Kunsong Zhao

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RESEARCH INTERESTS

Software Security: Blockchain/Smart Contract Security, Binary Reverse and Program Analysis

Software Engineering: AI for SE, Mining Software Repositories and Empirical Software Engineering

EDUCATION

Ph.D. Computer Science (*Advisor: Prof. Daniel Xiapu Luo*)   2022.9 - present
Department of Computing, The Hong Kong Polytechnic University

M.Eng. Software Engineering (*Outstanding Graduate of the University*)   2019.9 - 2022.6
School of Computer Science, Wuhan University (CGPA: 88.03/100; Ranking: 5/35, Top 15%)

B.Eng. Software Engineering (*Outstanding Graduate of the University*)   2015.9 - 2019.6
School of Computer Science, Hubei University (CGPA: 88.63/100; Ranking: 3/120, Top 3%)

PUBLICATIONS

# indicates that the authors contributed equally to this work; * indicates the corresponding authors.

[C8] Kunsong Zhao, Yunpeng Tian, Zuchao Ma, and Xiapu Luo. **Soleker: Uncovering Vulnerabilities in Solana Smart Contracts.** *Proceedings of the 40th IEEE/ACM International Conference on Automated Software Engineering (ASE), Seoul, South Korea, November, 2025.* (**CCF-A**).

[C7] Xinghao Peng, Zhiyuan Sun, Kunsong Zhao, Zuchao Ma, Zihao Li, Jinan Jiang, Xiapu Luo, and Yinqian Zhang. **Automated Soundness and Completeness Vetting of Polygon zkEVM.** *Proceedings of the 34th USENIX Security Symposium (USENIX SEC), Seattle, Washington, United State, August, 2025.* (**CCF-A**).

[C6] Kunsong Zhao, Zihao Li, Weimin Chen, Xiapu Luo, Ting Chen, Guozhu Meng, and Yajin Zhou. **Recasting Type Hints from WebAssembly Contracts.** *Proceedings of the 33rd ACM International Conference on the Foundations of Software Engineering (FSE), Trondheim, Norway, June, 2025.* (**CCF-A**).

[J12] Geng Zhang, Jin Liu, Guangyou Zhou, Kunsong Zhao, Zhiwen Xie, and Bo Huang. **Question-directed Reasoning with Relation-aware Graph Attention Network for Complex Question Answering over Knowledge Graph.** *IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP), 2024, 32: 1915-1927.* (**CCF-B, JCR Q1**).

[C5] Yu Nong, Richard Fang, Guangbei Yi, Kunsong Zhao, Xiapu Luo, Feng Chen, and Haipeng Cai. **VGX: Large-Scale Sample Generation for Boosting Learning-Based Software Vulnerability Analyses.** *Proceedings of the 46th International Conference on Software Engineering (ICSE), Lisbon, Portugal, April, 2024.* (**CCF-A**).

[C4] Kunsong Zhao, Zihao Li, Jianfeng Li, He Ye, Xiapu Luo, and Ting Chen. **DeepInfer: Deep Type Inference from Smart Contract Bytecode.** *Proceedings of the 31st ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), San Francisco, California, United States, December, 2023.* (**CCF-A**).

[J11] Kunsong Zhao, Zhou Xu, Meng Yan, Tao Zhang, Lei Xue, Ming Fan, and Jacky Keung. **The Impact of Class Imbalance Techniques on Crashing Fault Residence Prediction Models.** *Empirical Software Engineering (EMSE), 2023, 28(2): 49.* (**CCF-B, JCR Q1**).

[J10] Jiaojiao Yu, Xu Zhou, Xiao Liu, Jin Liu, Zhiwen Xie, and Kunsong Zhao. **Detecting Multi-type Self-admitted Technical Debt with Generative Adversarial Network-based Neural Networks.** *Information and Software Technology (IST), 2023, 158: 107190.* (**CCF-B, JCR Q1**).

[J9] Kunsong Zhao, Jin Liu, Zhou Xu, Xiao Liu, Lei Xue, Zhiwen Xie, Yuxuan Zhou, and Xin Wang. **Graph4Web: A Relation-Aware Graph Attention Network for Web Service Classification.** *Journal of Systems and Software (JSS), 2022, 190: 111324.* (**CCF-B, JCR Q1**). Invited to the 30th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER) as part of the Journal First Track, Macao SAR, China, March, 2023.

[J8] Jiaojiao Yu, Kunsong Zhao, Jin Liu, Xiao Liu, Zhou Xu, and Xin Wang. **Exploiting Gated Graph Neural Network for Detecting and Explaining Self-Admitted Technical Debts.** *Journal of Systems and Software (JSS), 2022, 187: 111219.* (**CCF-B, JCR Q1**).

