

# Yun Peng

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## EDUCATION

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**The Chinese University of Hong Kong (CUHK)** Oct 2020 - Present

**Ph.D. in Computer Science and Engineering**

**Awards:** • Postgraduate Scholarship Oct 2020

**University of Science and Technology of China (USTC)** Sep 2016 - June 2020

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

**Honors Class for Computer Science(30/1850)**

**GPA: Overall: 3.9/4.3 (90/100) Major: 3.98/4.3 (91/100) Rank: 3/78**

**Awards:** • Gold Outstanding Student Scholarship (2/40) Sep 2018  
• First prize of Honor Class Scholarship (15/226) Sep 2018, Sep 2019  
• Outstanding Graduation Thesis (Top 5%) Jun 2020

## RESEARCH EXPERIENCE

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**Automated Software Engineering Group, UIUC** April 2019 - Jan 2020

**Project: Automatically Patching Vulnerabilities in Smart Contracts**

*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 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
- Achieved an average patch rate of 0.98 for four vulnerabilities: *DAO*, *MissingInputValidation*, *LockedEther*, *UnhandledException*

**Lab of System Software and Software Security, USTC**

**Project: An Empirical Study for Common Language Features Used in Python Projects** Feb 2020 - Oct 2020

*Research Assistant* Advisor: Associate Professor Yu Zhang

- Built a tool to automatically scan language feature usage in Python source files
- Identified 22 language features from six categories and summarized recognition patterns of them
- Collected language feature usage of 35 mainstream Python projects from 8 fields and analyzed the difference of distribution of language feature usage in these 8 fields
- Conducted a case study on 3 commonly but differently used language features: Exception, Decorator and Nested Class / Function
- Summarized possible influence of language features for three groups of persons in Python community: Python designer, Python compiler designer and Python application developer
- **Awarded as School Outstanding Graduation Thesis (Top 5%)**

**Project: Security analysis of smart contracts used in Ethereum** Jan 2019 - Apr 2019

*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%

## SKILLS

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

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

## ENGLISH PROFICIENCY

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

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