

# Yuyang(Peter) RONG

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## EDUCATION

### UC Davis

Sep 2019 - Jun 2024

*Ph.D. candidate in Computer Science*

*Davis, CA*

- Research interests: Software security, compiler validation, LLM in software engineering
- Skills: **C/C++ (9/10), Rust (8/10), Python (8/10), LLVM (IR, CodeGen), MLIR**, GitHub, Jira, Docker
- Community impacts: **LLVM contributor**. Bug fixes in backends, e.g. X86, AArch64, etc.
- Leadership & project management: **Manage a six-person team working on two projects simultaneously**

### ShanghaiTech University

Sep 2015 - Jun 2019

*B.E. Computer Science and Technology*

*Shanghai, China*

- GPA 3.79/4 (Rank: 5/124)    Excellent Undergraduate of Shanghai (2019)    Scholarship of Shanghai (2016)

## WORKING AND RESEARCH EXPERIENCE

### Bytedance Ltd.

Jun 2020 - Sep 2020

*Research Intern*

*Mountain View, CA*

- Focused on optimizing fuzzer Angora's gradient solver and alleviate its branch collision problem.
- Implemented a fuzzer [Valkyrie](#) with a runtime in ~2000 LoC in C++ and a gradient solver in ~3000 LoC in Rust.
- Found six bugs in open-source libraries, improved branch coverage by 41% compared to Angora.

### Bytedance Ltd.

Sep 2018 - Aug 2019

*Research Intern*

*Beijing, China*

- Assigned to maintain [Angora](#) and use it to find integer bugs in Bytedance's codebase.
- Implemented a sanitizer as an LLVM pass w/ runtime library using ~1500 LoC in C++ and ~2000 LoC in Rust.
- Identified **8 crashing and 166 non-crashing bugs**. [CVE-2020-18869](#) and [CVE-2020-18871](#) assigned.

### 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, [open-sourced](#).
- 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 athenet 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](#).

### 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

**ECS153: Computer Security**

*(Best TA award)* Spring 2023

**ECS032A: Introduction to Programming**

Fall 2020