[J7] Tian Cheng, Kunsong Zhao, Song Sun, Muhammad Mateen, and Junhao Wen. **Effort-Aware Cross-project Just-in-Time Defect Prediction Framework for Mobile Apps.** *Frontiers of Computer Science (FCS), 2022, 16(6): 166207.* (**CCF-B, JCR Q2**).

[J6] Zhiwen Xie, Runjie Zhu, Kunsong Zhao, Jin Liu, Guangyou Zhou, and Jimmy Xiangji Huang. **Dual Gated Graph Attention Networks with Dynamic Iterative Training for Cross-Lingual Entity Alignment.** *ACM Transactions on Information Systems (TOIS), 2021, 40(3): 1-30.* (**CCF-A**).

[J5] Kunsong Zhao, Zhou Xu, Meng Yan, Lei Xue, Wei Li, and Gemma Catolino. **A Compositional Model for Effort-Aware Just-In-Time Defect Prediction on Android Apps.** *IET Software, 2022, 16(3): 259-278.* (**CCF-B**).

[J4] Kunsong Zhao, Zhou Xu, Meng Yan, Tao Zhang, Dan Yang, and Wei Li. **A Comprehensive Investigation of the Impact of Feature Selection Techniques on Crashing Fault Residence Prediction Models.** *Information and Software Technology (IST), 2021, 139: 106652.* (**CCF-B, JCR Q1**).

[J3] Zhou Xu, Kunsong Zhao, Tao Zhang, Chunlei Fu, Meng Yan, Zhiwen Xie, Xiaohong Zhang, and Gemma Catolino. **Effort-Aware Just-in-Time Bug Prediction for Mobile Apps via Cross-triplet Deep Feature Embedding.** *IEEE Transactions on Reliability (TRel), 2021, 71(1): 204-220.* (**JCR Q1**).

[J2] Kunsong Zhao, Zhou Xu, Tao Zhang, Yutian Tang, and Meng Yan. **Simplified Deep Forest Model based Just-In-Time Defect Prediction for Android Mobile Apps.** *IEEE Transactions on Reliability (TRel), 2021, 70(2): 848-859.* (**JCR Q1**).

[C3] Kunsong Zhao, Jin Liu, Zhou Xu, Li Li, Meng Yan, Jiaojiao Yu, and Yuxuan Zhou. **Predicting Crash Fault Residence via Simplified Deep Forest Based on A Reduced Feature Set.** *Proceedings of the 29th IEEE/ACM International Conference on Program Comprehension (ICPC), Madrid, Spanish, May, 2021.* (**CCF-B**).

[C2] Kunsong Zhao, Zhou Xu, Meng Yan, Yutian Tang, Ming Fan, and Gemma Catolino. **Just-in-Time Defect Prediction for Android Apps via Imbalanced Deep Learning Model.** *Proceedings of the 36th ACM/SIGAPP Symposium On Applied Computing (SAC), Gwangju, Korea, March, 2021.* (**CORE-B**).

[J1] Zhou Xu[#], Kunsong Zhao[#], Meng Yan, Peipei Yuan, Ling Xu, Yan Lei, and Xiaohong Zhang. **Imbalanced Metric Learning for Crashing Fault Residence Prediction.** *Journal of Systems and Software (JSS), 2020, 170: 110763.* (**CCF-B, JCR Q1**). Invited to the 29th IEEE/ACM International Conference on Program Comprehension (ICPC) as part of the Journal First Track, Madrid, Spanish, May, 2021.

[C1] Zhiwen Xie, Runjie Zhu, Kunsong Zhao, Jin Liu, Guangyou Zhou, and Jimmy Xiangji Huang. **A Contextual Alignment Enhanced Cross Graph Attention Network for Cross-lingual Entity Alignment.** *Proceedings of the 28th International Conference on Computational Linguistics (COLING), Barcelona, Spanish, December, 2020.* (**CCF-B**).

AWARDS & GRANTS

Distinguished Artifact Reviewers Award, The 32nd ACM Conference on Computer and Communications Security (CCS), 2025.

Top Conference Travel Grant, The Hong Kong Polytechnic University, 2025.

Polkadot Blockchain Academy, Polkadot Foundation, 2024.

Outstanding Scientific Paper of Hubei Province, Hubei Association for Science & Technology, 2023.

Ethereum Foundation Academic Grant, Ethereum Foundation on Blockchain Security Research, 2023.

Outstanding graduated postgraduates, 2022.

Graph Machine Learning Task Based on DGL Framework, Global MAX Performance Cloud Computing Innovation Competition (MAXP), **First Prize**, 2021.

Huawei Scholarship, 2021.

Academic Merit Scholarship, **Second Prize**, 2020, 2021.

Link Prediction of Antiviral Drug Atlas in Coronavirus Research, China Conference on Knowledge Graph and Semantic Computing (CCKS), **First Prize**, 2020.

Outstanding Graduate Student, 2020.

Outstanding Graduates, 2019.

