhee, Sora Kang, Min Sung Lee, Ga In Han, Ah-Hyun Yoo, Jong-Hwan Jang, **Yong-Yeon Jo**, Jeong Min Son, Joon-myung Kwon, Su-Yeon Choi, Hak Seung Lee, Heesun Lee, “Artificial Intelligence-Driven Electrocardiogram Screening for Asymptomatic Left Ventricular Systolic Dysfunction in the General Population”, *JACC: Advances*, 2026.

Soo Youn Lee, Ah-Hyun Yoo, Sora Kang, Jong-Hwan Jang, **Yong-Yeon Jo**, Jeong Min Son, Min Sung Lee, Ga In Han, Joon-myung Kwon, Hak Seung Lee, Kyung-Hee Kim, “Detection and prognostic stratification of left ventricular systolic dysfunction in left bundle branch block using an artificial intelligence-enabled electrocardiography”, *Journal of Cardiovascular Imaging*, 2026.

Jaeho Park, **Yong-Yeon Jo**, Jong-Hwan Jang, Jin Yu, Joon-myung Kwon, Junho Song, "VCP: Visible Context Propagation for Electrocardiogram Recovery", *IEEE Open Journal of Signal Processing*, 2026.

Hak Seung Lee, Sooyeon Lee, Sora Kang, Ga In Han, Ah-Hyun Yoo, Jong-Hwan Jang, **Yong-Yeon Jo**, Jeong Min Son, Min Sung Lee, Joon-myung Kwon, Kyung-Hee Kim, "Artificial Intelligence-Enabled ECG Screening for LVSD in LBBB: Evaluating Model Development and Transfer Learning Approaches", *JACC: Advances*, 2025.

Min Sung Lee, Jong-Hwan Jang, Sora Kang, Ga In Han, Ah-Hyun Yoo, **Yong-Yeon Jo**, Jeong Min Son, Joon-myung Kwon, Sooyeon Lee, Ji Sung Lee, Hak Seung Lee, Kyung-Hee Kim, "Transparent and robust Artificial intelligence-driven Electrocardiogram model for Left Ventricular Systolic Dysfunction", *Diagnostics*, Vol 15. No. 15, 2025.

Jong-Hwan Jang, **Yong-Yeon Jo**, Sora Kang, Jeong Min Son, Hak Seung Lee, Joon-myung Kwon, Min Sung Lee, "A novel XAI framework for explainable AI-ECG using generative counterfactual XAI (GCX)", *Scientific Reports*, Vol 15. No. 1, 2025.

Jaeho Park, TaeJun Park, Joon-myung Kwon, **Yong-Yeon Jo**, "Benchmarking ECG Delineation using Deep Neural Network-based Semantic Segmentation Models", *Proceedings of the sixth Conference on Health, Inference, and Learning*, PMLR 287, 2025.

Yong-Yeon Jo, Byeong Tak Lee, Jeong-Ho Hong, Hak Seung Lee, Joon-myung Kwon, Beom Joon Kim, "Test-Time Calibration: A Framework for Personalized Test-Time Adaptation in Real-World Biosignals", *Proceedings of the sixth Conference on Health, Inference, and Learning*, PMLR 287, 2025.

Byeong Tak Lee, **Yong-Yeon Jo**, Joon-Myung Kwon, "Unveiling the secrets of neural network scaling for ECG classification", *Informatics in Medicine Unlocked*, Vol 55., 2025.

Jin Yu, JaeHo Park, TaeJun Park, Gyurin Kim, JiHyun Lee, Min Sung Lee, Joon-myung Kwon, Jeong Min Son, **Yong-Yeon Jo**, "ALFRED: Ask a Large-language model For Reliable ECG Diagnosis", *arXiv preprint*, 2025.

Hak Seung Lee, Sora Kang, **Yong-Yeon Jo**, Jeong Min Son, Min Sung Lee, Joon-myung Kwon, Kyung-Hee Kim, "AI-Enabled Smartwatch ECG: A Feasibility Study for Early Prediction and Prevention of Heart Failure Rehospitalization", *JACC: Basic to Translational Science*, In Press, Corrected Proof, 2025.

Yong-Yeon Jo, Byeong Tak Lee, Beom Joon Kim, Jeong-Ho Hong, Hak Seung Lee, Joon-myung Kwon, "New Test-Time Scenario for Biosignal: Concept and Its Approach", *Findings paper presented at Machine Learning for Health (ML4H)*, arXiv:2411.17785, 2024.

