Yuyang(Peter) RONG

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EDUCATION

UC Davis Sep 2019 - Jun 2024

Ph.D. candidate in Computer Science *Davis, CA*

· Research interest: software security, software engineering, staic analysis, compiler, operating systems.

· Languages: **Rust (9/10), C/C++ (8/10), Python (7/10)** Framworks: **LLVM, Docker, Angora, AFL++**

ShanghaiTech University Sep 2015 - Jun 2019

B.E. Computer Science and Technology *Shanghai, China*

· GPA 3.80/4 (Ranking: 5/124)

· Excellent Undergraduate of Shanghai (Jun 2019) ShanghaiTech President Scholarship (Oct 2016)
Scholarship of Academic Excellence (Nov 2017) Shanghai Government Scholarship (Oct 2016)

WORKING AND RESEARCH EXPERIENCE

Bytedance Jun 2020 - Sep 2020

Research Intern *Mountain View, CA*

· Focused on optimizing fuzzer Angora's gradient solver and alleviate branch collision problem.

· Implemented an LLVM pass in 2000 lines of C++ and a new gradient solver in 3000 lines of Rust.

· Improved branch coverage by 41% compared by Angora, 94% compare to AFL++.

· ***Valkyrie: Improving Fuzzing Performance Through Principled Techniques*** submitted to ISSRE 2022.

Bytedance Sep 2018 - Aug 2019

Research Intern *Beijing, China*

· Assigned to find integer errors using Angora in Bytedance's codebase.

· Designed a sanitizer and implemented it as an LLVM pass with runtime library using around 1500 lines C++ and 2000 lines of Rust, maintainer of Angora ever since.

· Identified 8 crashing errors that could cause deinal of service attack, CVE-2020-18869 and CVE-2020-18871 assigned; found 166 non-crashing errors that could cause program misbehave, reported to developers.

· ***IntEgrity: finding integer errors by targeted fuzzing*** published on SecureComm 2020.

ShanghaiTech University Nov 2017 - Jan 2018

Lab Intern *Shanghai, China*

· Designed subproblem algorithm by combining line search and trust region.

· Implemented the algorithm using Python and did extensive experiments.

· Solved 113/126 problems, achieving a success rate of 89.7%.

· ***An inexact first-order method for constrained nonlinear optimization*** published on *Optimization Methods and Software*.

ABB Group Oct 2017 - Jun 2018

Research Intern *Shanghai, China*

· The goal was to combine ABB's desktop robot Yumi and Huskey UGV.

· Attached Yumi to an 4-wheel robot to make it autonomous and designed **navigation**, **mapping**, and **control** algorithms in around 5000 lines of C++.

· Demonstrated our prototype to the leader in ABB.

PROJECTS

RITOS Jan 2020 - Mar 2020

ECS240 Operating system course project *UC Davis*

· Designed Rust IoT Operating System (RITOS) on raspberry pi 3.

· Implemented booting code and barebone binary in 1500 lines of Rust.

· Open-sourced RITOS, also contributed to 100-star Cortex-A to Rust binding project.

Athernet Jan 2018 - Jun 2018

CS120 Computer networks course project *ShanghaiTech University*

· Designed computer networks from scratch, using sound as physical layer.

· Implemented Layer 1/2 in 3500 lines of JAVA and Layer 3/4 in 1500 lines of C++, open-sourced.

· Demonstrated prototype by downloading a 10kB file from an FPT server with only athernet access, achieving 16.4 kbps bit rate (Upper bound 22 kbps).

COOL Compiler Jan 2018 - Jun 2018

CS131 Compiler course project *ShanghaiTech University*

· Designed a new language COOL as part of the Compiler course project.

· Implemented end-to-end compiler including lexer, parser, semantic analysis, type analysis, and code generation.

· Implemented in using Flex, Bison, C++, open-sourced to Github.

Screen++ Jun 2017 - Jun 2017

iLab Hackathon team leader *Shanghai, China*

· Proposed an application to connect all the screens in different platforms.

· Responsible for the software development & marketing model, constructed the prototype using Python & Apache.

· Won the **3rd prize** in iLab Hackathon.

SafeBox Jun 2017 - Jul 2017

CS230 Operating system course project *ShanghaiTech University*

· Designed an abstraction layer to run untrusted software by intercepting unsafe system calls.

· Implemented the prototype in 1200 lines of Rust, open-sourced.

· Successfully prevented untrusted submission from accessing Internet in online judge Gradebot.

TEACHING

ECS032A: Introduction to Programming 2020 Fall Quater

Teaching Assistant *UC Davis*

CS110: Computer Architecture I 2018 Spring Semester

Leading Teaching Assistant *ShanghaiTech*

SI100C: Introduction to Computer Science 2017 Fall Semester

Leading Teaching Assistant *ShanghaiTech*

SI100: Introduction to Information Science and Technology 2017 Spring Semester

Teaching Assistant *ShanghaiTech*

CS100: Introduction to Programming 2016 Fall Semester

Teaching Assistant *ShanghaiTech*