



UCDAVIS

PANEL ON BLOCKCHAIN AND THE DATABASE RESEARCH COMMUNITY

ACM SIGMOD/PODS 2021

June 24, 2021



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Mohammad Sadoghi
(Principal Investigator)



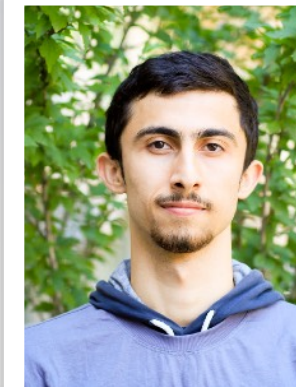
Jelle Hellings, PostDoc
(Fault-tolerant Complexity Analysis)



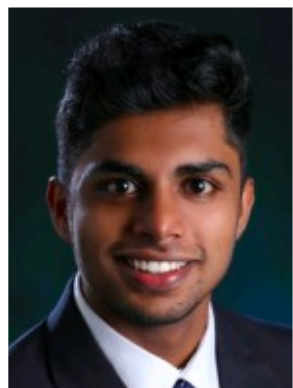
Suyash Gupta, PhD
(Scalable Consensus Meta-Protocols)



Thamir Qadah, PhD
(Distributed & Coordination-free Concurrency)



Sajjad Rahnema, PhD
(Global Scale Consensus)



Dhruv Krishnan, MSc
(Scaling Fabric via Sharding)



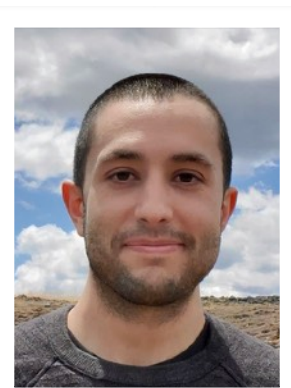
Priya Holani, MSc
(Scaling Fabric via Sharding)



Shubham Pandey, MSc
(Scaling Fabric via RDMA)



Rohan Sogani, MSc
(Scaling Fabric via Sharding)



Erik Linsenmayer, BSc
(Fault-tolerant Serverless)

*What are traps for DB people
when they look at BC topics?*

Not Focusing on & Exploring the Core of Blockchain Engines!

Not leading & Owning the Field, yet!

*Start Building Permissioned &
Permissionless Blockchain Fabrics*

What are unique insights DB people bring to BC work?

Commit Protocols

Agreement Protocols

Concurrency Control Protocols

Optimistic

Pessimistic

Speculative

Query Optimization & Evaluation

Analytics

Provenance

Files and Access Methods

Storage Layouts

Disk Management

Partitioning

Replication

Logging

Recovery

Checkpointing

The Path Forward



Permissioned Blockchain Through the Looking Glass [ICDCS'20]

Layer 1 (e.g., Proof-of-Work)

Layer 2 (e.g., PBFT, Po*)

Chain Management (off-chain, on-chain)

Database Stack

Query Optimization & Evaluation	
Concurrency Control Protocols	
Relational Operators	
Files and Access Methods	
Buffer Management	
Disk Space Management	
Storage	Log
	

Analytics
(Read-only)

Resilient Replication

Waif-free BFT [DISC'19]

Resilient Concurrent Consensus [ICDE'21]

Delayed Replication [ICDT'20]

Proof-of-Execution [EDBT'21]

Cerberus [arXiv'20]

Sharding (Isolation Semantics, Consistency Levels)

ByShard [VLDB'21]

Cross-chain Network

Cluster Sending Primitive [DISC'19]

Global Distribution

GeoBFT [VLDB'20]

Reconfigurable Network

Recovery (View-change)

Identity Management

Permissioned

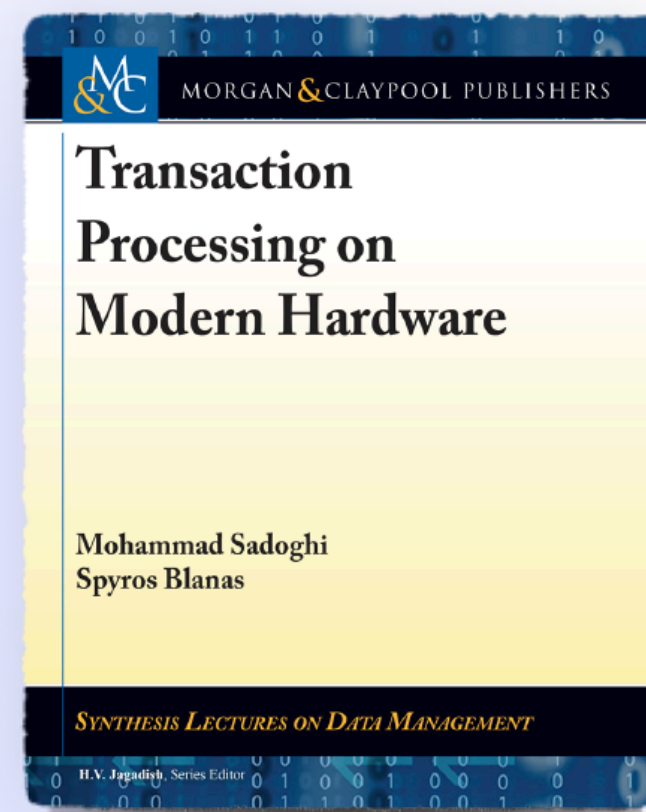
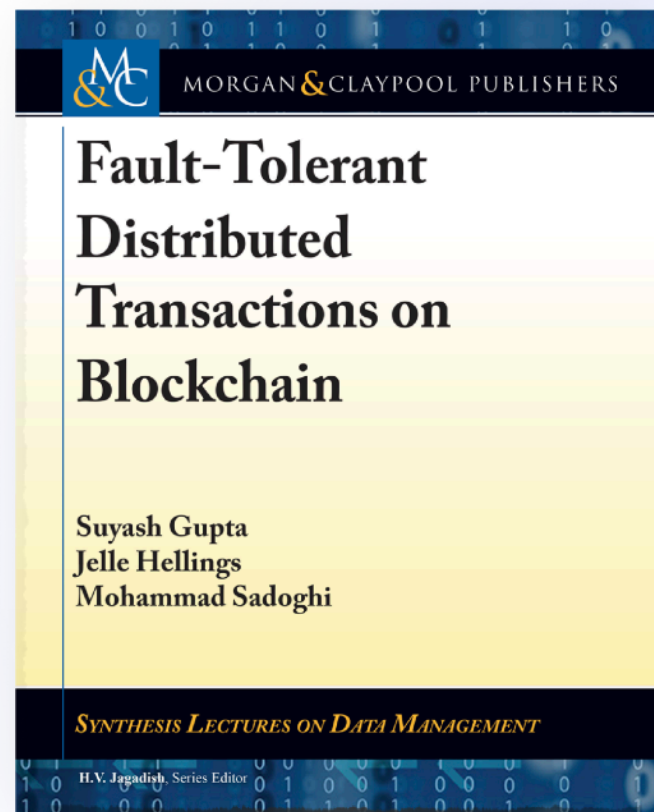
Permissionless

Applications: DeFi, Smart Contracts, IoT, Serverless

Blockplane [ICDE'19]



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THANK YOU