Ki-Hyun Jeon, Hak Seung Lee, Sora Kang, Jong-Hwan Jang, **Yong-Yeon Jo**, Jeong Min Son, Min Sung Lee, Joon-myung Kwon, Ju-Seung Kwun, Hyoung-Won Cho, Si-Hyuck Kang, Wonjae Lee, Chang-Hwan Yoon, Jung-Won Suh, Tae-Jin Youn, In-Ho Chae, "AI-enabled ECG index for predicting left ventricular dysfunction in patients with ST-segment elevation myocardial infarction", *Scientific Reports*, Vol 14. No. 1, 2024.

Junho Song, Jong-Hwan Jang, Byeong Tak Lee, DongGyun Hong, Joon-myung Kwon, **Yong-Yeon Jo**, "Foundation Models for Electrocardiograms", *arXiv preprint*, arXiv:2407.0711, 2024.

Byeong Tak Lee, Joon-myung Kwon, **Yong-Yeon Jo**, "TADA: Temporal Adversarial Data Augmentation for Time Series Data", *arXiv preprint*, arXiv:2407.15174, 2024.

Ki-Hyun Jeon, Jong-Hwan Jang, Sora Kang, Hak Seung Lee, Min Sung Lee, Jeong Min Son, **Yong-Yeon Jo**, Tae Jun Park, Il-Young Oh, Joon-myung Kwon, Ji Hyun Lee, "Identifying atrial fibrillation with sinus rhythm electrocardiogram in embolic stroke of undetermined source: a validation study with insertable cardiac monitors", *Korean Circulation Journal*, Vol 53. No. 11, 2023.

Yong-Yeon Jo, Young Sang Choi, Jong-Hwan Jang, Joon-Myung Kwon, "ECGT2T: Towards Synthesizing Twelve-Lead Electrocardiograms from Two Asynchronous Leads", *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2023.

Byeong Tak Lee, Joon-myung Kwon, **Yong-Yeon Jo**, "Can Knowledge Distillation Really Transfer Inductive Bias?", *Proceeding of the Applied Machine Learning Methods for Time Series Forecasting (AMLTS)*, 2022.

Byeong Tak Lee, Seon-Yu Lim, Youngjae Song, Joon-myung Kwon, **Yong-Yeon Jo**, "Efficient Data Augmentation Policy for Electrocardiograms", *Proceeding of the International Conference on Information and Knowledge Management (ACM CIKM)*, 2022.

Yong-Yeon Jo, Myung-Hwan Jang, Sunju Park, Sang-Wook Kim, "A Data Layout with Good Data Locality for Single-Machine based Graph Engines", *IEEE Transactions on Computers*, Vol. 71 No. 8, 2022.

Yeji Lee, Byungjin Choi, Min Sung Lee, Uram Jin, Seokyoung Yoon, **Yong-Yeon Jo**, Joon-myung Kwon, "An artificial intelligence electrocardiogram analysis for detecting cardiomyopathy in the peripartum period", *International Journal of Cardiology*, Vol. 352, 2022.

Joon-myung Kwon, Yong-Yeon Jo*, Soo Youn Lee, Seonmi Kang, Seon-Yu Lim, Min Sung Lee, Kyung-Hee Kim, "Artificial Intelligence-Enhanced Smartwatch ECG for Heart Failure-Reduced Ejection Fraction Detection by Generating 12-Lead ECG", *Diagnostics*, Vol. 12 No. 3, 2022.

Yoonsuk Kang, **Yong-Yeon Jo**, Jaehyuk Cha, Wan D. Bae, Sang-Wook Kim, "FORESEE: An Effective Efficient Framework for Estimating the Execution Times of IO Traces on the SSD", *IEEE Transactions on Computers*, Vol 70. No. 12, 2021.

Joon-myung Kwon, Ye Rang Lee, Min-Seung Jung, Yoon-Ji Lee, **Yong-Yeon Jo**, Da-Young Kang, Soo Youn Lee, Yong-Hyeon Cho, Jae-Hyun Shin, Jang-Hyeon Ban, Kyung-Hee Kim, "Deep learning model for screening sepsis using electrocardiography", *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, open access, 2021.

