

# 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, static analysis, compiler, operating systems.
- Languages: **Rust (9/10), C/C++ (8/10), Python (7/10)**    Frameworks: **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)

## EXPERIENCE

### Advanced Micro Devices (AMD)

Jun 2022 - Sep 2022

*Research Intern*

*San Jose, CA*

- Focused on testing compiler backend of AI Engine.
- Implemented a state-of-the-art fuzzer to accommodate for the compiler infrastructure.
- Found 6 pattern matching bugs so far.

### 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% compared 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 denial of service attack, [CVE-2020-18869](#) and [CVE-2020-18871](#) assigned; found 166 non-crashing errors that could cause program misbehavior, 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

<b>RITOS</b>	Jan 2020 - Mar 2020
<i>ECS240 Operating system course project</i>	<i>UC Davis</i>
<ul style="list-style-type: none"> <li>· Designed Rust IoT Operating System (RITOS) on raspberry pi 3.</li> <li>· Implemented booting code and barebone binary in 1500 lines of Rust.</li> <li>· Open-sourced <a href="#">RITOS</a>, also contributed to 100-star <a href="#">Cortex-A to Rust binding project</a>.</li> </ul>	
<b>Atherneth</b>	Jan 2018 - Jun 2018
<i>CS120 Computer networks course project</i>	<i>ShanghaiTech University</i>
<ul style="list-style-type: none"> <li>· Designed computer networks from scratch, using sound as physical layer.</li> <li>· Implemented Layer 1/2 in 3500 lines of JAVA and Layer 3/4 in 1500 lines of C++, <a href="#">open-sourced</a>.</li> <li>· Demonstrated prototype by downloading a 10kB file from an FPT server with only atherneth access, achieving 16.4 kbps bit rate (Upper bound 22 kbps).</li> </ul>	
<b>COOL Compiler</b>	Jan 2018 - Jun 2018
<i>CS131 Compiler course project</i>	<i>ShanghaiTech University</i>
<ul style="list-style-type: none"> <li>· Designed a new language COOL as part of the Compiler course project.</li> <li>· Implemented end-to-end compiler including lexer, parser, semantic analysis, type analysis, and code generation.</li> <li>· Implemented in using Flex, Bison, C++, open-sourced to <a href="#">Github</a>.</li> </ul>	
<b>Screen++</b>	Jun 2017 - Jun 2017
<i>iLab Hackathon team leader</i>	<i>Shanghai, China</i>
<ul style="list-style-type: none"> <li>· Proposed an application to connect all the screens in different platforms.</li> <li>· Responsible for the software development &amp; marketing model, constructed the prototype using Python &amp; Apache.</li> <li>· Won the <b>3rd prize</b> in iLab Hackathon.</li> </ul>	
<b>SafeBox</b>	Jun 2017 - Jul 2017
<i>CS230 Operating system course project</i>	<i>ShanghaiTech University</i>
<ul style="list-style-type: none"> <li>· Designed an abstraction layer to run untrusted software by intercepting unsafe system calls.</li> <li>· Implemented the prototype in 1200 lines of Rust, <a href="#">open-sourced</a>.</li> <li>· Successfully prevented untrusted submission from accessing Internet in online judge <a href="#">Gradebot</a>.</li> </ul>	

## TEACHING

<b>ECS032A: Introduction to Programming</b>	2020 Fall Quarter
Teaching Assistant	<i>UC Davis</i>
<b>CS110: Computer Architecture I</b>	2018 Spring Semester
Leading Teaching Assistant	<i>ShanghaiTech</i>
<b>SI100C: Introduction to Computer Science</b>	2017 Fall Semester
Leading Teaching Assistant	<i>ShanghaiTech</i>
<b>SI100: Introduction to Information Science and Technology</b>	2017 Spring Semester
Teaching Assistant	<i>ShanghaiTech</i>
<b>CS100: Introduction to Programming</b>	2016 Fall Semester
Teaching Assistant	<i>ShanghaiTech</i>