Zeta Avarikioti

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EDUCATION

01/2018 - 03/2021	Ph.D. in Distributed Computing (Dr. sc. ETH Zürich) Department of Information Technology and Electrical Engineering, ETH Zürich, Switzerland Thesis: "A Theoretical Treatment of Blockchain Scaling Protocols" Advisor: Roger Wattenhofer			
01/2014 - 07/2017	MSc in Logic, Algorithms and Computation Department of Mathematics, National and Kapodistrian University of Athens, Greece Master thesis: "Geometric Proximity Problems in High Dimensions" Advisor: Ioannis Z. Emiris			
01/2007 - 09/2013	BSc & MSc in Civil Engineering School of Civil Engineering, National Technical University of Athens, Greece Master thesis: "Structural Design of High-rise Buildings" Advisor: Faidon Karydakis			
Professional Experience				
05/2021 - present	Postdoctoral Fellow (ESPRIT program) in Security and Privacy Unit Department of Informatics, TU Wien, Austria			
09/2021 - present	Chief Science Officer at Common Prefix (https://www.commonprefix.com/) Consultant since Sept 2021, Chief Science Officer since Oct 2024			

- 09/2021 11/2021 Visiting Postdoc in Prof. Roughgarden's Group Department of Computer Science, Columbia University, USA
- 05/2021 03/2022 **Postdoctoral Fellow** in Pietrzak Group Institute of Science and Technology Austria, Austria
- 09/2017 04/2021 **Research Assistant** in Distributed Computing Group Department of Information Technology and Electrical Engineering, ETH Zürich, Switzerland
- 09/2015 08/2017 **Research Assistant** in Computation and Reasoning Lab School of Electrical Engineering, National Technical University of Athens, Greece

Fellowships, Scholarships & Grants

- 2024 PI at FWF SPyCoDe Program (291.850 EUR personal funding)
- 2022 Coordinator of WWTF-funded Project "SCALE2: SeCure, privAte, and interoperabLe layEr 2" (297.925 EUR personal funding, 879.850 EUR in total)
- 2021 FWF ESPRIT Program (287.711 EUR personal funding)
- 2020 IST Austria Postdoc Fellowship
- 2020 SNSF Early Postdoc.Mobility Fellowship (declined)
- 2020 Grace Hopper Celebration Scholarship
- 2019 IARC Real World Crypto Stipend

PUBLICATION LIST

Peer-reviewed Publications

- Lukas Aumayr, Zeta Avarikioti, Matteo Maffei, Giulia Scaffino, and Dionysis Zindros. "Blink: An Optimal Proof of Proof-of-Work". In: *Financial Cryptography and Data Security (FC)*. 2025. URL: https://eprint.iacr.org/ 2024/692.
- [2] Lukas Aumayr, Zeta Avarikioti, Iosfi Salem, Stefan Schmid, and Michelle Yeo. "X-Transfer: Enabling and Optimizing Cross-PCN Transactions". In: *Financial Cryptography and Data Security (FC)*. 2025.

