



UCDAVIS

PANEL ON BLOCKCHAIN AND THE DATABASE RESEARCH COMMUNITY

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Mohammad Sadoghi
(Principal Investigator)



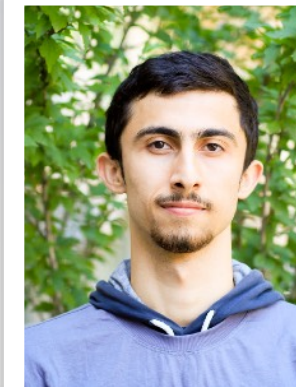
Jelle Hellings, PostDoc
(Fault-tolerant Complexity Analysis)



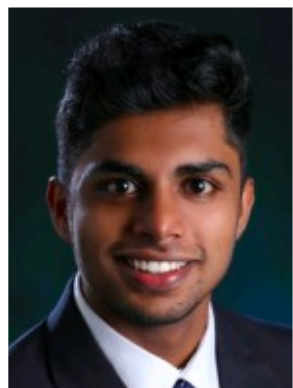
Suyash Gupta, PhD
(Scalable Consensus Meta-Protocols)



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



Sajjad Rahnama, PhD
(Global Scale Consensus)



Dhruv Krishnan, MSc
(Scaling Fabric via Sharding)



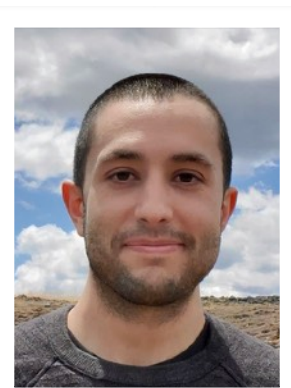
Priya Holani, MSc
(Scaling Fabric via Sharding)



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'19]

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)

Wait-free BFT [DISC'19]

Resilient Concurrent Consensus [ICDE'21]

Cerberus [arXiv'20]

Delayed Replication [ICDT'20]

Proof-of-Execution [EDBT'21]

ByShard [VLDB'21]

Cluster Sending Primitive [DISC'19]

Resilient Replication

Sharding (Isolation Semantics, Consistency Levels)

Cross-chain Network

Global Distribution

Reconfigurable Network

Recovery (View-change)

GeoBFT [VLDB'20]

Identity Management

Permissioned

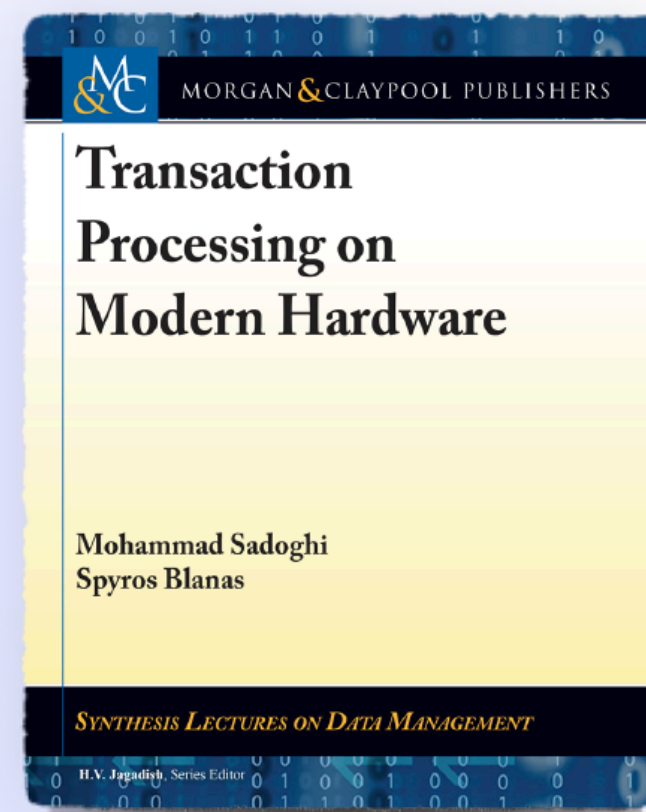
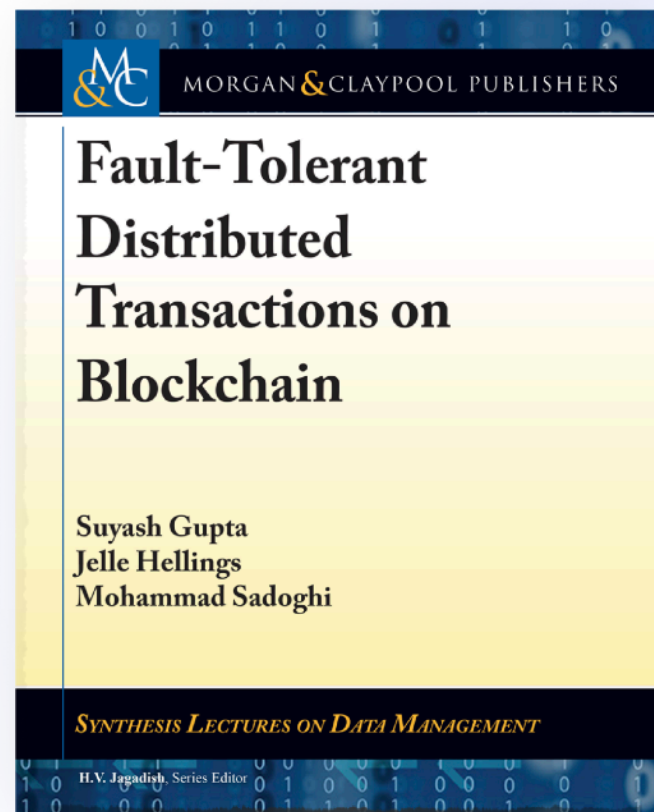
Permissionless

Applications: DeFi, Smart Contracts, IoT, Serverless

Blockplane [ICDE'19]



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THANK YOU