Myung-Hwan Jang, **Yong-Yeon Jo**, Sang-Wook Kim, "RealGraph-Web: A Graph Analysis Platform on the Web", *Proceeding of International Conference on Very Large Data Bases (VLDB), Demonstration Track*, 2021.

Joon-myung Kwon, **Yong-Yeon Jo**, Soo Youn Lee, Kyung-Hee Kim, "Artificial intelligence using electrocardiography: Strengths and pitfalls", *European Heart Journal*, Vol 42. No 30, 2021.

Yong-Yeon Jo, Joon-myung Kwon, Ki-Hyun Jeon, Yong-Hyeon Cho, Jae-Hyun Shin, Yoon-Ji Lee, Min-Seung Jung, Jang-Hyeon Ban, Kyung-Hee Kim, Soo Youn Lee, Jinsik Park, Byung-Hee Oh, "Detection and classification of arrhythmia using an explainable deep learning model", *Journal of Electrocardiology*, Vol. 67, 2021.

Yong-Yeon Jo, Joon-myung Kwon, Ki-Hyun Jeon, Yong-Hyeon Cho, Jae-Hyun Shin, Yoon-Ji Lee, Min-Seung Jung, Jang-Hyeon Ban, Kyung-Hee Kim, Soo Youn Lee, Jinsik Park, Byung-Hee Oh, "Artificial intelligence to diagnose paroxysmal supraventricular tachycardia using electrocardiography during normal sinus rhythm", *European Heart Journal - Digital Health*, Vol 2. No 2., 2021.

Yong-Yeon Jo, Younghoon Cho, Soo YounLee, Joon-myung Kwon, Kyung-Hee Kim, Ki-Hyun Jeon, Soohyun Cho, Jinsik Park, Byung-Hee Oh, "Explainable artificial intelligence to detect atrial fibrillation using electrocardiogram", *International Journal of Cardiology*, Vol. 328, 2021.

Yong-Yeon Jo, Young Sang Choi, Hyo-Eun Kim, Kyounglan Ko, Chan Wha Lee, Hyo Soung Cha, Yul Hwangbo, "Impact of image compression on deep learning-based mammogram classification", *Scientific Reports*, Vol. 11, 2021.

Joon-myung Kwon, Min-Seung Jung, Kyung-Hee Kim, **Yong-Yeon Jo**, Jae-Hyun Shin, Yong-Hyeon Cho, Yoon-Ji Lee, Jang-Hyeon Ban, Ki-Hyun Jeon, Soo Youn Lee, Jinsik Park, Byung-Hee Oh, "Artificial intelligence for detecting electrolyte imbalance using electrocardiography", *Annals of Noninvasive Electrocardiology*, Vol 26. No. 3, 2021.

Yong-Yeon Jo, Jai Hong Han, Hyun Woo Park, Hyojung Jung, Jaedong Lee, Jipmin Jung, Hyo Soung Cha, Dae Kyung Sohn, Yul Hwangbo, "Prediction of the prolonged length of hospital stay after cancer surgery using the machine learning on electronic health records: Retrospective cross-sectional study", *Journal of Medical Internet Research Medical Informatics*, Vol. 9 No. 2, 2021.

Yong-Yeon Jo, Jong-Hwan Jang, Joon-Myung Kwon, Hyung-Chul Lee, Chul-Woo Jung, Seonjeong Byun, Han-Gil Jeong, "Predicting Intraoperative Hypotension Using Deep Learning with Waveforms of Arterial Blood Pressure, Electroencephalogram, and Electrocardiogram", *PlosOne*, open access, 2021.

Joon-myung Kwon, Soo Youn Lee, Yoon-Ji Lee, **Yong-Yeon Jo**, Min-Seung Jung, Yong-Hyeon Cho, Jae-Hyun Shin, Jang-Hyeon Ban, Kyung-Hee Kim, Jinsik Park, Byung-Hee Oh, "Deep learning model for detection of hypoalbuminemia using electrocardiography", *Preprints*, preprints202101.0408.v1, 2021.

JeongMyung Lee, Seokwon Kang, YongSeung Yu, **Yong-Yeon Jo**, Sang-Wook Kim, Yongjun Park, "Optimization of a GPU-based sparse matrix multiplication for large sparse networks", *Proceeding of IEEE International Conference on Data Engineering (IEEE ICDE)*, 2020.

Yong-Yeon Jo, Myung-Hwan Jang, Sang-Wook Kim, Sunju Park, "RealGraph: A graph engine leveraging the power-law distribution of real-world graphs", *Proceeding of the World Wide Web (WWW) Conference*, 2019.