- [3] Zeta Avarikioti, Yuheng Wang, and Yuyi Wang. "Thunderdome: Timelock-Free Rationally-Secure Virtual Channels". In: USENIX Security Symposium. 2025.
- [4] Giulia Scaffino, Lukas Aumayr, Mahsa Bastankhah, Zeta Avarikioti, and Matteo Maffei. "Alba: The Dawn of Scalable Bridges for Blockchains". In: NDSS. https://eprint.iacr.org/2024/197. 2025. URL: https:// eprint.iacr.org/2024/197.
- [5] Lukas Aumayr, Zeta Avarikioti, Matteo Maffei, and Subhra Mazumdar. Securing Lightning Channels against Rational Miners. Proceedings of the 31th ACM Conference on Computer and Communications Security (CCS). 2024. URL: https://eprint.iacr.org/2024/826.
- [6] Zeta Avarikioti, Mahsa Bastankhah, Mohammad Ali Maddah-Ali, Krzysztof Pietrzak, Jakub Svoboda, and Michelle Yeo. "Route Discovery in Private Payment Channel Networks". In: Data Privacy Management, Cryptocurrencies and Blockchain Technology, ESORICS International Workshop CBT (2024). URL: https://ia.cr/2021/1539.
- [7] Zeta Avarikioti, Pawel Kedzior, Tomasz Lizurej, and Tomasz Michalak. "Bribe & Fork: Cheap Bribing Attacks via Forking Threat". In: Advances in Financial Technologies (AFT) (2024). DOI: 10.48550/ARXIV.2402.01363.
- [8] Zeta Avarikioti, Stefan Schmid, and Samarth Tiwari. "Brief Announcement: Musketeer Incentive-Compatible Rebalancing for Payment Channel Networks". In: Proceedings of the 43rd ACM Symposium on Principles of Distributed Computing, PODC. ACM, 2024, pp. 306–309. URL: https://doi.org/10.1145/3662158.3662809.
- [9] Zeta Avarikioti, Stefan Schmid, and Samarth Tiwari. "Musketeer: Incentive-Compatible Rebalancing for Payment Channel Networks". In: Advances in Financial Technologies (AFT) (2024). URL: https://ia.cr/2023/938.
- [10] Georgia Avarikioti, Antoine Desjardins, Eleftherios Kokoris-Kogias, and Roger Wattenhofer. "Divide and Scale: Formalization and Roadmap to Secure Sharding". In: International Colloquium on Structural Information and Communication Complexity (2023). URL: http://arxiv.org/abs/1910.10434.
- [11] Zeta Avarikioti, Lioba Heimbach, Roland Schmid, and Roger Wattenhofer. "FnF-BFT: Exploring Performance Limits of BFT Protocols". In: International Colloquium on Structural Information and Communication Complexity (2023). URL: https://arxiv.org/abs/2009.02235.
- [12] Zeta Avarikioti, Tomasz Lizurej, Tomasz Michalak, and Michelle Yao. "Lightning Creation Games". In: IEEE International Conference on Distributed Computing Systems (ICDCS) (2023).
- [13] Sophie Rain, Zeta Avarikioti, Laura Kovács, and Matteo Maffei. "Towards a Game-Theoretic Security Analysis of Off-Chain Protocols". In: IEEE Computer Security Foundations Symposium (CSF) (2023). URL: https://arxiv. org/abs/2109.07429.
- [14] Giulia Scaffino, Lukas Aumayr, Zeta Avarikioti, and Matteo Maffei. "Glimpse: On-Demand PoW Light Client with Constant-Size Storage for DeFi". In: USENIX Security Symposium (2023). URL: https://ia.cr/2022/1721.
- [15] Zeta Avarikioti and Orfeas Stefanos Thyfronitis Litos. "Suborn Channels: Incentives Against Timelock Bribes". In: Financial Cryptography and Data Security (FC). 2022.
- [16] Zeta Avarikioti, Krzysztof Pietrzak, Iosif Salem, Stefan Schmid, Samarth Tiwari, and Michelle Yeo. "HIDE & SEEK: Privacy-Preserving Rebalancing on Payment Channel Networks". In: *Financial Cryptography and Data Security (FC)*. https://ia.cr/2021/1401. 2022.
- [17] Samarth Tiwari, Michelle Yeo, Zeta Avarikioti, Iosif Salem, Krzysztof Pietrzak, and Stefan Schmid. "Wiser: Increasing Throughput in Payment Channel Networks with Transaction Aggregation". In: Advances in Financial Technologies (AFT) (2022). URL: https://arxiv.org/abs/2205.11597.
- [18] Zeta Avarikioti, Eleftherios Kokoris Kogias, Roger Wattenhofer, and Dionysis Zindros. "Brick: Asynchronous Incentive-Compatible Payment Channels". In: *Financial Cryptography and Data Security (FC)*. 2021. URL: https://fc21.ifca.ai/papers/168.pdf.
- [19] Zeta Avarikioti, Lioba Heimbach, Yuyi Wang, and Roger Wattenhofer. "Ride the Lightning: The Game Theory of Payment Channels". In: *Financial Cryptography and Data Security (FC)*. 2020, pp. 264–283. DOI: 10.1007/978– 3-030-51280-4_15.
- [20] Zeta Avarikioti, Orfeas Stefanos Thyfronitis Litos, and Roger Wattenhofer. "Cerberus Channels: Incentivizing Watchtowers for Bitcoin". In: *Financial Cryptography and Data Security (FC)* (2020), pp. 346–366. DOI: 10. 1007/978-3-030-51280-4_19.
- [21] Alexei Zamyatin, Zeta Avarikioti, Daniel Perez, and William J. Knottenbelt. "TxChain: Efficient Cryptocurrency Light Clients via Contingent Transaction Aggregation". In: *Data Privacy Management, Cryptocurrencies and*

Blockchain Technology, ESORICS International Workshop CBT. 2020, pp. 269–286. DOI: 10.1007/978-3-030-66172-4_18.

