

Proceedings of the Sixth International Workshop on Foundations and Applications of Blockchain (FAB)

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ABSTRACT

Blockchain - the technology behind Bitcoin - is flourishing into an impressive spectrum of research projects and initiatives, corporate alliances, and startup companies. This multidisciplinary effort spans diverse disciplines ranging from Computer Science and Engineering to Communications, Social Sciences, Public Policy, Banking and Finance, Journalism, and Political Sciences to name a few. Database researchers have been involved in an impressive body of blockchain research. As an example, more than 50 research papers have been published in pioneer database conferences (VLDB, SIGMOD, and ICDE) over the past five years. Over the past six years, FAB has attracted many blockchain researchers. This one-day event strives to bring together database researchers and practitioners interested in blockchains to share and exchange results.

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1 INTRODUCTION

The workshop on foundations and applications of blockchain strives to bring together database researchers and practitioners interested in blockchains to share and exchange results. FAB has invited papers and presentations on a broad range of topics, including:

- Decentralized data management using blockchains
- Applications of blockchain in data management
- distributed transaction processing
- Data privacy and confidentiality in blockchains
- Partitioned and replicated data stores for blockchain
- Blockchain for social networking
- Distributed systems for blockchain
- Machine learning for blockchains
- Blockchain consensus protocols
- Proof of * systems
- Governance and blockchain
- Software engineering practices and life cycle management of blockchain
- Social and economic aspects of blockchain
- Game theory and its applications to blockchain
- Blockchain protocol analysis and security

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- Algorithm design, complexity analysis, implementation for blockchain
- Experience papers with blockchain
- Energy consumption of blockchains
- Smart contracts
- Custody and decentralized identity solutions

Authors were able to submit research papers describing research work in the broad area of blockchain. We solicit both regular papers (up to 8 pages) and short papers (up to 4 pages). The former tends to be descriptions of complete technical work, while the latter tends to be descriptions of interesting, innovative ideas, which nevertheless require more work to mature. For short papers, we also encouraged submissions that put previously published work in a new light or describe extensions of previously published work by the authors.

All submissions have been evaluated based on their originality, technical merit, topical relevance, value to the community, and the likelihood of leading to insightful discussions. All manuscripts submitted to our workshop have been reviewed by at least five PC members.

2 OVERVIEW OF THE PROGRAM

The event includes two keynote speeches by well-known researchers in the field of Blockchains, six research presentations, and a panel to address the open challenges in the blockchain area that require attention in the coming years. The detailed program can be found at <https://scfab.github.io/2024>.

Keynotes

- Benefits and Challenges of Decentralization in Data Systems: Opportunities for Data Management Research by *Ruben Mayer (University of Bayreuth)*
- Data Management and AI for Blockchain Data Analysis by *Arijit Khan (Aalborg University)*

Research Papers

- Practical Declarative Smart Contracts Optimization
 - Lan Lu (University of Pennsylvania), Tao Luo (University of Pennsylvania), Jingyi Li (University of Pennsylvania), Hongxun Ding (Southern University of Science and Technology), Brendan Massey (University of Pennsylvania), Haoxian Chen (ShanghaiTech University), Boon Thau Loo (University of Pennsylvania)
- Resilient Consensus Sustained Collaboratively
 - Junchao Chen (University of California, Davis), Suyash Gupta (University of California, Berkeley), Alberto Sonnino (MystenLabs & University College London), Eleftherios Kokoris-Kogias (IST Austria & MystenLabs), Mohammad Sadoghi (University of California, Davis)

- CroCRPC: Cross-Chain Remote Procedure Calls Framework for dApps
 - Avishek De (University of California, Santa Barbara), Divyakant Agrawal (University of California, Santa Barbara), Amr El Abbadi (University of California, Santa Barbara)
- From On-chain to Macro: Assessing the Importance of Data Source Diversity in Cryptocurrency Market Forecasting
 - Giorgos Demosthenous (University of Cyprus), Chryssis Georgiou (University of Cyprus), Eliada Polydorou (University of Cyprus)
- SOK: Blockchain for Provenance
 - Asma Jodeiri Akbarfam (Augusta University), Hoda Maleki (Augusta University)
- Performance optimization techniques in Hyperledger Fabric
 - Jeeta Chacko (Technical University Munich)

Panel on Blockchain

- Panel coordinator: Mohammad Sadoghi (University of California Davis)
- Panelists: Arijit Khan (Aalborg University), Heidi Howard (Microsoft), Jeeta Chacko (Aalborg University), and Ruben Mayer (University of Bayreuth)

3 ORGANIZING AND PROGRAM COMMITTEES

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- Yifan Xu, Coinbase

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