JIHYUNG KOOK

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RESEARCH INTERESTS

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

EDUCATION

Georgia Institute of Technology — Atlanta, GA
Online M.S. in Computer Science, Specialization: Computational Perception & Robotics — *Dec. 2024*

Sookmyung Women's University — Seoul, Korea
B.S. in Statistics and Computer Science — *Feb. 2017*

PRESENTATIONS & PUBLICATIONS

[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] Yoo, S., Oh, T., Kook, J., et al., "Association between Muscle Cramping and Diabetic Peripheral Neuropathy: Findings from a Prospective Cohort Study," Diabetes & Metabolism Journal, under review, Apr. 2026

[3] Oh, T., Kook, J., Jung, S., et al., "A Standardized Glucose-Insulin-Potassium Infusion Protocol in Surgical Patients," Diabetes Research and Clinical Practice, vol. 174, 108756, Apr. 2021 (Impact Factor: 7.4)

[4] 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 ML and Cryptography Lab — Seoul, Korea
Full-time Researcher (Advisor: Prof. Eunsang Lee) — *Jul. 2025 – Present*

- Implement federated learning experiments in Python using CKKS-based homomorphic encryption with OpenFHE (C++) on Linux to evaluate efficiency–accuracy trade-offs under sparsification settings; manuscript in preparation for submission to IEEE Transactions on Dependable and Secure Computing (TDSC).
- Conduct literature reviews on homomorphic encryption topics, including Threshold FHE, and present synthesized findings in weekly lab meetings.

Seoul National University Bundang Hospital (SNUBH) — Seongnam, Korea
Part-time Researcher, Division of Endocrinology and Metabolism — *Mar. 2018 – Jul. 2020*
(Advisor: Prof. Tae Jung Oh)

- Contributed to journal publication on a standardized glucose-insulin-potassium infusion protocol by preprocessing and analyzing large-scale clinical datasets of 7,000+ patients.
- Engineered features from continuous glucose monitoring (CGM) data of 55 patients on Python, extracting clinically meaningful predictors (e.g., peak occurrence, variability metrics).

PROFESSIONAL EXPERIENCE

Seoul National University Bundang Hospital — Seongnam, Korea
Part-time Administrative Assistant, Division of Endocrinology and Metabolism — *Jul. 2025 – Present*

- Preprocessed, merged, and analyzed EMR datasets with Python to support faculty-led clinical studies; performed statistical analysis (Student's t-test, Cohen's d) contributing to a manuscript submitted to Diabetes & Metabolism Journal (Apr. 2026).
- Managed research administration tasks including payroll processing and IRB review fees, ensuring budgeting accuracy and institutional compliance.

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 regulatory compliance.
- Coordinated bi-monthly cross-subsidiary meetings, resulting in 20% cleanup of legacy records and 10% refresh of high-value datasets.
- Delivered group-wide training 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 to standardize customer analysis, increasing data accuracy and reliability by 25%.
- Analyzed user/transaction data of a newly adopted in-app payment system; improved recommendation algorithms leading early adopting sellers to achieve 1.5x higher monthly sales.
- Built Tableau/R-Shiny dashboards to track KPIs; provided cross-team SQL and Tableau training, reducing the data team's workload by 10%.

ADDITIONAL TRAINING

Graduate-Level Coursework (Audited) — Georgia Institute of Technology Jan. 2025 – May 2026

- Completed: High Performance Computer Architecture (CS 6290), Intro to Research (CS 8803), Deep Learning (CS 7643), Distributed Computing (CS 7210)
- Planning: Applied Cryptography (CS 6260) or GPU Hardware and Software (CS 7295), Fall 2026

Big Data Platform Technology Program (Government-funded) Jun. 2017 – Feb. 2018
4th Industrial Revolution Academy — Seoul National University Big Data Institute

- Completed intensive courses in Python, SQL/DBMS, data mining, and machine/deep learning.

RELEVANT COURSEWORK

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

TECHNICAL SKILLS

Programming & Tools: Python, PyTorch, R, SQL, PySpark, C/C++, Git, Docker, LaTeX, Linux
Cryptography & ML: Homomorphic Encryption (OpenFHE, CKKS), Privacy-Preserving ML (Federated Learning), Statistical Modeling
Data Visualization: Matplotlib, ggplot2, R-Shiny, Tableau