- [22] Georgia Avarikioti, Kenan Besic, Yuyi Wang, and Roger Wattenhofer. "Online Payment Network Design". In: Data Privacy Management, Cryptocurrencies and Blockchain Technology, ESORICS International Workshop CBT. 2019, pp. 307–320. DOI: 10.1007/978-3-030-31500-9_20.
- [23] Georgia Avarikioti, Lukas Käppeli, Yuyi Wang, and Roger Wattenhofer. "Bitcoin Security Under Temporary Dishonest Majority". In: *Financial Cryptography and Data Security (FC)*. 2019, pp. 466–483. DOI: 10.1007/978– 3-030-32101-7_28.
- [24] Georgia Avarikioti, Alain Ryser, Yuyi Wang, and Roger Wattenhofer. "High Dimensional Clustering with r-nets".
 In: Proceedings of the AAAI Conference on Artificial Intelligence. 2019, pp. 3207–3214. DOI: 10.1609/aaai.
 v33i01.33013207.
- [25] Georgia Avarikioti, Rolf Scheuner, and Roger Wattenhofer. "Payment Networks as Creation Games". In: Data Privacy Management, Cryptocurrencies and Blockchain Technology, ESORICS International Workshop CBT. 2019, pp. 195–210. DOI: 10.1007/978-3-030-31500-9_12.
- [26] Georgia Avarikioti, Gerrit Janssen, Yuyi Wang, and Roger Wattenhofer. "Payment Network Design with Fees". In: Data Privacy Management, Cryptocurrencies and Blockchain Technology, ESORICS International Workshop CBT. 2018, pp. 76–84. DOI: 10.1007/978-3-030-00305-0_6.
- [27] Georgia Avarikioti, Yuyi Wang, and Roger Wattenhofer. "Algorithmic Channel Design". In: International Symposium on Algorithms and Computation ISAAC. 2018, 16:1–16:12. DOI: 10.4230/LIPIcs.ISAAC.2018.16.
- [28] Georgia Avarikioti, Ioannis Z. Emiris, Loukas Kavouras, and Ioannis Psarros. "High-dimensional approximate r-nets". In: Proceedings of the Twenty-Eighth Annual ACM-SIAM Symposium on Discrete Algorithms, SODA. SIAM, 2017, pp. 16–30. URL: https://doi.org/10.1137/1.9781611974782.2.

Manuscripts

- Lukas Aumayr, Zeta Avarikioti, Robin Linus, Matteo Maffei, Andrea Pelosi, Christos Stefo, and Alexei Zamyatin. BitVM: Quasi-Turing Complete Computation on Bitcoin. Cryptology ePrint Archive, Paper 2024/1995. 2024. URL: https://eprint.iacr.org/2024/1995.
- [2] Robin Linus, Lukas Aumayr, Alexei Zamyatin, Andrea Pelosi, Zeta Avarikioti, and Matteo Maffei. BitVM2: Bridging Bitcoin to Second Layers. GitHub. 2024. URL: https://bitvm.org/bitvm_bridge.pdf.
- [3] Georgia Avarikioti, Roman Brunner, Aggelos Kiayias, Roger Wattenhofer, and Dionysis Zindros. "Structure and Content of the Visible Darknet". In: *CoRR* (2018). URL: http://arxiv.org/abs/1811.01348.
- Georgia Avarikioti, Felix Laufenberg, Jakub Sliwinski, Yuyi Wang, and Roger Wattenhofer. "Towards Secure and Efficient Payment Channels". In: CoRR (2018). URL: http://arxiv.org/abs/1811.12740.
- [5] Georgia Avarikioti, Ioannis Z. Emiris, Ioannis Psarros, and Georgios Samaras. "Practical Linear-space Approximate Near Neighbors in High Dimension". In: CoRR (2016). URL: http://arxiv.org/abs/1612.07405.

