

# YUJIN NAM

✉ yujinnam@ucsd.edu    🌐 Personal Webpage    🔗 LinkedIn

## EDUCATION

---

**University of California, San Diego** Sep. 2021 - present  
Ph.D in Computer Science  
Advisor: Tajana Šimunić Rosing

**Seoul National University** Mar. 2015 - Aug. 2020  
B.S. in Electrical and Computer Engineering  
**GPA: 3.80/4.30** (*Cum Laude*)

## RESEARCH EXPERIENCES/ PROJECTS

---

**Private Similarity Search** Jun. 2023 - Present  
*UCSD, Intel Labs (Summer Internship)*  
- Design of algorithms for private similarity search for graph-like DB

**Efficient Host-based Intrusion Detection System** Apr. 2023 - Present  
*UCSD, collaboration with UW-Madison*  
- Efficient real-time IDS using lightweight hyperdimensional computing

**[ISLPED'23] Fully Homomorphic Encrypted Hyper-dimensional Computing** Nov. 2021 - Apr. 2023  
*UCSD*  
- Advisor: Tajana Šimunić Rosing  
- Secure hyper-dimensional training based on fully homomorphic encryption  
- Investigated fully homomorphic encryption parameters for hyper-dimensional computing training and tested training performance.

**Fully Homomorphic Encryption Workload** Jun. 2022 - Sep. 2022  
*UCSD, Intel Corp. (Summer Internship)*  
- Design and implementation of a private machine learning model  
- HW accelerator simulation

**Privacy-Preserving Statistical Analysis** Jul. 2019 - Apr. 2020  
*Crypto Lab Inc.*  
- Advisor: Younho Lee, Jung Hee Cheon  
- Privacy-preserving statistical analyzing toolkit development using the CKKS scheme.  
- Proposed efficient data arrangement in ciphertext and analyzing functions.  
- Implemented the toolkit, optimized codes, and evaluated the toolkit.

**Hardware Architecture of a Number Theoretic Transform** Aug. 2019 - Oct. 2019  
*Crypto Lab Inc.*  
- Advisor: Sunwoong Kim, Jung Hee Cheon  
- Hardware accelerator design for NTT in the RNS-variant of the CKKS scheme.  
- Modified SW code to match HW design and generated reference data for test.  
- Generated test bench and debugged HW architecture.

## PUBLICATION

---

1. S. Kim, K. Lee, W. Cho, **Y. Nam**, J. H. Cheon, and R. A. Rutenbar. Hardware architecture of a number theoretic transform for a bootstrappable rns-based homomorphic encryption scheme. In *2020 IEEE 28th Annual International Symposium on Field-Programmable Custom Computing Machines (FCCM)*, pages 56–64, 2020.
2. Younho Lee, Jinyeong Seo, **Nam, Yujin**, Jiseok Chae, and Jung Hee Cheon. Heaan-stat: a privacy-preserving statistical analysis toolkit for large-scale numerical, ordinal, and categorical data. *IEEE Transactions on Dependable and Secure Computing*, pages 1–18, 2023.
3. **Nam, Yujin**, Minxuan Zhou, Saransh Gupta, Gabrielle De Micheli, Rosario Cammarota, Chris Wilkerson, Daniele Micciancio, and Tajana Rosing. Efficient machine learning on encrypted data using hyperdimensional computing. In *2023 IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED)*, pages 1–6, 2023.
4. Minxuan Zhou, **Yujin Nam**, Pranav Gangwar, Weihong Xu, Arpan Dutta, Kartikeyan Subramanyam, Chris Wilkerson, Rosario Cammarota, Saransh Gupta, and Tajana Rosing. Fhemem: A processing in-memory accelerator for fully homomorphic encryption, 2023.

## WORK EXPERIENCES

<b>Graduate Intern</b> , <i>Intel Labs</i>	Jun. 2023 - Sep. 2023
- Fully Homomorphic Encryption based private similarity search algorithm	
<b>Graduate Intern</b> , <i>Intel Corp.</i>	Jun. 2022 - Sep. 2022
- Fully homomorphic encryption based machine learning implementation	
<b>Researcher</b> , <i>Crypto Lab Inc.</i>	Aug. 2019 - Sep. 2020
- Software and hardware design of fully homomorphic encryption based application	
<b>Summer Intern</b> , <i>Crypto Lab Inc.</i>	Jun. 2019 - Aug. 2019

## HONORS and AWARDS

National Scholarship For Science and Engineering (fully funded), Korea Student Aid Foundation	2017 - 2019
SNU Merit-Based Scholarship, SNU	2015, 2016

## COURSE PROJECT

<b>Bachelor's Thesis</b>
<i>Machine Learning Inference on Mobile Using Various Layers</i>
- Advisor: Kyoung Mu Lee
- The principal goal was to lighten the VDSR model to implement it on iOS.
- Lightened VDSR model by applying lightweight layers.
- Implemented & experimented the models on iOS environment.

## SKILLS

<b>Programming Languages</b>	C/C++, Python, Verilog, MATLAB, R
<b>Frameworks</b>	PyTorch
<b>Developer Tools</b>	Git, VS Code, Vivado

## EXTRA-CURRICULAR ACTIVITIES

<b>SNU's Tomorrow's Engineers Membership (STEM)</b>	2017 Fall - 2019 Fall
<i>honor society of college of engineering, SNU</i>	
<b>Student Council of College of Engineering</b>	2016 Spring
<i>member of the department of human rights</i>	
<b>Student Council of Department of Electrical and Computer Engineering</b>	2015 Fall
<i>member</i>	