Yehong Zhang

Shanghai | yehongzhang23@m.fudan.edu.cn | 86 159 9291 2056 | wizeaz.github.io | github.com/WIZeaz

Personal Statement

I am currently a Ph.D. student at Fudan University, working under the guidance of Professor Jun Wu and Associate Professor Hui Xu. My recent research focuses on vulnerability detection in Rust libraries, primarily guided by Hui Xu. I am keen to explore various techniques to identify potential vulnerabilities in Rust libraries to enhance the reliability of the Rust ecosystem. Previously, I earned my bachelor's degree from South China University of Technology, where I actively participated in competitive programming and was awarded two silver medals in the International Collegiate Programming Contest (ICPC).

Education

Fudan University, Ph.D. in Computer Science — Sept 2021 – Present

- GPA: 3.7/4.0
- Advisors: Jun Wu, Hui Wu

South China University of Technology, B.E. in Software Engineering — Sept 2017 – July 2021

- GPA: 3.7/4.0
- English Program

Projects

Fuzz Driver Synthesis for Rust Generics — Sept 2023 – Sept 2024

- Proposed an approach to synthesize fuzz driver for Rust generic APIs. Our approach systematically infers all valid and fuzzable monomorphic versions of generic APIs, along with a pruning algorithm to reduce the number of generic APIs that need testing, thereby improving fuzzing efficiency.
- Developed a prototype, RuMono, to evaluate our approach and demonstrate its advantages.
- The paper is currently under review by TOSEM (Major Revision).

Detecting Rust Lifetime Annotation Bugs (Ongoing) — Aug 2024 - Present

- Currently addressing issues related to Rust's lifetime annotations. Unsafe Rust permits dereferencing raw pointers with arbitrary lifetimes, potentially leading to use-after-free vulnerabilities and problems with multiple mutable references.
- Developed the tool based on the Rust Analysis Platform.

Compiler Backend for DSP — Sept 2021 - Present

- Developed the compiler backend to generate binary code for the digital signal processor (DSP) designed by our lab, based on LLVM.
- My primary work includes creating instruction selection patterns, adapting the Clang driver for cross-compiling, porting Newlib, and optimizing for code size and performance. I also mentor several graduate students on this project.

Publications

RuMono: Fuzz Driver Synthesis for Rust Generic APIs — Nov 2024

Yehong Zhang, Jun Wu, Hui Xu

ACM Transactions on Software Engineering and Methodology (TOSEM)

Honors and Awards

Silver Medal - 2019 ICPC Asia Nanchang Regional Contest	2019
Silver Medal - 2019 ICPC China Xian National Invitational Programming Contest	2019
National Scholarship	2018
Excellent Student Scholarship	2019-2023