TEACHING EXPERIENCE

2022 - PRES	Co-lecturer , Cryptocurrencies (192.065), TU Wien Informatics Redesigned and co-taught the class with Prof. Maffei. Developed a new programming project.
Spring 2022	Co-lecturer , Foundations of Decentralized Systems (C_CS-523_S22), ISTA Designed and co-taught the class with Dr. Kokoris-Kogias to graduate students.
Fall 2021	Guest lecturer , Cryptocurrencies (192.065), TU Wien Informatics Gave guest lecture on the Economics of Blockchains.
Fall 2020	Guest lecturer , Computational Thinking (227-0014-20L), D-ITET ETH Zürich Gave guest lecture on Cryptography.
2017 - 2021	Teaching Assistant in Distributed Computing Group, ETH Zürich Developed and graded assignments and exams, led lab sessions, and prepared lecture notes. <i>Courses:</i> Discrete Event Systems (Head TA), Distributed Systems (Head TA), Principles of Distributed Computing, Computer Engineering II, Distributed Computing Seminar, Deep Reinforcement Learning Seminar, Computational Thinking.

2015 – 2017 **Teaching Assistant** in Computation and Reasoning Lab, NTUA Designed and graded assignments, facilitated lab sessions, coordinated exam preparation and administration. *Courses:* Computer Programming, Introduction to Computer Science, Computational Cryptography, Computability & Complexity, Automata & Formal Grammars.

Mentoring

PhD main supervisor or co-supervisor, TU Wien:

2024 - Pres	Pim Keer.	PhD student. ((main PhD	supervisor)	
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- 2023 PRES Yuheng Wang. PhD student. (main PhD supervisor)
- 2024 PRES Giannis Alexopoulos. PhD student. (PhD co-supervisor)
- 2024 PRES Christo Stefo. PhD student. (PhD co-supervisor)
- 2022 PRES Giulia Scaffiano. PhD student. (PhD co-supervisor)

Mentoring and unofficial supervision, ISTA and TU Wien:

- 2024 2025 Dominik Apel. Master thesis, TU Wien.
- 2024 2025 Andrea Pelosi. PhD intern, TU Wien.
- 2023-2024 $\,$ Tomas Beat Giefer. Bachelor thesis, TU Berlin.
- 2023 2024 Georgiy Rudnev. Bachelor thesis, TU Berlin.
- 2021 2023 Michelle Yeo. PhD, ISTA.
- 2021 2023 Samarth Tiwari. PhD, Centrum Wiskunde & Informatica.
- 2021 2024 Tomasz Lizurej. PhD, University of Warsaw.
- 2021 2023 Mahsa Bastankhah. Intern, ISTA (2021); Intern, TU Wien (2023).

Bachelor and master theses supervisor, ETH Zurich:

Projects that resulted in publication are marked with a *.

- 2020 Patrick Wintermeyer. Semester project: Evaluating Performance Limits of BFT Protocols. *
- 2020 Alain Gautschi. Bachelor thesis: Exploring Blockchain Peer-to-Peer Networks.
- 2020 Peter Müller. Semester project: Tichu Bot.
- 2020 Lioba Heimbach. Master thesis: Byzantine Agreement: Optimistic Analysis. *
- 2019 Lucas Bettua. Master thesis: Scalable Byzantine Agreement with Epoch-Adaptive Adversaries.
- 2019 Lioba Heimbach. Semester project: Network Creation Game on Blockchain Payment Channels. *
- 2019 David Spielmann. Bachelor thesis: Evaluation of Network Connection Strategies in Cryptocurrencies.
- 2018 Rolf Scheuner. Master thesis: Micropayment Channels Game. *
- 2018 Remo Glauser. Semester project: Exploring Centralized Payment Network Topology.
- 2018 Lukas Bieri. Semester project: Simulating Bitcoin's Network Topology.
- 2018 Kenan Besic. Bachelor thesis: Online Algorithmic Channel Design. *
- 2018 Lukas Käppeli. Bachelor thesis: Bitcoin Security under Temporary Dishonest Majority. *
- 2018 Gerrit Janssen. Bachelor thesis: Design of a Payment Network with Fees. *
- 2018 Alain Ryser. Bachelor thesis: High Dimensional Clustering. *
- 2018 Roman Brunner. Bachelor thesis: Structure and Content of the Visible Darknet. *
- 2018 Felix Laufenberg. Master thesis: Robust Scaling of Blockchain Protocols. *

