Wenyu Zhao (he/him)

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Skills: Performance analysis and optimization (eBPF, perf events, benchmarking, ...), compilers, memory management, system programming, and programming languages.
Programming Languages: Rust, C, C++, Java, Python, JavaScript, TypeScript, Go, Swift.

Experience

Student Researcher, Google DeepMind *2023 – 2024, Sydney, AU*
Student Researcher, Google *2023, Sunnyvale CA, US*

- Two consecutive internships focused on evaluating LXR, a high-performance research garbage collector (GC), on Google's proprietary production workloads.
- Ported MMTk and LXR GC to Google's JDK, and conducted detailed performance analysis on internal workloads.
- Advanced the understanding of performance and memory behavior in Google's production workloads.

Software Engineering Intern (PhD), Google *2021, Munich, DE*

- Refactored V8's GC interface and integrated the MMTk GC framework into V8, Chrome's JavaScript runtime.
- Significantly improved the V8 GC interface design, laying the groundwork for future GC research in V8.

Research Assistant, Australian National University *2019 – 2020, Canberra, AU*

- Integrated the MMTk GC framework into OpenJDK and JikesRVM, providing a robust foundation for future Java GC innovations, including the LXR GC.
- Designed core MMTk components including the GC task scheduler and virtual memory allocator.

Education

Doctor of Philosophy, Australian National University *2020 – Present, Canberra, AU*

- **Anticipated Graduation:** Q4 2025
- **Supervisors:** Prof. Steve Blackburn, Dr. Kathryn McKinley, Prof. Tony Hosking, and Dr. Shoaib Akram.
- **Research Area:** Memory management, garbage collection, and system performance analysis.
- **Thesis:** High-throughput Low-latency Garbage Collection: From Abstraction to Production.

Bachelor of Science (Honours), Australian National University *2018, Canberra, AU*

- **Supervisors:** Prof. Steve Blackburn
- **Research Area**: Memory management and garbage collection.
- **Thesis**: Understanding and Analyzing the Garbage-First Family of Garbage Collectors.

Bachelor of Computer Science, Monash University *2015 – 2017, Melbourne, AU*

Selected Publications

Zhao, Blackburn, McKinley, Cao, Hamouda, **Advancing Performance via a Systematic Application of Research and Industrial Best Practice**, in OOPSLA '25, Singapore, October 12-18, 2025. — ***Distinguished Artifact Award***

Zhao, Blackburn, McKinley, **Work Packets: A New Abstraction for GC Software Engineering, Optimization, and Innovation**, in OOPSLA '25, Singapore, October 12-18, 2025. — ***Distinguished Artifact Award***

Zhao, Blackburn, McKinley, **Low-Latency, High-Throughput Garbage Collection**, in PLDI '22, San Diego, CA, USA., June 13-17, 2022. — ***Distinguished Paper Award***

Awards & Scholarships

PLDI'22 Distinguished Paper Award *2022*
For the paper *"Low-Latency, High-Throughput Garbage Collection"*

Australian Government Research Training Scholarship (AGRTPFOS) *2020-2025*
Awarded for PhD program tuition fee-waiver and stipend.