

闫明

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🎓 <https://scholar.google.com/citations?user=Nye2GwkAAAAJ&hl=zh-CN>

研究兴趣: 深度学习库、深度学习编译器等深度学习系统基础软件的测试与定位; 芯片设计程序测试



教育经历

- 博士生, 软件工程, 智能与计算学部, 天津大学 2021.09 - 2025.07
导师: 陈俊洁副教授
- 硕士, 软件工程, 智能与计算学部, 天津大学 2018.09 - 2021.07
导师: 王赞教授, 陈俊洁副教授
- 学士, 软件工程, 软件学院, 天津大学 2014.09 - 2018.07
导师: 王赞教授

实习及项目经历

- 决策与推理部门, 华为诺亚方舟实验室 2021.04 - 2022.05
实习内容: 聚焦芯片设计程序测试用例生成, 致力于提升最后一公里功能覆盖, 同时显著降低工业实践中测试时间成本与人力成本
实习成果: 针对芯片设计程序的测试技术 LMT 已在华为内部 6 个模块、8 个特性上进行落地使用, 相关研究成果发表在 CCF-A 类会议 ICSE 2023 (SEIP track)
- 芯片验证用例生成技术研究, 华为 2021 - 2022 (结题, 学生负责人)
相关技术落地使用, 并申请潜在高水平专利, 合作项目获优秀成果奖,
- 基于模型变异的 AI 框架 Fuzz 技术, 华为 2022-2023 (结题, 学生负责人)
利用模型转换及有导向模型变异技术, 采用差分测试对国产深度学习框架-昇思 (MindSpore) 进行测试, 检测到数十个模型预测不一致性错误
- 面向 EDA 测试用例生成的大语言模型技术, 华为 2024-2025 (在研, 学生负责人)

论文发表

“+”: 第一学生作者/导师一作, “*”: 通讯作者.

1. [ICSE-SEIP'23] Achieving Last-Mile Functional Coverage in Testing Chip Design Software Implementations. (CCF-A)

Ming Yan, Junjie Chen*, Hangyu Mao, Jiajun Jiang, Jianye Hao, Xingjian Li, Zhao Tian, Zhichao Chen, Dong Li, Zhangkong Xian, Yanwei Guo, Wulong Liu, Bin Wang, Yuefeng Sun, Yongshun Cui.

In: *The 45th International Conference on Software Engineering, SEIP track, May 14-20, 2023: 343-354, Melbourne Convention and Exhibition Centre, Melbourne, Australia.*

2. **[FSE'21] Exposing Numerical Bugs in Deep Learning via Gradient Back-propagation. (CCF-A)**
Ming Yan, Junjie Chen*, Xiangyu Zhang, Lin Tan, Gan Wang, Zan Wang.
In: The 29th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, August 23-28, 2021, 627-638, Athens, Greece. ACM SIGSOFT Distinguished Paper Award Nominee
3. **[FSE'20] Deep Learning Library Testing via Effective Model Generation. (CCF-A)**
Zan Wang, Ming Yan†, Junjie Chen*, Shuang Liu, Dongdi Zhang.
In: The 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, November 8-13, 2020, 788-799, Sacramento, California, United States. ACM SIGSOFT Distinguished Paper Award
4. **[JSEP'23] Revisiting Deep Neural Network Test Coverage from the Test Effectiveness Perspective. (CCF-B)**
Ming Yan, Junjie Chen*, Xuejie Cao, Zhuo Wu, Yuning Kang, Zan Wang.
In: Journal of Software: Evolution and Process 36, no. 4 (2024): e2561.
5. **[Journal of Software'20] Survey on testing of deep neural networks. (CCF-B)**
Zan Wang, Ming Yan†, Shuang Liu*, Junjie Chen, Dongdi Zhang, Zhuo Wu, Xiang Chen.
In: Journal of Software, 2020,31(5):1255-1275 (in Chinese).
6. **[IST'23] Stratified random sampling for neural network test input selection. (CCF-B)**
Zhuo Wu, Zan Wang, Junjie Chen, Hanmo You, Ming Yan, Lanjun Wang*.
In: Information and Software Technology, 165, (2023): 107331.
7. **[Journal of Software'23] Test Case Selection for Deep Neural Networks via Data Mutation. (CCF-B)**
Xuejie Cao, Junjie Chen*, Ming Yan, Hanmo You, Zhuo Wu, Zan Wang.
In: Journal of Software, 2023, pages to appear (in Chinese).
8. **[ASE-NIER'22] An Empirical Study on Numerical Bugs in Deep Learning Programs.**
Gan Wang, Zan Wang, Junjie Chen*, Xiang Chen, Ming Yan.
In: The 37th IEEE/ACM International Conference on Automated Software Engineering, NIER track, October 10-14, 2022, Article 173, 1-5, Oakland Center, Michigan, USA
9. **[TOSEM'20] Practical Accuracy Estimation for Efficient Deep Neural Network Testing. (CCF-A)**
Junjie Chen, Zhuo Wu, Zan Wang, Hanmo You, Lingming Zhang, Ming Yan.
In: ACM Transactions on Software Engineering and Methodology (TOSEM), 2020, 29(4): 1-35. (Selected for ESEC/FSE 2021 Journal-First Presentation)

荣誉奖项

■ 华为奖学金, 华为	2024
■ CCF 中国软件大会优秀博士生论坛, 中国计算机学会	2023
■ 优秀贡献奖, 华为-天津大学人工智能创新实验室	2023
■ 中国电子学会优秀硕士学位论文, 电子学会	2022
■ 天津大学优秀硕士学位论文, 天津大学	2021
■ 国家奖学金, 天津大学	2020
■ 创新创业之星, 天津大学智算学部	2020
■ ACM SIGSOFT 杰出论文奖, ACM	2020
■ 天津大学优秀毕业生 (本/硕), 天津大学	2018/2021

学术服务经历

- 2024: ECOOP Artifact Evaluation Committee
- 2023: ISSTA Artifact Evaluation Committee
- 2024: ISSTA, *co-reviewer*
- 2023: ESEC/FSE, ASE, ICSE (2024), *co-reviewer*
- 2022: ESEC/FSE, ASE, *co-reviewer*
- 2021: ISSTA, TDSC, *co-reviewer*
- 2020: ISSTA Tool Demo, JCST, COMPSAC, Journal of Software, *co-reviewer*