

Yun Peng

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EDUCATION

University of Science and Technology of China

Sep 2016 - Present

B.E. in Computer Science, Special Class for the Gifted Young

Honors Class for Computer Science(30/1850)

GPA: Overall: 3.87/4.3 (90/100) Major: 3.98/4.3 (91/100) Rank: 3/57

Core Courses: Data Structures (92), Introduction to Computer Systems (Honors, 95), Operating Systems (Honors, 90), Computer Organization (91), Mathematical Logic (95), Operations Research (97), Probability and Statistics (95), Graph Theory (92), Linear Algebra I (92), Function of Complex Variable (95), Computer Architecture (92), Parallel Computing (90), Computing Methods(98), Compiler Principles (Honors, 92)

- Awards:**
- Gold Outstanding Student Scholarship (2/40)
 - First prize of Honor Class Scholarship (15/226)

Sep 2018

Sep 2018, Sep 2019

RESEARCH EXPERIENCE

Automated Software Engineering Group, UIUC

April 2019 - Present

Project: Automatic Repair of smart contracts used in Ethereum

Research Assistant Advisor: Professor Tao Xie

- Attempted to build a tool to automatically fix vulnerabilities of smart contracts reported by Securify
- Built a real-world smart contract dataset from existing contracts in EtherScan which included about 94 contracts with 6 classes of line-labeled vulnerabilities for future research
- Implemented a pre-processor by loosening violation and compliance patterns, removed 99% false positives reported by Securify and reserved 97% true positives we can fix
- Implemented special data flow analysis and reference type analysis for functions in smart contracts in which modifiers can be executed both before and after the function execution while reference type had unique generation rules

- **Research paper about this project will be submitted on 15th Jan to USENIX ATC 2020**

Lab of System Software and Software Security, USTC

Sep 2018 - April 2019

Project: Security analysis of smart contracts used in Ethereum

Research Assistant Advisor: Professor Yinxing Xue

- Aimed to improve the accuracy and decrease false positive rate of current smart contract checkers such as slither
- Found some typical code patterns from real-world smart contracts and used code clone to detect undiscovered vulnerabilities
- Added compliance patterns to detect protections used by programmers yet ignored by current detection tools and decreased false positive rate by 20%

PROJECT EXPERIENCE

Project: Campus Distributed File Sharing System

Feb 2018 - Jul 2018

Group leader

- Built a distributed file system which takes advantage of students' available storage and makes file-sharing more efficient
- Implemented Erasure Code to encode a file into several pieces that could recover the original file even if some pieces are broken or missed, achieved the same safety with RAID but needed only 0.x times more storage instead of 3 or 4 times
- Implemented the Bittorrent protocol and improved it to build a distributed network so that a file doesn't need to be stored in a central server, which decreased the risk of file missing and made the file transmission faster
- Implemented Distributed Hash Table, which offers a convenient way to record and manage a file's basic information and authority

Project: A Pipeline RISC-V CPU

Feb 2019 - Jul 2019

- Implemented a pipeline RISC-V CPU with RV32I ISA which passed the official test of RISC-V
- Supported forwarding and branch prediction to reduce most pipeline hazards and improve performance of CPU
- Implemented a cache and collected the statistics of cache performance under different circumstances such as cache size

SKILLS

Programming Languages: C/C++, Python, HTML, CSS, Verilog, Solidity, Javascript, \LaTeX

Platforms: Git, MATLAB, EVM, Node.js, CUDA, OpenMP, MPI, LLVM

ENGLISH PROFICIENCY

TOEFL: Total: 103 (R: 28 L: 26 S: 23 W: 26)

GRE: Total: 323 + 3.5 (Verbal: 154 Quantitative: 169)