Jihyung Kook

+82-10-9722-7482 | thepawgrammer@gmail.com | thepawgrammer.github.io

 jihyung-kook | thepawgrammer

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 — GA, USA
  ◦ Specialization: Computational Perception Robotics (OMSCS Program)

- **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
  ◦ Preparing research on combining homomorphic encryption with federated learning to develop secure and practical AI systems
  ◦ 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

- **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

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, R, SQL, PySpark, C/C++, Git, Docker, LaTeX
- **Machine Learning & Data Science:** Privacy-Preserving Machine Learning (Federated Learning, Differential Privacy, Homomorphic Encryption), Deep Learning, Statistical Modeling, Data Analysis
- **Security & Cryptography:** Coursework: Introduction to Information Security (OMSCS CS6035), Homomorphic Encryption, Cryptographic Applications to Federated Learning
- **Data Visualization:** Tableau, R-Shiny, Matplotlib, ggplot2