CHENGPENG WANG

ADDRESS

Room 3154A, Lawson Computer Science Building (LWSN)
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EDUCATION

The Hong Kong University of Science and Technology *August 2019 - Dec 2023*
Ph.D. in Computer Science

Tsinghua University *2012-2019*
Master Degree in Software Engineering, 2019
BA in Software Engineering, Minor in Math, 2016

INDUSTRY EXPERIENCE

Feb 2024 – Dec 2023 | **Research Intern at Ant Group, Shenzhen**
Task: Large language model-aided static analysis

July 2023 – May 2023 | **Research Intern at Veridise, Remote**
Task: Static bug detection of zero-knowledge proof circuits

Aug 2022 – Feb 2021 | **Research Intern at Ant Group, Shenzhen**
Task: Value flow analysis for programs manipulating containers and database-backed application verification.

Aug 2019 – Feb 2019 | **Research Intern at Sourcebrella, Shenzhen**
Task: Inconsistency detection of build systems

HONORS AND AWARDS

Best Paper Award, ASPLOS'24 *2024*
UGC Research Travel Grant, HKUST *2022, 2023*
ACM SIGPLAN Distinguished Paper Award, OOPSLA'22 *2022*
ACM SIGPLAN PAC Award *2022*
Future Academician Scholarship, honored 100 students at Tsinghua University *2016*
Scholarship for Academic Excellence, Tsinghua University *2013, 2014*

PUBLICATIONS

[1] **Chengpeng Wang**, Jipeng Zhang, Rongxin Wu, Charles Zhang, DAInfer: Inferring API Aliasing Specifications from Library Documentation via Neurosymbolic Optimization, In **FSE 2024**: ACM International Conference on the Foundations of Software Engineering, July, 2024

[2] Bowen Zhang, Wei Chen, Peisen Yao, **Chengpeng Wang**, Wensheng Tang, Charles Zhang, SIRO: Empowering Version Compatibility in Intermediate Representations via Program Synthesis, In **ASPLOS 2024**: ACM Conference on Architectural Support for Programming Languages and Operating Systems, April, 2024

[3] Hao Ling, Heqing Huang, **Chengpeng Wang**, Yuandao Cai, Charles Zhang, GiantSan: Efficient Memory Sanitization with Segment Folding, In **ASPLOS 2024**: ACM Conference on Architectural Support for Programming Languages and Operating Systems, April, 2024. **(Best Paper Award)**

[4] Rongxin Wu, Yuxuan He, Jiafeng Huang, **Chengpeng Wang***, Wensheng Tang, Qingkai Shi, Xiao Xiao, and Charles Zhang, LibAlchemy: A Two-Layer Persistent Summary Design for Taming Third-Party Libraries in Static Bug-Finding Systems, In **ICSE 2024**: The IEEE/ACM International Conference on Software Engineering, April, 2024.

[5] Wensheng Tang, Dejun Dong, Shijie Li, **Chengpeng Wang***, Peisen Yao, Jinguo Zhou, and Charles Zhang, Octopus: Scaling Value-Flow Analysis via Parallel Collection of Realizable Path Conditions, In **TOSEM**: ACM Transactions on Software Engineering and Methodology, Oct, 2023.

[6] Wensheng Tang[#], **Chengpeng Wang**[#], Peisen Yao, Rongxin Wu, Xianjin Fu, Gang Fan, and Charles Zhang, DCLink: Bridging Data Constraint Changes and Implementations in FinTech Systems, In **ASE 2023** : The 38th IEEE/ACM International Conference on Automated Software Engineering, Sept, 2023.

[7] **Chengpeng Wang**, Peisen Yao, Wensheng Tang, Gang Fan, and Charles Zhang, Synthesizing Conjunctive Queries for Code Search, In **ECOOP 2023**: European Conference on Object-Oriented Programming, July, 2023.

[8] Zongyin Hao, Quanfeng Huang, **Chengpeng Wang**, Jianfeng Wang, Yushan Zhang, Rongxin Wu, and Charles Zhang, Pinolo: Detecting Logical Bugs in Database Management Systems with Approximate Query Synthesis, In **ATC 2023**: USENIX Annual Technical Conference, July, 2023.

[9] **Chengpeng Wang**, Gang Fan, Peisen Yao, Fuxiong Pan, and Charles Zhang, Verifying Data Constraint Equivalence in FinTech Systems, In **ICSE 2023**: The IEEE/ACM International Conference on Software Engineering, May, 2023.

[10] **Chengpeng Wang**, CodeSpider: Automatic Code Querying with Multi-modal Conjunctive Query Synthesis, In **SPLASH SRC 2022**: The ACM SIGPLAN conference on Systems, Programming, Languages, and Applications: Software for Humanity, Student Research Competition, Dec, 2022.

