

Xincheng Yang

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Research Interests

Distributed systems; fault tolerance (CFT/BFT); consistency models; replication; sharding; blockchain; scalable consensus protocols.

Education

Ph.D. in Computer Science , Illinois Institute of Technology	2017 – 2026 (expected)
M.S. in Computer Science , Illinois Institute of Technology	2015 – 2017
B.S. in Mathematics , Tianjin Normal University	2006 – 2010

Publications

1. **Xincheng Yang, Kyle Hale**. *Shipyards: A Multi-Leader Consensus Protocol with Auto-Balanced Leadership of the Sharded Keyspace*. Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2026. (*Accepted*)
2. **Xincheng Yang, Kyle Hale**. *CoPPar Tree: Fast and Composable Consistency at Global Scale*. Proceedings of the International Symposium on Parallel and Distributed Computing (ISPDC), 2025.

Research Experience

Early in my PhD, I explored research topics related to FLX (Computer Networks, Elsevier, 2007) and, beginning in 2022, developed an independent research direction on sharding-based consistency, which resulted in two first-author publications.

- Implemented **Shipyards**: Designed, implemented, and evaluated the protocol, integrating it into the EPaxos codebase. Shipyards outperforms the state-of-the-art EPaxos (SOSP '13 & NSDI '21) protocol in throughput by reducing message communication complexity.
- Implemented **CoPPar Tree**: Extended the ZooKeeper source code to implement the structure. CoPPar Tree outperforms ZooNet (ATC '16) by using a history composition mechanism to avoid synchronous waits for cross-shard operations.
- Contributed bug fixes to **ZooNet** (USNEX ATC '16).

Technical Skills

Languages:	Go, C/C++, Java, Python, JavaScript, OpenMP/MPI, Haskell/Ocaml/Racket, SQL, Bash
Distributed Systems:	Replication, consensus, sharding
Fault Tolerance:	CFT, BFT, failure recovery
Tools:	Git, Linux, Docker, Amazon EC2, ZooKeeper, L ^A T _E X

Talks & Presentations

- *Shipyard* (Oral), 40th IEEE International Parallel & Distributed Processing Symposium (IPDPS 2026, to appear)
- *CoPPar Tree* (Oral), 24th IEEE International Symposium on Parallel and Distributed Computing (ISPDC 2025)
- *CoPPar Tree* (Poster), 10th Greater Chicago Area Systems Research Workshop (GCASR 2023)
- *Bricks* (Poster), Middleware 2021

Teaching Experience

- Teaching Assistant, Programming Languages and Translators, 2019 Fall – 2026
- Teaching Assistant, Advanced Database Organization, Summer 2019
- Teaching Assistant, Introduction to Information Security, Spring 2019
- Teaching Assistant, Operating Systems, Fall 2018
- Teaching Assistant, Database Organization, 2017 Fall – 2018 Spring

Patent

US Patent No. 12373413