

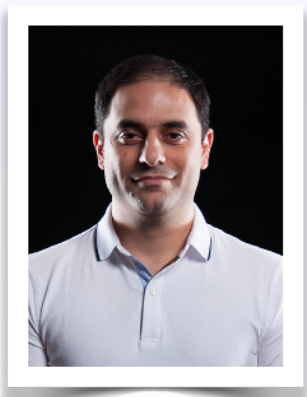


UCDAVIS

PANEL ON BLOCKCHAIN AND THE DATABASE RESEARCH COMMUNITY

ACM SIGMOD/PODS 2021

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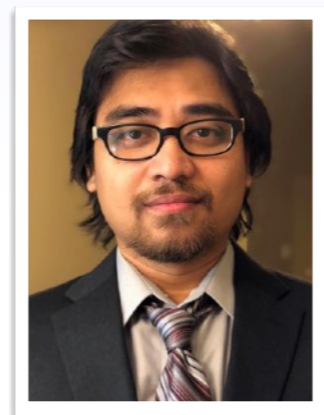
Mohammad Sadoghi
(Principal Investigator)



Jelle Hellings, PostDoc
(Fault-tolerant Complexity Analysis)



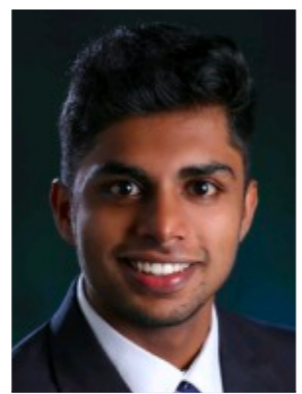
Suyash Gupta, PhD
(Scalable Consensus Meta-Protocols)



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



Sajjad Rahnama, PhD
(Global Scale Consensus)



Dhruv Krishnan, MSc
(Scaling Fabric via Sharding)



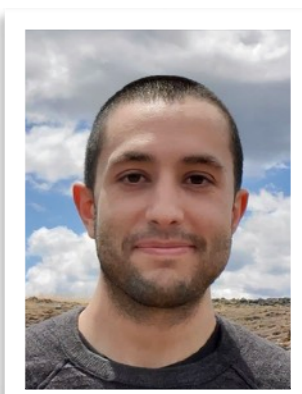
Priya Holani, MSc
(Scaling Fabric via Sharding)



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'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

Sharding (Isolation Semantics, Consistency Levels)

Cross-chain Network

Global Distribution

Reconfigurable Network

Recovery (View-change)

Identity Management

Applications: DeFi, Smart Contracts, IoT, Serverless

Waif-free BFT [DISC'19]

Resilient Concurrent Consensus [ICDE'21]

Cerberus [arXiv'20]

Cluster Sending Primitive [DISC'19]

Delayed Replication [ICDT'20]

Proof-of-Execution [EDBT'21]

ByShard [VLDB'21]

RingBFT [arXiv'21]

GeoBFT [VLDB'20]

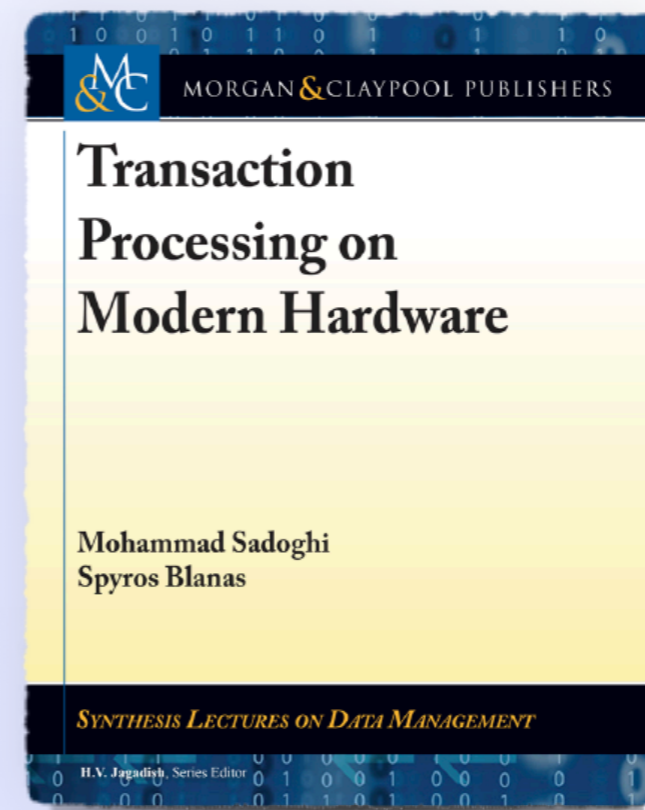
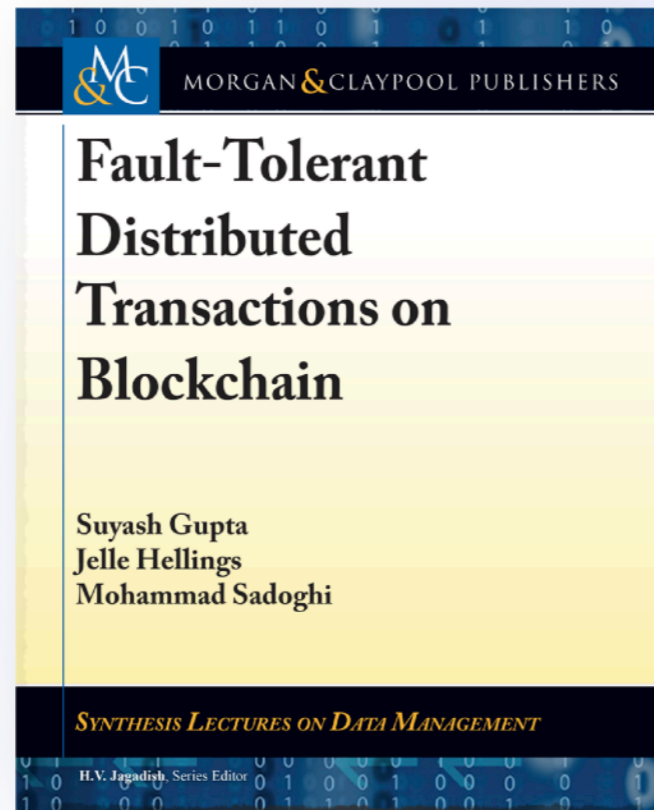
Permissioned

Permissionless

Blockplane [ICDE'19]



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THANK YOU