Joint Defense of Undergraduate Thesis, Computer Professional Talent Training Cooperation Alliance of Hubei Province, **Second Prize**, 2019.

Excellent Undergraduate Thesis, 2019.

Mathematical Contest In Modeling / Interdisciplinary Contest In Modeling, **Meritorious Winner**, 2018.

WeChat mini programs application development competition, **Third Prize in Central China**, 2018.

Central China Mathematical Modeling Competition, **Third Prize**, 2018.

Model Student of Academic Record, **First Prize**, 2018.

Excellent Student Scholarship, **First Prize**, 2018.

Excellent Scholarship for Recreational and Sports Activities, 2018.

Research and Innovation Scholarship, 2017, 2018.

China Mobile Internet Innovation Contest, **Second Prize**, 2017.

Merit Student, 2016, 2017, 2018.

Excellent Student Scholarship, **Second Prize**, 2016, 2017.

PATENTS & COPYRIGHT

Zhou Xu, Meng Yan, Weihan Zhang, Kunsong Zhao, Xiaohong Zhang, Yan Lei, Ling Xu. *A Just-In-Time Defect Prediction Method for Cross Mobile Applications based on Deep Feature Embedding*. Chinese patent CN112346974B, 2023.

Jin Liu, Kunsong Zhao, Zhiwen Xie, Xiaohui Cui, Bo Huang, Guangyou Zhou, Qiuming Kuang. *A Cross-language Entity Alignment Method based on Attention Networks of Context-aligned Enhanced Graphs*. Chinese patent CN112417159B, 2022.

Zhou Xu, Meng Yan, Yuxing Hu, Kunsong Zhao, Xiaohong Zhang, Ling Xu, Yan Lei. *A Method for Locating Software Crash Faults*. Chinese patent CN112465009A, 2021.

Jin Liu, Wang Liu, Kunsong Zhao, Houzhen Wang, Xiaohui Cui, Zhidong Shen. *Information Security Parallel System*. Chinese software registration 2020SR0989863, 2020.

TEACHING

Cyber and Internet Security (COMP5355, Lecturer: Prof. Daniel Xiapu Luo and Dr. Hao Zhou), Department of Computing, The Hong Kong Polytechnic University, Teaching Assistant, 2025 Summer.

Cyber and Internet Security (COMP5355, Lecturer: Dr. Hao Zhou and Dr. Xavier de Carné de Carnavalet), Department of Computing, The Hong Kong Polytechnic University, Teaching Assistant, 2024 Fall.

Cryptography and Blockchain (COMP6521, Lecturer: Dr. Xingye Lu), Department of Computing, The Hong Kong Polytechnic University, Teaching Assistant, 2024 Summer.

Cyber and Internet Security (COMP5355, Lecturer: Prof. Daniel Xiapu Luo and Dr. Hao Zhou), Department of Computing, The Hong Kong Polytechnic University, Teaching Assistant, 2023 Fall.

Machine Learning and Applications in Finance (COMP5564, Lecturer: Dr. Kai-Fung Chu), Department of Computing, The Hong Kong Polytechnic University, Teaching Assistant, 2023 Spring.

Software Engineering and Development (COMP5241, Lecturer: Dr. Qixin Wang), Department of Computing, The Hong Kong Polytechnic University, Teaching Assistant, 2022 Fall.

Java Object-Oriented Programming & Design, School of Computer Science, Wuhan University, Teaching Assistant, 2019 Fall.

SERVICES

The 23rd International Mining Software Repositories Conference (MSR'26), Junior Program Committee

The 33rd Network and Distributed System Security Symposium (NDSS'26), Artifact Evaluation Committee

The 32nd ACM Conference on Computer and Communications Security (CCS'25), Artifact Evaluation Committee

The 32nd Asia-Pacific Software Engineering Conference (APSEC'25), Technical Program Committee

The 33rd USENIX Security Symposium (USENIX SEC'24), Artifact Evaluation Committee

The 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'24), Reviewer

The 30th ACM Conference on Computer and Communications Security (CCS'23), Artifact Evaluation Committee

The 19th EAI International Conference on Security and Privacy in Communication Networks (SecureComm'23), External Reviewer

IEEE Transactions on Dependable and Secure Computing (TDSC), Journal Reviewer

IEEE Transactions on Knowledge and Data Engineering (TKDE), Journal Reviewer

IEEE Transactions on Multimedia (TMM), Journal Reviewer

IEEE Transactions on Reliability (TRel), Journal Reviewer

Software: Practice and Experience (SPE), Journal Reviewer

Neurocomputing, Journal Reviewer

INVITED TALKS

Type Inference from Smart Contract Bytecode, COMP Research Student Seminar, The Hong Kong Polytechnic University, November 2024.

Towards Just-in-Time Bug Detection in Mobile Apps, Macau University of Science and Technology, July 2022.