Myung-Hwan Jang, **Yong-Yeon Jo**, Sang-Wook Kim, “Graph-based recommendation on single-machine based graph engines: a performance study”, *Proceeding of the International Conference on Fuzzy Theory and Its Applications (iFUZZY)*, 2018.

Yong-Yeon Jo, Myung-Hwan Jang, Sang-Wook Kim, Kyungsik Han, “Efficient processing of recommendation algorithms on a single-machine-based graph engine”, *Journal of Supercomputing*, Vol. 76, 2018.

Yong-Yeon Jo, Myung-Hwan Jang, Hyungsoo Jung, Sang-Wook Kim, “A high-performance graph engine for efficient social network analysis”, *Proceeding of the World Wide Web (WWW) Conference*, 2018.

Yong-Yeon Jo, Kyuhwan Lee, Myung-Hwan Jang, Sang-Wook Kim, Eunjee Song, “Efficient processing of large-scale sparse matrix-matrix multiplications on a single machine”, *Proceeding of the IEEE International Conference on Systems, MAN, and Cybernetics Society (IEEE SMC)*, 2017.

Yoonsuk Kang, **Yong-Yeon Jo**, Jaehyuk Cha, Wan D. Bae, Sang-Wook Kim, “FORESEE: a framework for effective and efficient estimation of the execution time of an IO trace on the SSD”, *Proceeding of the International Conference on Information and Knowledge Management (ACM CIKM)*, 2017.

Yong-Yeon Jo, Myung-Hwan Jang, Sang-Wook Kim, “Efficient processing of alternating least squares on a single machine”, *Proceeding of the International Conference on Emerging Database (EDB)*, 2017.

Yong-Yeon Jo, Sang-Wook Kim, Sung-Woo Cho, Duck-Ho Bae, Hyunok Oh, “High-performance data mining with intelligent SSD”, *Journal of Cluster Computing*, Vol. 20 No. 2, 2017.

Yong-Yeon Jo, Jiwon Hong, Myung-Hwan Jang, Jae-Geun Bang, Sang-Wook Kim, “Data locality in graph engines: implications and preliminary experimental results”, *Proceeding of the International Conference on Information and Knowledge Management (ACM CIKM)*, 2016.

Yoonsuk Kang, **Yong-Yeon Jo**, Jaehhyuk Cha, Sang-Wook Kim, Young Kyun Shin, “The uFLIP benchmark revisited for evaluating SSDs”, *Journal of Communication Systems*, Vol. 29, 2016.

Duck-Ho Bae, Jin-Hyung Kim, **Yong-Yeon Jo**, Sang-Wook Kim, Hyunok Oh, Chanik Park, “Intelligent SSD: a turbo for big data mining”, *Computer Science and Information Systems*, Vol. 13 No. 2, 2016.

Yong-Yeon Jo, Sungwoo Cho, Sang-Wook Kim, Hyunok Oh, “Collaborative processing of data-intensive algorithms with CPU, intelligent SSD, and GPU”, *Proceeding of the International Conference on ACM/SIGAPP Symposium on Applied Computing (ACM SAC)*, 2016.

Yong-Yeon Jo, Moonjun Chung, Sang-Wook Kim, Hyunok Oh, “Data mining in intelligent SSD: simulation-based evaluation”, *Proceeding of the International Conference on Big Data and Smart Computing (BigComp)*, 2016.

Yong-Yeon Jo, Sang-Wook Kim, Duck-Ho Bae, “Efficient sparse matrix multiplication on GPU for large social network analysis”, *Proceeding of the International Conference on Information and Knowledge Management (ACM CIKM)*, 2015.

Yong-Yeon Jo, SungWoo Cho, Sang-Wook Kim, Duck-Ho Bae, Hyunok Oh, “On running data-Intensive algorithms with intelligent SSD and host CPU: a collaborative approach”, *Proceeding of the International Conference on ACM/SIGAPP Symposium on Applied Computing (ACM SAC)*, 2015.

Yong-Yeon Jo, Sang-Wook Kim, Duck-Ho Bae, “GPU-based matrix multiplication methods for social networks analysis”, *Proceeding of the International Conference on Research in Adaptive and Convergent Systems (ACM RACS)*, 2014.

