

JIAYI KANG

🔍 RESEARCH INTERESTS

Homomorphic Encryption, Lattice-Based Zero-Knowledge Proofs

🎓 EDUCATION

PhD Candidate in Cryptography 2021 - Present

KU Leuven, Department of Electrical Engineering, COSIC research group

Supervised by Prof. Frederik Vercauteren, Prof. Nigel Smart and Dr. Ilia Iliashenko

MSc in Mathematics (*With Great Distinction*) 2019 - 2021

KU Leuven, Department of Mathematics

Master of Physics (*First Class Honors*) 2015 - 2017

The University of Manchester, Department of Physics and Astronomy

BSc in Physics (*Honor Science Program*) 2012 - 2016





Xi'an JiaoTong University, Department of Physics

Exchange to University of California, Berkeley in 2015 Spring


⚙️ PUBLICATIONS

(authors ordered alphabetically except for publications marked with *)


Conferences

- Jacob Blundenbach, Jung Hee Cheon, Gamze Gürsoy, **Jiayi Kang**. On the overflow and p -adic theory applied to Homomorphic Encryption, accepted in *Cyber Security, Cryptology, and Machine Learning (CSCML)* 2024 
- Kelong Cong, **Jiayi Kang**, Georgio Nicolas, Jeongeun Park. Faster Private Decision Tree Evaluation for Batched Input from Homomorphic Encryption, in *Security and Cryptography for Networks (SCN)* 2024 
- Kelong Cong, Robin Geelen, **Jiayi Kang**, Jeongeun Park. Revisiting Oblivious Top- k Selection with Applications to Secure k -NN Classification, accepted in *Selected Areas in Cryptography (SAC)* 2024 
- Robin Geelen, Ilia Iliashenko, **Jiayi Kang**, Frederik Vercauteren. On Polynomial Functions Modulo p^e and Faster Bootstrapping for Homomorphic Encryption, in *EUROCRYPT* 2023 




Journals

- * Jacob Blundenbach¹, **Jiayi Kang**¹, Seungwan Hong¹, Caline Karam, Thomas Lehner, and Gamze Gürsoy. Ultra-secure storage and analysis of genetic data for the advancement of precision medicine, accepted in *Genome Biology* 2024 

Preprints

- Mariana Gama, Emad Heydari Beni, **Jiayi Kang**, Jannik Spiessens, Frederik Vercauteren. Blind zkSNARKs for Private Proof Delegation and Verifiable Computation over Encrypted Data, *eprint* 2024 

👤 TALKS AND SEMINARS

- Faster Private Decision Tree Evaluation for Batched Input from Homomorphic Encryption at *Security and Cryptography for Networks (SCN)*, Amalfi, Italy, 2024 
- Revisiting Oblivious Top- k Selection with Applications to Secure k -NN Classification, invited seminar at University of Luxembourg, 2024 
- On Polynomial Functions Modulo p^e and Faster Bootstrapping for Homomorphic Encryption at *the 2nd Annual FHE.org Conference on Fully Homomorphic Encryption*, Tokyo, Japan, 2023 

👥 EXPERIENCE

Intel Labs Jul. - Sep. 2022

Privacy Technologies Graduate Research Intern

Seoul National University Jul.-Aug. 2023

Research visit in the group led by Prof. Jung Hee Cheon

The Chinese University of Hong Kong 2017-2019

Research assistant in the physics department

♡ TEACHING

- Guest Lecturer for the course *Privacy and Big Data* (2023 Fall, 2024 Fall)
- Guest Lecturer for the course *Privacy Technologies* (2024 Fall)
- Teaching Assistant for the course *Computer Algebra for Cryptography* (2023 Spring, 2024 Spring)

♡ MASTER THESIS CO-SUPERVISON

- Hua Xu (2024-Present), Horizontal scalability for privately accelerating ZK provers
- Sabine Chentouf (2024-Present), Privacy-preserving federated learning
- Pritam Pal (2023-2024), From zero to HEro: zkSNARKs proof generation with Homomorphic Encryption
- Yingshuo Xi (2022-2023), An Investigation of Polynomial Activation Functions in Neural Networks
- Siva Kumar (2022), Secure Data Classification with Homomorphic Encryption

♡ COMMUNITY SERVICES

Sub-reviewer for Eurocrypt 2025

Reviewer for Designs, Codes and Cryptography (DCC) in 2024

Sub-reviewer for Eurocrypt 2024 and WAHC 2024

Sub-reviewer for Asiacrypt 2023 and CHES 2023