Curriculum Vitae

Seok-Ju, Hahn (Adam)

sjhahn11512@gmail.com
GitHub: vaseline555

Research Interests

Federated Learning, Machine Learning for Science

Education

Ulsan National Institute of Science and Technology (UNIST) **Ulsan, South Korea**
Ph.D. in Industrial Engineering *Mar. 2021 - Aug. 2024 (expected)*
Thesis: A Trilogy of Approaches for Tackling Heterogeneity in Federated Learning
Advisor Prof. Junghye Lee and Prof. Gi-Soo Kim
GPA: 4.30/4.30

Ulsan National Institute of Science and Technology (UNIST) **Ulsan, South Korea**
M.S. in Industrial Engineering *Mar. 2019 - Feb. 2021*
Thesis: Federated Learning with Sufficient Dimension Reduction and Generative Models
Advisor: Prof. Junghye Lee
GPA: 4.26/4.30

Ulsan National Institute of Science and Technology (UNIST) **Ulsan, South Korea**
B.S. in Industrial Management Engineering *Mar. 2015 - Feb. 2019*
GPA: 3.81/4.30

Experience

Military Service: Technical Research Personnel **Ulsan, South Korea**
Conscripted Researcher *Sep. 2022 - Aug. 2025*
Host: Republic of Korea Army
Description: Mandatory military training as a researcher as per the regulations of the South Korea government

Internship: Kakao Enterprise **Sungnam, South Korea**
AI Research Internship @ AI Lab (NEX Part, Advanced Technology Team) *Jun. 2021 - Aug. 2021*
Host: Dr. Minwoo Jeong
Project: Federated learning for scalable and privacy-preserving AI services

Teaching Assistant: Advanced Data Mining **Ulsan, South Korea**
Course: IE503, UNIST *Fall 2020*
Description: A graduate course for probabilistic machine learning and Bayesian modeling

Teaching Assistant: Data Mining **Ulsan, South Korea**
Course: IE303, UNIST *Spring 2019, Spring 2020*
Description: An undergraduate course for basics and applications of data mining methodologies

Publication

7. **Seok-Ju Hahn***, Bokyung Kim*, Junghye Lee, Jungho Im *"Geographic Coordinates-Guided Conditional Implicit Neural Modeling for High-Spatiotemporal Vegetation Index: Integrating Multi-Resolution Satellite Imagery"*. (*: equal contribution) (Work in Progress)

6. **Seok-Ju Hahn**, Junghye Lee *"Federated Synthetic Data Generation through Energy-based Composition"*. (Under Review)

5. Jaeho Kim*, **Seok-Ju Hahn***, Yoontae Hwang*, Junghye Lee, Seulki Lee *"CAFO: Feature-Centric Explanation on Time Series Classification"*. 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (*KDD*), 2024. (*: equal contribution) (Research Track; acceptance rate≈20.0%)

4. **Seok-Ju Hahn**, Gi-Soo Kim, Junghye Lee *"Pursuing Overall Welfare in Federated Learning through Sequential Decision Making"*. International Conference on Machine Learning, Proceedings of Machine Learning Research (*ICML*), 2024. (Main Conference; acceptance rate=27.5%)

3. **Seok-Ju Hahn***, Suhyeon Kim*, Young Sik Choi, Junghye Lee, Jihun Kang *"Prediction of Type 2 Diabetes using Genome-wide Polygenic Risk Score and Metabolic Profiles: A Machine Learning Analysis of Population-based 10-year Prospective Cohort Study"*. EBioMedicine, 2022. (*: equal contribution) (impact factor=11.1)

2. **Seok-Ju Hahn**, Minwoo Jeong, Junghye Lee *"Connecting Low-Loss Subspace for Personalized Federated Learning"*. 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (*KDD*), 2022. (Research Track; acceptance rate=14.9%)

1. **Seok-Ju Hahn**, Junghye Lee *"Privacy-preserving Federated Bayesian Learning of a Generative Model for Imbalanced Classification of Clinical Data"*. Fall Conference of Korean Institute of Industrial Engineers, 401-410, 2019.

Projects

4. **Development of Big Data Processing Techniques and Diagnostics for Commercial Air Conditioners** *(collaboration with LG Electronics)*
   Jan. 2021 - Aug. 2022

3. **Development of Deep Learning based Privacy-Preserving Federated Learning Platform for Artificial Intelligence** *(National Research Foundation)*
   Mar. 2019 - Feb. 2023

2. **Prediction of Type 2 Diabetes Incidence based on Genetic and Epidemiological Survey Data** *(collaboration with Kosin University Gospel Hospital)*
   Jul. 2019 - Sep. 2020

1. **Development of Prediction Model for Thick-Plate Roughing Mill** *(collaboration with POSCO)* *Dec. 2018 - Aug. 2019*

Teaching & Talk

5. **Lecture: Introduction to Federated Learning**
   Host: Prof. Junghye Lee, Seoul National University *Apr. 11th, 2024*
   Description: Teaching a basic concepts of federated learning and simulation methods for statistical heterogeneity with hands-on tutorials

4. **Talk: From Too-Much Worrier to Living Skeleton**
   Host: Prof. Yongjae Lee, UNIST *Dec. 1st, 2022*
   Description: Sharing experiences to fresh undergraduates of the Department of Industrial Engineering at UNIST; part of UNIST IE Nights

3. **Lecture: AI Novatus Academia**
   Host: UNIST Institute for the 4th Industrial Revolution *Jul. 29th, 2022*
   Description: Teaching a basic machine learning project pipeline: deep networks for pattern mining in temporal data

2. **Talk: Core AI Seminar**
   Host: Prof. Sungbin Lim, Korea University *Jul. 8th, 2022*
   Description: Paper talk - *Connecting Low-Loss Subspace for Personalized Federated Learning* (KDD 2022)

1. **Lecture: Recent Trends in Federated Learning**
   Host: Korea AI Center for Drug Discovery and Development *Oct. 12th, 2021*
   Description: Teaching concepts and challenges of federated learning and recent trends in personalized federated learning methods