TALKS

Invited Talks

- 1. Encode London, October 2024. BitVM2: Bridging Bitcoin to Second Layers.
- 2. Dagstuhl Seminar 24362: Next-Generation Secure Distributed Computing, September 2024. Blockchain Sharding.
- 3. TUM Blockchain Salon, May 2024. Blink: An Optimal Proof of Proof-of-Work.
- 4. Athens Cryptography Day, May 2024. Blink: An Optimal Proof of Proof-of-Work.
- 5. Andreessen Horowitz (a16z) Crypto Research, July 2022. How to Build Robust Payment Channel Networks.
- 6. Decrypto Seminar, June 2021. Divide and Scale: Formalization of Distributed Ledger Sharding Protocols.
- 7. Athens Cryptography Day (AtheCrypt), January 2021. Divide and Scale: Formalization of Distributed Ledger Sharding Protocols.
- 8. Decrypto Seminar, June 2020. Brick: Asynchronous Payment Channels.
- 9. Athens Cryptography Day (AtheCrypt), January 2020. Payment Channels: Designing Secure Watchtowers.

Conference Talks (with proceedings)

- 1. Advances in Financial Technologies (AFT), September 2024. Bribe & Fork: Cheap PCN Bribing Attacks via Forking Threat
- 2. Advances in Financial Technologies (AFT), September 2024. Musketeer: Incentive-Compatible Rebalancing for Payment Channel Networks
- 3. International Colloquium on Structural Information and Communication Complexity (SIROCCO), June 2023. Divide & Scale: Formalization and Roadmap to Robust Sharding
- 4. Financial Cryptography and Data Security (FC), March 2021. Brick: Asynchronous Incentive-Compatible Payment Channels.
- 5. Financial Cryptography and Data Security (FC), February 2020. Cerberus Channels: Incentivizing Watchtowers for Bitcoin.
- 6. International Workshop on Cryptocurrencies and Blockchain Technology (CBT), September 2019. Payment Networks as Creation Games.
- 7. Financial Cryptography and Data Security (FC), February 2019. Bitcoin Security under Temporary Dishonest Majority.
- 8. International Workshop on Cryptocurrencies and Blockchain Technology (CBT), September 2019. Payment Networks as Creation Games.
- 9. Financial Cryptography and Data Security (FC), February 2019. Bitcoin Security under Temporary Dishonest Majority.
- 10. 29th International Symposium on Algorithms and Computation (ISAAC), December 2018. Algorithmic Channel Design.
- 11. International Workshop on Cryptocurrencies and Blockchain Technology (CBT), September 2018. Payment Network Design with Fees.

Conference and Workshop Talks (without proceedings)

- 1. Theory and Practice of Blockchains 2020. Divide and Scale: Formalization of Distributed Ledger Sharding Protocols
- 2. FOCODIILE 2020. Divide and Scale: Formalization of Distributed Ledger Sharding Protocols
- 3. Science Blockchain Conference (SBC) 2020. Brick: Asynchronous Payment Channels.
- 4. Scaling Bitcoin 2018. Incentivizing Payment Channel Watchtowers.

ACADEMIC SERVICE

PC Chair	Advances in Financial Technologies (AFT) 2025 Scalability and Interoperability Workshop (AFT SIB) 2024 International Workshop on Foundations of Consensus and Distributed Ledgers 2022 Crypto Valley Conference (CVC) 2021
Organization Committee	International Workshop on Foundations of Consensus and Distributed Ledgers 2021 Swiss Blockchain Winter School 2019 Athens Cryptography Day 2016
PC Member	ACM CCS Blockchain and Distributed Computing Track 2023, 2024, 2025 Financial Cryptography and Data Security (FC) 2021, 2023, 2024, 2025 Advances in Financial Technologies (AFT) 2021, 2022, 2024 International Symposium on Distributed Computing (DISC) 2024 The Science of Blockchain Conference (SBC) 2023, 2024 IEEE International Conference on Distributed Computing Systems (ICDCS) 2021, 2022 IEEE Workshop on Security & Privacy on the Blockchain (S&B) 2021 IEEE International Conference on Decentralized Applications and Infrastructures 2021 International Conference on Mathematical Research for Blockchain Economy 2023, 2024
Reviewer in Journals	ACM Distributed Ledger Technologies Distributed Computing Journal IET Information Security Journal Computer Communications Journal ACM Transactions on Internet Technology

VOLUNTEERING AND COMMUNITY WORK

Founding Member of *Diversity & Inclusion at D-ITET*, ETH Zürich, Switzerland Board member of *We Shape Tech*, Zürich, Switzerland 2018 - 2021

2018 - 2019

2014 - 2015Tutor for children with financial problems in Solidarity Club of Athens, Greece

References

Available upon request.