

# Vabuk Pahari

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## Summary

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I am a final year PhD student at the Max Planck Institute for Software Systems (MPI-SWS). I work 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 data, from deploying and maintaining archive nodes (Ethereum, Base, Optimism) to architecting large-scale databases for efficient processing and visualization. By translating raw blockchain data into actionable insights, I have mapped the complex interactions of blockchain ecosystem participants (such as builders, proposers, and MEV bots). Moving forward, I am eager to apply this expertise within Decentralized Finance (DeFi), specifically to leverage my technical and analytical background to build scalable, real-world products that transform traditional financial systems.

## Education

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### 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
- Led research on blockchains on DeFi and MEV, which were published in scientific conferences
- Analyzed the Ethereum DAO ecosystem, and audited their Governance Contracts for potential attacks and vulnerabilities

### 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

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### 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.

## Publications and Pre-prints

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### 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>

## **Skills**

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