Yoonsuk Kang, **Yong-Yeon Jo**, Jaehyuk Cha, Sang-Wook Kim, Young Kyun Shin, “Exploiting the uFLIP benchmark for analyzing SSDs performance”, *Proceeding of the International Conference on Network Infrastructure and Digital Content (IEEE IC-NIDC)*, 2014.

Yoonsuk Kang, **Yong-Yeon Jo**, Duck-Ho Bae, Sang-Wook Kim, “Running data mining algorithms on SSDs”, *Proceeding of the International Conference on Emerging Databases-Technologies, Applications, and Theory (EDB)*, 2013.

Yong-Yeon Jo, Duck-Ho Bae, Sang-Wook Kim, “Efficient computations of link-based similarity measures on the GPU”, *Proceeding of the IEEE International Conference on Network Infrastructure and Digital Content (IEEE IC-NIDC)*, 2012.

60

강운석, **조용연**, 김상욱, “SSD 성능에 영향을 주는 특징 분석 방법”, 한국정보처리학회 춘계학술발표대회, 2018.

61

장명환, **조용연**, 김상욱, “그래프 기반 추천 알고리즘의 효율적인 수행”, 한국지능시스템학회 춘계학술대회, 2018.

62

강운석, **조용연**, 차재혁, 배완덕, 김상욱, “SSD를 위한 IO 트레이스 수행시간 예측 방안”, 한국컴퓨터종합학술대회, 2017.

63

조용연, 장명환, 김상욱, “실 세계 빅 그래프의 특징을 고려한 싱글 머신 기반 그래프 엔진”, 한국컴퓨터종합학술대회, 2017.

64

조용연, 김상욱, 배덕호, “효율적인 빅 데이터 마이닝을 위한 iSSD 기반 협업 처리 방안”, 한국통신학회논문지, Vol. 42, No. 02, 2017.

65

이현진, **조용연**, 김상욱, “FlashGraph에서 너비우선탐색 알고리즘의 성능 개선 방안”, 정보처리학회 춘계학술발표대회, 2016.

66

정문준, **조용연**, 김상욱, 오현옥, “시뮬레이터 기반 iSSD에서 데이터 마이닝 알고리즘 성능 평가”, 정보처리학회 추계학술발표대회, 2015.

67

장명환, **조용연**, 김상욱, “GraphChi기반의 두 희소 행렬 곱셈”, 한국컴퓨터종합학술대회, 2015.

68

이규환, **조용연**, 김상욱, “블록 I/O 트레이스 리플레이어에 대한 분석”, 한국컴퓨터종합학술대회, 2015.

69

진동규, 조성우, **조용연**, 김상욱, 오현옥, “스케줄링 알고리즘에 따른 협업 시스템의 성능 분석”, 정보처리학회 추계학술발표대회, 2014.

70

권일택, **조용연**, 김상욱, “빅 데이터를 위한 행렬 곱셈의 성능 분석”, 정보처리학회 추계학술발표대회, 2014.

71

이인혁, 이규환, 강운석, **조용연**, 김상욱, “SSD 성능 비교를 위한 I/O 트레이스 리플레이어 분석”, 정보처리학회 추계학술발표대회, 2014.

72

정승훈, 이재성, 강운석, **조용연**, 배덕호, 김상욱, 강주영, 차재혁, “OLTP환경에서 SSD의 성능 분석”, 한국정보과학회 추계학술발표대회, 2013.

73

조성우, **조용연**, 배덕호, 김상욱, 오현옥, “Intelligent SSD에서 이질 스케줄링 알고리즘 적용을 통한 프로그램 성능 향상 방안”, 한국정보과학회 추계학술발표대회, 2013.

74

조용연, 배덕호, 김상욱, “GPU 기반의 외적을 통한 두 희소행렬 곱셈방안”, 한국정보과학회논문지, Vol. 19, No. 10, 2013.

75

조용연, 배덕호, 김상욱, “GPU기반 희소행렬 곱셈의 성능 분석”, 한국통신학회 동계종합학술발표회, 2013.

76

조용연, 배덕호, 김상욱, “GPU를 이용한 그래프에서 링크 기반 유사도 계산 방안의 성능 평가”, 한국정보과학회논문지, Vol. 18, No. 5, 2012.

77

조용연, 배덕호, 김상욱, “GPU를 이용한 그래프에서 링크 기반 유사도 계산 방안의 성능 평가”, 한국정보과학회 추계학술발표대회, 2011.