Xiao Cheng

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Education

- **University of New South Wales (UNSW Sydney)** — Sydney, Australia
  Ph.D. - Computer Science and Engineering, Software Security Analysis; — *2021 - Present*
- **Beijing University of Posts and Telecommunications** — Beijing, China
  Bachelor & Research Master - Engineering; — *2014 - 2021*

Publications (Conference)

- **(FSE'24, CCF-A, Top-Tier, ACM SIGSOFT Distinguished Paper Award)**: **Xiao Cheng**, Jiawei Ren and Yulei Sui. 2024. Fast Graph Simplification for Path-Sensitive Typestate Analysis through Tempo-Spatial Multi-Point Slicing. Proceedings of the 32st ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering. DOI: https://doi.org/10.1145/3643749
- **(ICSE'24, CCF-A, Top-Tier)**: **Xiao Cheng**, Jiawei Wang and Yulei Sui. 2024. Precise Sparse Abstract Execution via Cross-Domain Interaction. 46th International Conference on Software Engineering. DOI: https://doi.org/10.1145/3597503.3639220
- **(ISSTA'22, CCF-A, Top-Tier)**: **Xiao Cheng**, Guanqin Zhang, Haoyu Wang, and Yulei Sui. 2022. Path-Sensitive Code Embedding via Contrastive Learning for Software Vulnerability Detection. ACM SIGSOFT International Symposium on Software Testing and Analysis. DOI: https://dl.acm.org/doi/abs/10.1145/3533767.3534371
- **(OOPSLA'20, CCF-A, Top-Tier, ACM SIGSOFT Distinguished Paper Award)**: Yulei Sui, **Xiao Cheng**, Guanqin Zhang, and Haoyu Wang. 2020. Flow2Vec: value-flow-based precise code embedding. Proc. ACM Program. Lang. 4, OOPSLA. DOI: https://doi.org/10.1145/3428301
- **(ICECCS'19, CORE-A)**: **Xiao Cheng**, Haoyu Wang, Jiayi Hua, Miao Zhang, Guoai Xu, Li Yi, Yulei Sui. 2019. Static Detection of Control-Flow-Related Vulnerabilities Using Graph Embedding. 24th International Conference on Engineering of Complex Computer Systems. DOI: https://doi.org/10.1109/ICECCS.2019.00012.
- **(ICFEM'23, CORE-C)**: **Xiao Cheng**. 2023. Vulnerability Detection via Typestate-Guided Code Representation Learning. International Conference on Formal Engineering Methods. DOI: https://doi.org/10.1007/978-981-99-7584-6_22

Publications (Journal)

- **(TOSEM'24, CCF-A, Top-Tier)**: Jiawei Ren, Yulei Sui, **Xiao Cheng**, Yuan Feng and Jianjun Zhao. 2024. Dynamic Transitive Closure-Based Static Analysis through the Lens of Quantum Search. ACM Transactions on Software Engineering and Methodology. DOI: https://dl.acm.org/doi/10.1145/3644389
- **(TDSC'22, CCF-A, Top-Tier)**: **Xiao Cheng**, Xu Nie, Ningke Li, Haoyu Wang, Zheng Zheng and Yulei Sui. 2022. How About Bug-Triggering Paths? - Understanding and Characterizing Learning-Based Vulnerability Detectors. IEEE Transactions on Dependable and Secure Computing. DOI: https://doi.org/10.1109/TDSC.2022.3192419
- **(TOSEM'21, CCF-A, Top-Tier)**: **Xiao Cheng**, Haoyu Wang, Jiayi Hua, Guoai Xu, and Yulei Sui. 2021. DeepWukong: Statically Detecting Software Vulnerabilities Using Deep Graph Neural Network. ACM Transactions on Software Engineering and Methodology. DOI: https://doi.org/10.1145/3436877

Teaching Experience

- **41128 Software Analysis Studio** — On campus
  Subject lecturer — *Fall 2022 & 2023*
  - **Teaching software analysis**: Software Analysis a.k.a Program analysis is the process of automatically analyzing the behavior of computer programs such as correctness, robustness, safety and security.
- **Software Analysis, SSTC Software Engineering Studio** — Remote
  Subject coordinator and lecturer — *Spring 2022*

Services

- Web Program Chair of LCTES 2024
- Artifact Evaluation Committee of ISSTA 2024/2023, SAS 2023, FormaliSE 2024/2023
- (Co-)Reviewer of ICSE 2024/2021, ASE 2023/2022, FSE 2022, ISSRE 2022, SCAM 2021, CSUR 2021, TOSEM, TOPLAS, TSE

Honors and Awards

- 2024, ACM SIGSOFT Distinguished Paper Award (FSE)
- 2024, Development and Research Training Grant (DRTG), UNSW
- 2024, ACM SIGSOFT CAPS Travel Grant
- 2022, Apple Scholars in AI/ML PhD fellowship nomination
- 2021, International Research Training Program Scholarship (IRTP) Offer
- 2020, NASAC prototype competition third prize
- 2020, ACM SIGPLAN Distinguished Paper Award (OOPSLA)

Projects

- **SVF**: A source code analysis framework that enables interprocedural dependence analysis for LLVM-based languages.
- **Teaching Software Analysis**: An online open courses for learning software analysis via SVF.
- **DeepWukong**: a graph neural network based software vulnerability detector.