

Kirill Nikitin

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Curriculum Vitae
The New York Genome Center
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Education

Ph.D. Computer and Communication Sciences

Sep 2015–Nov 2021

École polytechnique fédérale de Lausanne, Switzerland

Thesis: “[Integrity and Metadata Protection in Data Retrieval](#)”

Advisor: Bryan Ford

M.S. Communication Systems

Sep 2013–Oct 2015

KTH Royal Institute of Technology, Sweden

Thesis: “[DTLS Adaptation for Efficient Secure Group Communication](#)” @ RISE SICS

Advisors: Marco Tiloca, Shahid Raza (both RISE SICS), Markus Hidell (KTH)

Diploma Information Security (with honors)

Sep 2008–Jun 2013

Kazan (Volga Region) Federal University, Russia

Thesis: “Cryptographic Key Distribution via Randomness from Multipath Propagation of Radio Waves”

Advisor: Arkady Karpov

Exchange Student Computer Science

Jan–May 2012

University of Helsinki, Finland

Refereed Publications [\[Google Scholar\]](#)

5. S. Colombo, [K. Nikitin](#), B. Ford, D. Wu, H. Corrigan-Gibbs. “[Authenticated private information retrieval](#)”. In *USENIX Security Symposium*, 2023.
4. J. Lee, [K. Nikitin](#), S. Setty. “[Replicated state machines without replicated execution](#)”. In *IEEE Symposium on Security and Privacy*, 2020.
3. [K. Nikitin](#), L. Barman, W. Lueks, M. Underwood, J.-P. Hubaux, B. Ford. “[Reducing Metadata Leakage from Encrypted Files and Communication with PURBs](#)”. *Proceedings on Privacy Enhancing Technologies*, 2019(4), 2019.
2. [K. Nikitin](#), E. Kokoris-Kogias, P. Jovanovic, N. Gailly, L. Gasser, I. Khoffi, J. Cappos, and B. Ford. “[CHAINIAC: Proactive Software-Update Transparency via Collectively Signed Skipchains and Verified Builds](#)”. In *USENIX Security Symposium*, 2017.
1. M. Tiloca, [K. Nikitin](#), S. Raza. “[Axiom: DTLS-Based Secure IoT Group Communication](#)”. In *ACM Transactions on Embedded Computing Systems (TECS), Special Issue on Embedded Computing for IoT*, 16(3), 66, 2017.

Reports and manuscripts:

2. C. Basescu, M. Nowlan, [K. Nikitin](#), J. Faleiro, and B. Ford, “[Crux: Locality-Preserving Distributed Services](#)”. Technical report, in *CoRR*, 1405.0637, arXiv, 2018.
1. M. Tiloca, S. Raza, [K. Nikitin](#), and S. Kumar. “[Secure Two-Way DTLS-Based Group Communication in the IoT \(work in progress\)](#)”. *IETF*, 2015.

Professional Experience

Post-Doctoral Researcher May 2023–now
G² lab, New York Genome Center & Columbia University, New York, NY

- Privacy-preserving analysis and sharing of biomedical data data.

Post-Doctoral Researcher Mar 2022–April 2023
Cornell Tech, Cornell University, New York, NY

- Protecting network metadata in online communication.

Doctoral Researcher Sep 2015–Aug 2021
Decentralized and Distributed Systems laboratory, EPFL, Lausanne, Switzerland

- Exploiting and protecting metadata in encrypted files and communications;
- Security and transparency of software-distribution systems.

Research Intern Aug–Oct 2019
Confidential Computing Group, Microsoft Research, Cambridge, UK

- Information-flow control for confidentiality in smart contracts.

Research Intern Aug–Nov 2018
Systems Security and Privacy Group, Microsoft Research, Redmond, US

- Improving scalability of smart contracts via off-chain execution and verifiable computation.

External Master's Thesis Jan–Jun 2015
Security Lab, RISE Swedish Institute of Computer Science, Stockholm, Sweden

- Designing a protocol for secure group communication for the Internet-of-Things.

Research Intern Jun–Aug 2014
Laboratory for Cryptologic Algorithms, EPFL, Lausanne, Switzerland

- Integer factorization and analysis of public-key ecosystem weaknesses.

Academic Service and Extracurricular Activities

- A member of the program committee or the editorial board for
 - [ACM CCS 2023, 2024](#): ACM Conference on Computer and Communications Security
 - [JSys 2021](#): Journal of Systems Research
 - [ACM CCS 2021 Posters & Demos](#)
 - [CryBlock 2019, 2020](#): Workshop on Cryptocurrencies and Blockchains for Distributed Systems
 - [BlockSys 2019](#): Workshop on Blockchain-enabled Networked Sensor Systems
 - [ICBC 2019](#): IEEE International Conference on Blockchain and Cryptocurrency
- An external reviewer for Eurocrypt 2022, IEEE Transactions on Industrial Informatics 2019, IEEE Transactions on Parallel and Distributed Systems 2020, and ACM CCS 2017, 2021.
- I was a president of the graduate student association at IC EPFL. Organized invited talks, activities for current students, and helped with the organization of Open Houses for newcomers.

Teaching and Supervision

- [CS-438 Decentralized Systems Engineering](#) (Fall 17, 18, 20)
- [ICC Information, Computation and Communication](#) (Spring 20)
- [CS-234 Technologies of societal self-organization](#) (Fall 19)
- [COM-402 Information Security and Privacy](#) (Spring 17, 18)
- [MATH-101 Analyse I](#) (Fall 16)
- [COM-102 Advanced information, computation, communication II](#) (Spring 16)

Supervision:

- Fernando Monje Real. “Traffic analysis of real-time collaborative editors”. *Master’s thesis* (Spring 20).
- Carlos Villa Sánchez. “Secure management of browser extensions and their dependencies”. *Master’s thesis* (Spring 20).
- Charles Parzy-Turlat. “Tree-based Group Key Agreement”. *Master’s project* (Spring 19).
- Simone Colombo. “DecenArch: a decentralized system for privacy-conscious Web archiving against censorship”. *Master’s thesis* (Spring 18).
- Nicolas Plancherel. “Decentralized Internet Archive”. *Master’s thesis* (Fall 17).
- Nicolas Ritter. “Access Control In Real-Time Peer-to-Peer Collaboration”. *Master’s project* (Fall 17).
- Damien Aymon. “Implementation of an Algorithm for Peer-to-Peer Collaborative Editing”. *Bachelor’s project* (Spring 17).
- Rehan Mulakhel. “Web Interface for Secure Decentralized Collaboration Platform”. *Bachelor’s project* (Spring 17).
- Gaspard Zoss. “Enhancing Debian Update Service”. *Master’s project* (Fall 17).

Awards

- 2020: [The Doc.Mobility Fellowship](#) from the Swiss National Science Foundation (declined)
- 2015: EPFL EDIC Fellowship for Doctoral Studies
- 2013-2015: [The Swedish Institute Scholarship](#)
- 2009, 2011, 2012: Triple scholar of [The Vladimir Potanin Fellowship Program](#)