

Jihyung Kook

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Seoul, South Korea

RESEARCH INTERESTS

My research focuses on **privacy-preserving machine learning and cryptography**, with a focus on developing methods that protect **data privacy in both learning and unlearning systems**. My work aims to advance secure and practical approaches that ensure the **trustworthiness and usability of future AI technologies**.

Keywords: Privacy-Preserving Machine Learning (PPML), Cryptography, Data Privacy

EDUCATION

- **Georgia Institute of Technology** Jan 2021 - Dec 2024
M.S. in Computer Science (OMSCS) GA, USA
 - Specialization: Computational Perception & Robotics
- **Sookmyung Women's University** Mar 2014 - Feb 2017
B.S in Statistics and Computer Science (Double Major) Seoul, South Korea

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

- [J.1] Tae-jung Oh, **Ji-hyung Kook**, Se Young Jung, et al. (2021). **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*, 174, 108756. DOI: 10.1016/j.diabres.2021.108756
- [C.1] Hyesung Yoon, **Jihyung Kook**, Junho Shim. (2015). **IOT-based Mailbox system using Android and Arduino**. In *Proceedings of the 2015 Spring Conference of KIPS (Korea Information Processing Society)*, pp. 1080–1081. Korea Information Processing Society. April 22, 2015, Seoul, South Korea.

RESEARCH EXPERIENCE

- **Privacy-Preserving Machine Learning and Cryptography Lab** Jul 2025 - Present
Researcher Seoul, South Korea
 - Investigating methods to mitigate computational overhead of homomorphic encryption and communication overhead of federated learning for practical privacy-preserving AI
 - Participating in weekly lab meetings and literature reviews on homomorphic encryption and federated learning
 - Building foundational expertise in cryptographic techniques for privacy-preserving machine learning
 - Supervisor: [Prof. Eunsang Lee](#)
- **Research Project** May 2025 - Jul 2025
Georgia Institute of Technology Atlanta, GA, USA
 - Designed and wrote a full research proposal: “A Systematic Review of Practical Challenges in Applying Homomorphic Encryption to Privacy-Preserving Machine Learning”
 - Conducted a group project using a Systematic Literature Review (SLR) methodology, gaining experience in defining research questions, applying inclusion/exclusion criteria, and synthesizing findings
 - Participated in a structured peer review process, giving and receiving feedback that improved clarity, feasibility, and academic rigor
 - Learned collaborative academic writing with LaTeX (Overleaf) and research planning under realistic semester constraints
- **Seoul National University Bundang Hospital** Mar 2018 - Mar 2021
Part-time Research Assistant Gyeonggi-do, South Korea
 - Contributed to a paper in *Diabetes Research and Clinical Practice* on a standardized glucose–insulin–potassium infusion protocol
 - Conducted a pilot study using continuous glucose monitoring data to discover predictors of glycemic control
 - Preprocessed and analyzed large-scale clinical datasets (7,000+ patients) for endocrinology research projects
 - Supervisor: [Prof. Tae-jung Oh](#)

WORK EXPERIENCE

- **Seoul National University Bundang Hospital** Jul 2025 - Present
Part-time Research Administrative Assistant Gyeonggi-do, South Korea
 - Supported research administration tasks including processing payroll for research staff and initial IRB budget reviews
 - Assisted with basic data analysis tasks for ongoing clinical projects
- **KB Kookmin Bank (concurrent with KB Financial Group)** Jul 2020 - Sep 2023
Data Analyst, Department of Data Planning Seoul, South Korea
 - Standardized and organized inconsistent customer data across subsidiaries, enabling unified data access
 - Trained staff from seven subsidiaries on Customer Journey Maps (CJM) to improve retention in digital services
 - Provided one-on-one training on dashboard design and automation using Tableau
- **Croquis Inc. (Kakao Style / Zigzag)** Mar 2018 - Apr 2020
Junior Data Analyst, Department of Data Seoul, South Korea
 - Automated 17 ETL workflows with Python, enhancing data accuracy by 15% and improving reporting reliability
 - Analyzed purchase and browsing data to optimize product recommendations and marketing strategies
 - Built custom dashboards in Tableau and R-Shiny to enable data-driven decisions for business teams
 - Conducted internal training in Python, R, and Tableau to improve organizational data literacy

VOLUNTEER EXPERIENCE

- **ForCatMung Center** Sep 2025 - Present
Volunteer Ansan, South Korea
 - Participate in monthly volunteer activities including cleaning the shelter and distributing food to rescued animals
- **2025 Animal Run Seoul** Oct 2025
Participant Seoul, South Korea
 - Completed 10 km charity run to raise awareness and donations for endangered animals

CERTIFICATES & TRAINING

- **Seoul National University 4th Industrial Revolution Academy - Big Data Platform Technology** Jun 2017 - Feb 2018
Seoul National University Big Data Institute Seoul, South Korea
 - Completed courses in Python Programming, SQL/DBMS, Distributed Systems, Data Mining, Unstructured Data Mining, Machine Learning, and Deep Learning
 - Preceding Research Training at Seoul National University Bundang Hospital: Exploratory study on predictive factors from Continuous Glucose Monitoring System (CGM) data

SKILLS

- **Programming & Tools:** Python, PyTorch, R, SQL, PySpark, C/C++, Git, Docker, LaTeX
- **Machine Learning & Security:** Privacy-Preserving Machine Learning (Federated Learning, Homomorphic Encryption), Deep Learning, Statistical Modeling, Data Analysis
- **Data Visualization:** Tableau, R-Shiny, Matplotlib, ggplot2