[11] **Chengpeng Wang**, Wenyang Wang, Peisen Yao, Qingkai Shi, Jinguo Zhou, Xiao Xiao, and Charles Zhang, Anchor: Fast and Precise Value-Flow Analysis for Containers via Memory Orientation, In **TOSEM**: ACM Transactions on Software Engineering and Methodology, Sept, 2022.

[12] Rongxin Wu, Minglei Chen, **Chengpeng Wang***, Gang Fan, Jiguang Qiu, and Charles Zhang, Accelerating Build Dependency Error Detection via Virtual Build, In **ASE 2022** : The 37th IEEE/ACM International Conference on Automated Software Engineering, Oct, 2022.

[13] **Chengpeng Wang**, Peisen Yao, Wensheng Tang, Qingkai Shi, Charles Zhang: Complexity-Guided Container Replacement Synthesis, In **OOPSLA 2022**: The ACM SIGPLAN Conference on Objected Oriented Programming, Systems, Languages and Applications, Dec, 2022. **(ACM SIGPLAN Distinguished Paper Award)**

[14] Gang Fan, **Chengpeng Wang**, Rongxin Wu, Xiao Xiao, Qingkai Shi, Charles Zhang: Escaping Dependency Hell: Finding Build Dependency Errors with the Unified Dependency Graph, In **ISSTA 2020**: The ACM SIGSOFT International Symposium on Software Testing and Analysis, July, 2020.

[15] **Chengpeng Wang**, Yixiao Yang, Han Liu, Le Kang: Statistical API Completion Based on Code Relevance Mining, In **MAINT 2019**: International Workshop on Mining and Analyzing Interaction Histories, 2019:7-13.

# means equal contribution. * means corresponding author.

PRESENTATIONS AND INVITED TALKS

SIRO: Empowering Version Compatibility in Intermediate Representations via Program Synthesis, In ASPLOS 2024: ACM Conference on Architectural Support for Programming Languages and Operating Systems, April, 2024.

Towards Enhancing Reliability and Performance of Data-Centric Systems with Static Analysis, School of Informatics, Xiamen University, Aug, 2023.

Synthesizing Conjunctive Queries for Code Search, In ECOOP 2023: European Conference on Object-Oriented Programming, July, 2023.

Pinolo: Detecting Logical Bugs in Database Management Systems with Approximate Query Synthesis, In ATC 2023: USENIX Annual Technical Conference, July, 2023.

Synthesizing Conjunctive Queries for Code Search, In ByteDance, June, 2023

Verifying Data Constraint Equivalence in FinTech Systems, In ICSE 2023 : The IEEE/ACM International Conference on Software Engineering, May, 2023.

Complexity-Guided Container Replacement Synthesis, In AST lab @ ETH Zurich, March, 2023.

CodeSpider: Automatic Code Querying with Multi-modal Conjunctive Query Synthesis, In SPLASH SRC 2022: The ACM SIGPLAN conference on Systems, Programming, Languages, and Applications: Software for Humanity, Student Research Competition, Dec, 2022.

Complexity-Guided Container Replacement Synthesis, In OOPSLA 2022 : The ACM SIGPLAN Conference on Objected Oriented Programming, Systems, Languages and Applications, Dec, 2022.

PROFESSIONAL SERVICES

Program Committee Member

- FSE'25 research track
- ISSTA'25 research track
- ASE'24 industrial track
- SPLASH'24 SRC track
- ISSRE'24 research track
- Forge'24
- OOPSLA'24 artifact evaluation
- PLDI'23 artifact evaluation
- FSE'22 artifact evaluation
- ISSTA'22 artifact evaluation

Reviewer/Sub-/Co-reviewer

- ISSTA'24 research track
- ICSE'24 research track
- CCS'24 research track
- ISSRE'23 industrial track
- PLDI'23 research track
- ISSTA'23 research track

- FSE'22 industrial track
- ASE'22 research track
- ISSRE'21 industrial track
- IEEE Transactions on Software Engineering (TSE)

Volunteer

- Student Volunteer @ SPLASH 2022
- Student Volunteer @ ISSTA 2019

TEACHING EXPERIENCE

COMP 3021: Java Programming, HKUST	*Spring/Fall 2022/2023*
COMP 4631: Computer and Communication Security, HKUST	*Fall 2021*
COMP 3111/H: Software Engineering, HKUST	*Fall 2020*
COMP 2011: Programming with C++, HKUST	*Spring 2020*
Haskell: Functional Language Programming, THU	*Spring 2019*
Automaton and Formal Logic, THU	*Fall 2019*

REFERENCES

Dr. Xiangyu Zhang, Professor
Department of Computer Science
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Dr. Shing-Chi Cheung, Professor
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