

Jinyeong Seo

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Overview

I am a Ph.D. student at Seoul National University, advised by Prof. Yongsoo Song. My research interest lies in (but is not limited to) the practical instantiation of cryptographic protocols using techniques from lattice-based cryptography. Specifically, my recent research focuses on improving the performance of lattice-based proof systems and homomorphic encryption schemes. I also have broad interests in the theoretical foundations of cryptographic proofs.

Education

Seoul National University

Seoul, South Korea

Ph.D. in Computer Science

Mar. 2022 – Present

Advisor: Prof. Yongsoo Song

KAIST

Daejeon, South Korea

B.S. in Mathematical Science

Mar. 2016 – Aug. 2021

(double major: computer science)

Publications

Authors are listed in alphabetical order by last name, unless an asterisk(*) is indicated.

Conferences

[C08] **MatriGear: Accelerated Authenticated Matrix Triple Generation with Scalable Prime Fields via Optimized HE Packing**

Hyunho Cha, Intak Hwang, Seonhong Min, Jinyeong Seo, Yongsoo Song

IEEE S&P 2025

[C07] **Simpler and faster BFV Bootstrapping for Arbitrary Plaintext Modulus from CKKS**

Jaehyung Kim, Jinyeong Seo, Yongsoo Song

ACM CCS 2024

[C06] **Concretely Efficient Lattice-based Polynomial Commitment from Standard Assumptions**

Intak Hwang, Jinyeong Seo, Yongsoo Song.

CRYPTO 2024

[C05] **Optimizing HE operations via Level-aware Key-switching Framework**

Intak Hwang, Jinyeong Seo, Yongsoo Song.

WAHC 2023

[C04] Asymptotically faster multi-key homomorphic encryption from homomorphic gadget decomposition

Taechan Kim, Hyesun Kwak, Dongwon Lee, Jinyeong Seo, Yongsoo Song.

ACM CCS 2023

[C03] Toward Practical Lattice-based Proof of Knowledge from Hint-MLWE

Duhyeong Kim, Dongwon Lee, Jinyeong Seo, Yongsoo Song.

CRYPTO 2023

[C02] Accelerating HE Operations from Key Decomposition Technique

Miran Kim, Dongwon Lee, Jinyeong Seo, Yongsoo Song.

CRYPTO 2023

[C01] Faster TFHE Bootstrapping with Block Binary Keys

Changmin Lee, Seonhong Min, Jinyeong Seo, Yongsoo Song.

ACM ASIACCS 2023

Journals

[J01] *HEaaN-STAT: a privacy-preserving statistical analysis toolkit for large-scale numerical, ordinal, and categorical data

Younho Lee, Jinyeong Seo, Yujin Nam, Jiseok Chae, Jung Hee Cheon

IEEE TDSC 2023

Preprints

[P02] On the Security and Privacy of CKKS-based Homomorphic Evaluation Protocols

Intak Hwang, Seonhong Min, Jinyeong Seo, Yongsoo Song

[P01] Practical Zero-Knowledge PIOP for Public Key and Ciphertext Generation in (Multi-Group) Homomorphic Encryption

Intak Hwang, Hyeonbum Lee, Jinyeong Seo, Yongsoo Song

Experiences

CryptoLab Inc.

Seoul, South Korea

- Researcher

Sep. 2019 – Mar. 2020

- Intern

Jun. 2019 – Aug. 2019

- Developed HEaaN-STAT, homomorphic encryption-based statistical analysis toolkit.

eWBM Inc.

Seoul, South Korea

- Intern

Jun. 2018 – Aug. 2018

- Developed ECDH PKI protocols for secure communication on LoRa devices.

Presentations

Simpler and faster BFV Bootstrapping for Arbitrary Plaintext Modulus from CKKS

Oct. 2024

ACM CCS 2024

Concretely Efficient Lattice-based Polynomial Commitment from Standard Assumptions Aug. 2024

CRYPTO 2024

Practical Lattice-based Private Stream Aggregation and Application to Federated Learning Aug. 2023

The 5th Privacy-Preserving Machine Learning Workshop 2023

Honors & Awards

Korea Cryptography Contest Oct. 2024
2nd Place (\$3,000) National Security Research Institute

Student Travel Grants Oct. 2024
Travel Grant (\$1,000) ACM CCS 2024

Korea Cryptography Contest Oct. 2023
1st Place (\$10,000) National Security Research Institute

29th Samsung Humantech Paper Award Feb. 2023
Silver Award (\$7,000) Samsung Electronics

Korea Cryptography Contest Oct. 2022
3rd Place (\$2,000) National Security Research Institute

Repositories

https://github.com/SNUCP/level-aware-ksw	PoC Implementation of [C05]
https://github.com/SNUCP/snu-mghe	PoC Implementation of [C04]
https://github.com/SNUCP/fast-ksw	PoC Implementation of [C02]
https://github.com/SNUCP/blockkey-tfhe	PoC Implementation of [C01]

Skills

Programming : C, C++, Go, Python