

JIHYUNG KOOK

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RESEARCH INTERESTS

Data Privacy, Privacy-Enhancing Technologies, Privacy-Preserving Machine Learning, Applied Cryptography

EDUCATION

Georgia Institute of Technology

Online M.S. in Computer Science

Atlanta, GA

Dec. 2024

- Specialization: Computational Perception & Robotics

Sookmyung Women's University

B.S. in Statistics and Computer Science

Seoul, Korea

Feb. 2017

PRESENTATION/PUBLICATION

[1] **Kook, J.**, Lee, E., “Efficiency Evaluation of Sparsified Homomorphic Encryption in Federated Learning,” Poster presented at the *Korean Institute of Communications and Information Sciences (KICS) Fall Conference*, Nov. 2025

[2] Oh, T., **Kook, J.**, Jung, S., et al., “A Standardized Glucose-Insulin-Potassium Infusion Protocol in Surgical Patients: Use of Real Clinical Data from a Clinical Data Warehouse,” *Diabetes Research and Clinical Practice*, vol. 174, 108756, Apr. 2021, DOI: 10.1016/j.diabres.2021.108756 (International, Peer-reviewed, Impact Factor: 7.4)

[3] Yoon, H., **Kook, J.**, Shim, J., “IOT-based Mailbox system using Android and Arduino,” Poster presented at the *Korea Information Processing Society (KIPS) Spring Conference*, Apr. 2015

RESEARCH EXPERIENCE

Sejong University—Privacy-Preserving Machine Learning and Cryptography Lab

Seoul, Korea

Full-time Researcher (Advisor: Prof. Eunsang Lee)

Jul. 2025 – Present

- Implement experiments on encrypted federated learning to quantify efficiency-accuracy trade-offs in sparsification settings; presented preliminary results as a poster at a domestic conference.
- Conduct literature reviews on federated learning with homomorphic encryption for privacy-preserving machine learning; present synthesized findings in weekly lab meetings.

Seoul National University Bundang Hospital (SNUBH)

Seongnam, Korea

Part-time Researcher, Division of Endocrinology and Metabolism (Advisor: Prof. Tae Jung Oh)

Mar. 2018 – Jul. 2020

- Contributed to journal publication on a standardized glucose-insulin-potassium infusion protocol by preprocessing and analyzing large-scale clinical datasets of 7,000+ patients.
- Performed an exploratory study on predictive factors from 55 patients' continuous glucose monitoring (CGM) data to evaluate quality and patterns and identify predictors of glycemic control under weekly faculty mentorship.
- Engineered features from continuous glucose monitoring (CGM) data of 55 patients on Python, extracting clinically meaningful predictors (e.g., peak occurrence, variability metrics).

RELEVANT COURSEWORK

- Systems & Security: Computer Networks, Introduction to Operating Systems, Introduction to Information Security, (Audit) High Performance Computer Architecture
- Machine Learning: Machine Learning for Trading, Artificial Intelligence, (Audit) Deep Learning
- Statistics & Analysis: Probability and Mathematical Statistics, Regression and Time Series Analysis, Multivariate Statistical Analysis

PROFESSIONAL EXPERIENCE

Seoul National University Bundang Hospital

Seongnam, Korea

Part-time Administrative Assistant, Division of Endocrinology and Metabolism

Jul. 2025 – Present

- Support clinical analysis and manuscript preparation by preprocessing, merging, and extracting Electronic Medical Record (EMR) datasets.

- Manage research administration tasks, including payroll processing, publication and IRB review fees, and training expenses, ensuring accurate budgeting and compliance with institutional guidelines.
- Preprocessed, merged, and analyzed EMR datasets with Python to support faculty-led clinical studies, performing cross-checks and statistical analysis (Student's t-test, Cohen's d) to derive accurate, interpretable results.

KB Kookmin Bank & KB Financial Group

Seoul, Korea

Junior Data Analyst, Department of Data Planning

Jul. 2020 – Sep. 2023

- Standardized customer data across 8 subsidiaries by organizing records into 8 domains and implementing retention/deletion rules, enhancing cross-subsidiary integration and ensuring regulatory compliance.
- Coordinated bi-monthly cross-subsidiary meetings with data managers to resolve data quality and integration issues, resulting in a 20% cleanup of legacy records, 10% refresh of 10% high-value datasets, and higher database reliability.
- Delivered group-wide training (8 subsidiaries) and individual coaching on data visualization and automation, updating 30+ topics annually to improve digital adoption and reporting efficiency.

Croquis Inc. (now Kakao Style)

Seoul, Korea

Junior Data Analyst, Department of Data

Mar. 2018 – Apr. 2020

- Automated 17 ETL workflows on PySpark using Python and PySQL to standardize customer analysis across teams, increasing data accuracy and reliability by 25%.
- Analyzed user/transaction data of a newly adopted in-app payment system; improved recommendation algorithms and automated promotion reporting, leading early adopting sellers to achieve 1.5x higher monthly sales.
- Collaborated with PMs, designers, and engineers to define KPIs focused on expanding top 100 seller participation (out of 400+ shops), and built Tableau/R-Shiny dashboards to track adoption and performance for sales increase.
- Provided cross-team SQL and Tableau training, raising organizational data literacy, enabling data-driven decision-making, and reducing the data team's workload by 10% through increased self-service analytics.

ADDITIONAL TRAINING

Graduate-Level Coursework (Audited)

Atlanta, GA

Online – Georgia Institute of Technology

Jan. 2025 – Present

- Completed: High Performance Computer Architecture (CS 6290), Intro to Research (CS 8803 O24), Deep Learning (CS 7643)
- In Progress: Distributed Computing (CS 7210), Spring 2026

Big Data Platform Technology Program (Government-funded)

Seoul, Korea

4th Industrial Revolution Academy – Seoul National University Big Data Institute

Jun. 2017 – Feb. 2018

- Completed intensive courses in Python, SQL/DBMS, data mining, and machine/deep learning.
- Conducted an exploratory study at SNUBH on predictive factors from CGM data under weekly faculty guidance.

TECHNICAL SKILLS

Programming & Tools: Python, PyTorch, R, SQL, PySpark, C/C++, Git, Docker, LaTeX

ML & Security: Privacy-Preserving ML (federated learning, homomorphic encryption), Statistical Modeling

Data Visualization: Matplotlib, ggplot2, R-Shiny, Tableau

VOLUNTEER WORK

2025 Animal Run Seoul – Participant

Oct. 2025

- Completed a 10km charity run to raise awareness and funds for endangered animal conservation.

Ansan ForCatMung Center – Volunteer

Sep. 2025

- Contributed to shelter activities, including cleaning dog and cat kennels, walking dogs, and feeding animals, ensuring the care and well-being of rescued animals.