

# JIAYI KANG

## 🔍 RESEARCH INTERESTS

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Homomorphic Encryption, Lattice-Based Zero-Knowledge Proofs

## 🎓 EDUCATION

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**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


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(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, 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 Blundenbach<sup>1</sup>, **Jiayi Kang**<sup>1</sup>, Seungwan Hong<sup>1</sup>, 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

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- On the overflow and  $p$ -adic theory applied to Homomorphic Encryption at *Cyber Security, Cryptology, and Machine Learning (CSCML)*, virtual, 2024 
- 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

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**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

## ♡ TEACHING

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- 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

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- Hua Xu (2024-Present), Horizontal scalability for privately accelerating ZK provers
- Sabrine 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

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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