

Xiaokun Luan

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EDUCATION

Ph.D. Candidate

Sep. 2021 - Present

Applied Mathematics, Peking University, Beijing, China

Bachelor of Science

Sep. 2017 - June 2021

Information and Computational Science, Peking University, Beijing, China

RESEARCH INTERESTS

- Trustworthy AI & AI Security
- Content Provenance and IP Protection for Large Language Models (LLMs)
- Model Watermarking and Fingerprinting
- Formal Methods and Automated Theorem Proving

PUBLICATIONS

Luan, Xiaokun and Meng Sun (2021). “Modeling and Verification of CKB Consensus Protocol in Coq”. In: *2021 IEEE 21st International Conference on Software Quality, Reliability and Security Companion (QRS-C)*, pp. 660–667. DOI: [10.1109/QRS-C55045.2021.00100](https://doi.org/10.1109/QRS-C55045.2021.00100).

Luan, Xiaokun et al. (2021). “Using LSTM to Predict Tactics in Coq”. In: *SEKE*, pp. 132–137. URL: <https://doi.org/10.18293/SEKE2021-047>.

Li, Xiangyu et al. (2023). “MedTiny: Enhanced Mediator Modeling Language for Scalable Parallel Algorithms”. In: *2023 IEEE 23rd International Conference on Software Quality, Reliability, and Security Companion (QRS-C)*, pp. 451–460. DOI: [10.1109/QRS-C60940.2023.00075](https://doi.org/10.1109/QRS-C60940.2023.00075).

Sun, Weidi et al. (2023). “HeatC: A Variable-Grained Coverage Criterion for Deep Learning Systems”. In: *Dependable Software Engineering. Theories, Tools, and Applications: 9th International Symposium, SETTA 2023, Nanjing, China, November 27–29, 2023, Proceedings*. Nanjing, China: Springer-Verlag, pp. 243–261. ISBN: 978-981-99-8663-7. DOI: [10.1007/978-981-99-8664-4_14](https://doi.org/10.1007/978-981-99-8664-4_14). URL: https://doi.org/10.1007/978-981-99-8664-4_14.

Cai, Yufan et al. (Jan. 2025). “Automated Program Refinement: Guide and Verify Code Large Language Model with Refinement Calculus”. In: *Proc. ACM Program. Lang.* 9.POPL. DOI: [10.1145/3704905](https://doi.org/10.1145/3704905). URL: <https://doi.org/10.1145/3704905>.

Luan, Xiaokun, David Sanan, et al. (June 2025). “Why the Proof Fails in Different Versions of Theorem Provers: An Empirical Study of Compatibility Issues in Isabelle”. In: *Proc. ACM Softw. Eng.* 2.FSE. DOI: [10.1145/3715787](https://doi.org/10.1145/3715787). URL: <https://doi.org/10.1145/3715787>.

Luan, Xiaokun, Zeming Wei, et al. (2025). “Robust and Efficient Watermarking of Large Language Models Using Error Correction Codes”. In: *Proc. Priv. Enhancing Technol.* 2025, pp. 183–200. DOI: [10.56553/popets-2025-0126](https://doi.org/10.56553/popets-2025-0126).

Luan, Xiaokun, Xiyue Zhang, Jingyi Wang, et al. (2025). “Protecting Deep Learning Model Copyrights With Adversarial Example-Free Reuse Detection”. In: *IEEE Transactions on Neural Networks and Learning Systems*, pp. 1–14. DOI: [10.1109/TNNLS.2025.3578664](https://doi.org/10.1109/TNNLS.2025.3578664).

Luan, Xiaokun et al. (2025). “MedTiny Code Generation for Enhancing RegLang Smart Contract Reliability”. In: *Proceedings of the 40th ACM/SIGAPP Symposium on Applied Computing*. SAC ’25. Catania International Airport, Catania, Italy: Association for Computing Machinery, pp. 1666–1673. ISBN: 9798400706295. DOI: [10.1145/3672608.3707846](https://doi.org/10.1145/3672608.3707846). URL: <https://doi.org/10.1145/3672608.3707846>.

Xu, Qiyuan et al. (Jan. 2025). “Generically Automating Separation Logic by Functors, Homomorphisms, and Modules”. In: *Proc. ACM Program. Lang.* 9.POPL. DOI: [10.1145/3704903](https://doi.org/10.1145/3704903). URL: <https://doi.org/10.1145/3704903>.

Zhang, Yedi et al. (2025). “Position: Trustworthy AI Agents Require the Integration of Large Language Models and Formal Methods”. In: *Forty-second International Conference on Machine Learning Position Paper Track*. URL: <https://openreview.net/forum?id=wkisIZbntD>.

RESEARCH EXPERIENCE

AI Engineer Intern	June 2025 - Sep. 2025
Trustworthy Theory, Technology & Engineering Lab, Huawei	
Visiting Researcher	Jan. 2024 - June 2024
Cyber Security Lab, Nanyang Technological University, Singapore	

TEACHING EXPERIENCE

Teaching Assistant	Peking University, School of Mathematical Sciences
– Artificial Intelligence (Spring 2025)	
– Programming Techniques and Methodology (Fall 2024)	
– Set Theory and Graph Theory (Spring 2023)	
– Theoretical Computer Science (Fall 2021)	

AWARDS & HONORS

ACM SIGSOFT Distinguished Paper Award at FSE	2025
Elite Doctoral Program at Peking University	2025
Zhuang Qitai Scholarship	2022, 2023
Outstanding Research Award at Peking University	2022
Beijing Outstanding Graduate & Peking University Outstanding Graduate	2021
National Scholarship for Undergraduate Students	2020
Merit Student at Peking University	2020
First Prize in Chinese High School Mathematics League	2016