Wen Zhang

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Research Area

Computer systems.

Education

8/2017–Present **Ph.D., Computer Science**, *University of California, Berkeley*
- Advisor: Professor Scott Shenker.

9/2013–6/2017 **B.S., Computer Science** (with Distinction), *Stanford University*

Publications

Preprints

[1] Wen Zhang, Dev Bali, Jamison Kerney, Aurojit Panda, and Scott Shenker. Extracting database access-control policies from web applications. *CoRR*, abs/2411.11380, 2024. https://arxiv.org/abs/2411.11380.

Conference Papers

[2] Wen Zhang, Eric Sheng, Michael Alan Chang, Aurojit Panda, Mooly Sagiv, and Scott Shenker. Blockaid: Data access policy enforcement for web applications. In *OSDI '22: 16th USENIX Symposium on Operating Systems Design and Implementation*, 2022. https://www.usenix.org/conference/osdi22/presentation/zhang.

[3] Wen Zhang, Vivian Fang, Aurojit Panda, and Scott Shenker. Kappa: a programming framework for serverless computing. In *SoCC '20: ACM Symposium on Cloud Computing*, 2020. https://doi.org/10.1145/3419111.3421277.

[4] Wen Zhang, Scott Shenker, and Irene Zhang. Persistent state machines for recoverable in-memory storage systems with NVRam. In *OSDI '20: 14th USENIX Symposium on Operating Systems Design and Implementation*, 2020. https://www.usenix.org/conference/osdi20/presentation/zhang-wen.

[5] Elliott Slaughter, Wonchan Lee, Sean Treichler, Wen Zhang, Michael Bauer, Galen M. Shipman, Patrick S. McCormick, and Alex Aiken. Control replication: compiling implicit parallelism to efficient SPMD with logical regions. In *SC '17: International Conference for High Performance Computing, Networking, Storage and Analysis*, 2017. https://doi.org/10.1145/3126908.3126949.

Workshop Papers

[6] Jiwon Park, Shadaj Laddad, Dev Bali, Wen Zhang, Scott Shenker, and Matei Zaharia. Everything everywhere all at once: Efficient cross-service program analysis with OverSeer. In *ASEW '24: 39th IEEE/ACM International Conference on Automated Software Engineering Workshops*, 2024. https://doi.org/10.1145/3691621.3694937.

[7] Wen Zhang, Aurojit Panda, and Scott Shenker. Access control for database applications: Beyond policy enforcement. In *HotOS '23: 19th Workshop on Hot Topics in Operating Systems*, 2023. https://doi.org/10.1145/3593856.3595905.

Technical reports, abstracts, and notes

[8] Silvery D. Fu, David Wang, Wen Zhang, and Kathleen Ge. Liberal entity matching as a compound AI toolchain (extended abstract). *CoRR*, abs/2406.11255, 2024. https://arxiv.org/abs/2406.11255.

[9] Wen Zhang, Aurojit Panda, Mooly Sagiv, and Scott Shenker. A decidable case of query determinacy: Project-select views. *CoRR*, abs/2411.08874, 2024. https://arxiv.org/abs/2411.08874.

[10] Wen Zhang, Aurojit Panda, and Joseph Tassarotti. Rabia errata, 2024. https://cs.nyu.edu/~apanda/classes/sp24/papers/rabia-errata.pdf.

[11] Wen Zhang, Eric Sheng, Michael Alan Chang, Aurojit Panda, Mooly Sagiv, and Scott Shenker. Blockaid: Data access policy enforcement for web applications (extended technical report). *CoRR*, abs/2205.06911, 2022. https://arxiv.org/abs/2205.06911.

Teaching Experience

Fall '18 **Graduate Student Instructor, Computer Networks (CS 168)**, *UC Berkeley*

Spr '17 **Course Assistant, Compilers (CS 143)**, *Stanford University*

Spr '14–Fall '15 **Section Leader, Intro to Programming (CS 106A/B/X)**, *Stanford University*

Industry Experience

Summer '19 **Research Intern**, *Microsoft Research*, Redmond, WA
- Supervisor: Dr. Irene Zhang.

Summer '17 **Member of Technical Staff Intern**, *Rubrik*, Palo Alto, CA

Summer '15 **Software Engineer Intern**, *Dropbox*, San Francisco, CA

Summer '14 **Intern Software Analyst and Developer**, *Intentional Software*, Bellevue, WA

Selected Projects

Ote: Extracting database access-control policies from web applications [1]
- Extracts an existing application's implicitly-embedded access-control policy.
- Performs concolic execution to explore execution paths; merges and simplifies execution transcripts to produce a policy.

Blockaid: Database access-control enforcement for web applications [2]
- Efficiently enforces database access control on web applications in a backwards-compatible and semantically-transparent manner.
- Checks policy compliance via SMT solving, optimized through generalization-based caching.

Persimmon: Persistence for in-memory storage systems [4]
- Converts an existing in-memory storage system into a fast, persistent version using persistent memory; requires minimal code changes.
- Provides persistence via synchronous command logging, and asynchronous crash-consistent shadow execution on persistent state.

Kappa: Programming framework for serverless computing [3]

- Provides a familiar programming model for general-purpose, parallel serverless computing.
- Enables task-based parallel programming; checkpoints program state for fault tolerance.

References

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