Vabuk Pahari

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Professional Profile

I am a final year PhD student at the Max Planck Institute for Software Systems (MPI-SWS) working on public blockchains (Ethereum and Layer-2s), Decentralized Finance (DeFi) and Decentralized Autonomous Organizations (DAOs), with a focus on how economic incentives and mechanism design shape the behavior of participants in blockchain ecosystems. I have extensive experience in the full lifecycle of on-chain blockchain data, from deploying and maintaining nodes (Ethereum, Base, Optimism) to architecting large-scale databases for efficient processing and visualization.

Education

Max Planck Institute for Software Systems, Saarbrücken Germany — September 2020 –
PhD. Candidate in Computer Science. Advised by Dr. Krishna Gummadi.

- ➢ Deployed and maintained an Ethereum, Base, and Optimism Archive Nodes to enable large-scale blockchain data collection, processing, and visualization
- ➢ Translated raw blockchain data into actionable insights, and mapped the complex interactions of blockchain ecosystem participants (such as builders, proposers, and MEV bots)
- ➢ Led research on blockchains on DeFi, MEV and DAOs: published findings and presented talks in scientific conferences and workshops

Wesleyan University, Middletown, CT, USA — May 2020
Master of Arts, Computer Science.
Led research on the robustness of large theoretical and real-world networks.

Wesleyan University, Middletown, CT, USA — May 2019
Bachelor of Arts, Double Major: Mathematics and Computer Science: GPA: 4.00/4.00. Graduated *Phi Beta Kappa.*

Work Experience

Chainlink Labs, Research Engineering Intern — July 2022 – December 2022

- ➢ Worked on Cross-Chain Interoperability Protocol (CCIP) for securely sending tokens and data between blockchains
- ➢ Implemented Smart Contracts in Solidity for Cross-Chain Governance using CCIP
- ➢ Researched the dynamics of using different kinds of ERC20 Token Structures for Cross-Chain Bridges

Infineon Technologies, *Intern*, Munich, Germany — June 2017—August 2017

- ➢ Wrote a library in C++ for the Optiga Trust E, a security chip, and the TLE5012, a magnetic sensor, to communicate with microcontrollers. Results: Optiga Trust E and TLE5012 have both been released
- ➢ Built a cryptographic library for public key authentication using WolfSSL and Optiga Trust E–stored X.509 certificates.

Skills and Competencies

- **Technical –** Python, Solidity, Javascript, SQL, MongoDB, Statistics, Data Analysis and Visualization, Node Deployment
- **Soft Skills –** Cross-Functional Collaboration, Mentorship, Project Leadership, Scientific Communication, Interpersonal and intercultural skills
- **Languages** – English (Fluent), German (Fluent), Nepali (Native)

Publications and Pre-prints

Becoming Immutable: How Ethereum is Made
Vabuk Pahari and Andrea Canidio.
Pre-print: https://arxiv.org/pdf/2506.04940
Non-archival: CBER Crafting the Cryptoeconomy Conference, Columbia University, New York, USA, October 2025

How Exclusive are Ethereum Transactions? Evidence from non-winning blocks
Vabuk Pahari and Andrea Canidio.
To Appear in 5th International Workshop on Cryptoasset Analytics (CAAW 2026)
Pre-print: https://arxiv.org/pdf/2509.16052
Non-archival: Futures of Money II, Paris, May 2025

On the Governance of Decentralized Autonomous Organizations
Vabuk Pahari, Balakrishnan Chandrasekaran, Abhisek Dash, Krishna P. Gummadi, and Johnnatan Messias.
Non-archival: The Latest in DeFi Research (TLDR), May 2025
Non-archival: The Ethereum Community Conference (ETHCC), July 2025

Non-Atomic Arbitrage in Decentralized Finance
Vabuk Pahari, Lioba Heimbach, and Eric Schertenleib
In Proceedings of IEEE Symposium on Security and Privacy (S&P), San Francisco, CA, USA, May 2024
Non-archival: 4th Workshop on Decentralized Finance (DeFi), May 2025

Dissecting Bitcoin and Ethereum Transactions: On the Lack of Transaction Contention and Prioritization Transparency in Blockchains
Johnnatan Messias, **Vabuk Pahari**, Balakrishnan Chandrasekaran, Krishna P. Gummadi, and Patrick Loiseau.
In Proceedings of the Financial Cryptography and Data Security (FC 2023). Bol, Brač, Croatia.

Understanding Blockchain Governance: Analyzing Decentralized Voting to Amend DeFi Smart Contracts
Johnnatan Messias, **Vabuk Pahari**, Balakrishnan Chandrasekaran, Krishna P. Gummadi, and Patrick Loiseau.
Pre-print: https://arxiv.org/pdf/2305.17655