

Sen Fang

☎ (+1) 984-379-1827 • ✉ sfang9@ncsu.edu • 🌐 tomasandersonfang.github.io

Research Interests

I am passionate about advancing research at the cutting edge of large language models (LLMs) and automated software engineering. Recently, I have focused on leveraging LLMs to automate software engineering tasks, including program repair (using fine-tuning with tailored code representations and LoRA), code optimization (fine-tuning with diff-based output), test data generation (multi-level prompting), and bug-report-driven maintenance (pre-training and fine-tuning). My current research spans three main areas: 1) LLMs security/robustness in code; 2) AI agents for automated software development; and 3) LLMs for AI-centric smart contract development.

Education

NC State University

Ph.D. in Computer Science

2024-2029 (Expected)

Advisor: Bowen Xu

Central China Normal University

MSc in Electronics and Communication Engineering

2018-2020

Advisor: Shaocheng Qu

Thesis: Research on Machine Translation Model Based on Self-Attention Mechanism

Wuhan Polytechnic University

BSc in Electronic Information Engineering

2014-2018

Advisor: Lei Yang

Thesis: Performance Comparison of Direct Sequence Spread Spectrum Systems under Different Modulation Methods

Outstanding Student 2018.

Research Experience

Hedra

Machine Learning Engineer

2025.05-2025.08

Leader: Hongwei Yi

KTH Royal Institute of Technology

Research Engineer

2023.03-2024.03

Advisor: Martin Monperrus

Macau University of Science and Technology

Others

2020.09-2022.11

Advisor: Tao Zhang

Publications

Published.....

1. André Silva*, **Fang, Sen***, Martin Monperrus. "RepairLLaMA: Efficient Representations and Fine-Tuned Adapters for Program Repair". IEEE Transactions on Software Engineering (2025) (*: Equal contribution)(Code: <https://github.com/ASSERT-KTH/repairllama>)
2. Yao Li, **Fang, Sen**, etc. "Enhancing Android Malware Detection: The Influence of ChatGPT on Decision-centric Tasks" ACM Transactions on Software Engineering and Methodology. 2025. (Ranking: A*)
3. Chen, Zimin, **Fang, Sen**, and Martin Monperrus. "Supersonic: Learning to generate source code optimizations in C/C++." IEEE Transactions on Software Engineering (2024). (Code: <https://github.com/ASSERT-KTH/Supersonic>)(Ranking: A*)
4. **Fang, Sen**, Tao Zhang, Youshuai Tan, He Jiang, Xin Xia, and Xiaobing Sun. "RepresentThemAll: A Universal Learning Representation of Bug Reports." In Proceedings of the 45th International Conference on Software Engineering. 2023. (Code: <https://github.com/ICSE-2023/RepresentThemALL>)(Ranking: A*)
5. Yuan, Dawei*, **Fang, Sen***, Tao Zhang, Zhou Xu, and Xiapu Luo. "Java Code Clone Detection by Exploiting Semantic and Syntax Information From Intermediate Code-Based Graph." IEEE Transactions on Reliability (2022). (*: Equal contribution)(Ranking: A)
6. **Fang, Sen**, Tao Zhang, You-Shuai Tan, Zhou Xu, Zhi-Xin Yuan, and Ling-Ze Meng. "PRHAN: Automated Pull Request Description Generation Based on Hybrid Attention Network." Journal of Systems and Software 185 (2022): 111160. (Code: <https://github.com/TomasAndersonFang/PRHAN>)(Ranking: A)
7. **Fang, Sen***, You-shuai Tan*, Tao Zhang, Zhou Xu, and Hui Liu. "Effective prediction of bug-fixing priority via weighted graph convolutional networks." IEEE Transactions on Reliability 70, no. 2 (2021): 563-574. (*: Equal

- contribution)(Code: <https://github.com/TanYoushuai123/PPWGCN>)(Ranking: A)
8. **Fang, Sen**, You-Shuai Tan, Tao Zhang, and Yepang Liu. "Self-attention networks for code search." Information and Software Technology 134 (2021): 106542. (Code: <https://github.com/TomasAndersonFang/SANCS>)(Ranking: A)
 9. Tan, Youshuai; Chen, Jinfu; Shang, Weiyi; Zhang, Tao; **Fang, Sen**; Luo, Xiapu; Chen, Zijie; Qi, Shuhao. "STRE: An Automated Approach to Suggesting App Developers When to Stop Reading Reviews." IEEE Transactions on Software Engineering.(Ranking: A*)
 10. Li, Yao; Zhang, Tao; Luo, Xiapu; Cai, Haipeng; **Fang, Sen**; Yuan, Dawei. "Do Pre-trained Language Models Indeed Understand Software Engineering Tasks?" IEEE Transactions on Software Engineering.(Ranking: A*)
 11. Huang, Youwei, **Fang, Sen**, Jianwen Li, Jiachun Tao, Bin Hu, Tao Zhang. "Deep Smart Contract Intent Detection." In Proceedings of the 32nd IEEE International Conference on Software Analysis, Evolution and Reengineering. 2025. (Code: <https://gitlab.com/web3se/smartintent>)(Ranking: A)
 12. Benoit Baudry; Khashayar Etemadi; **Fang, Sen**, etc. "Generative AI to Generate Test Data Generators" (IEEE Software). (Sorted by alphabet) (Code: <https://github.com/ASSERT-KTH/lo1lm>)(Ranking: B)

Submitting.....

1. **Fang, Sen**, Weiyuan Ding, Antonio Mastropaolo, Bowen Xu. "Smaller = Weaker? Benchmarking Robustness of Quantized LLMs in Code Generation" (Submitted to TSE).
2. **Fang, Sen**, Weiyuan Ding, Bowen Xu. "EVALOOP: Assessing LLM Robustness in Programming from a Self-consistency Perspective" (Submitted to FSE 26).

Technical skills

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| Programming Languages | Python, C/C++, Java, \LaTeX |
| Frameworks | PyTorch, transformers, TensorFlow, JAX, NumPy, SLURM |
| Operating Systems | Unix/Linux, Windows |
| Development Environments | Linux Toolchain, Jupyter, PyCharm, Visual Studio Code |