

JIESHAN CHEN

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RESEARCH INTEREST

My work lies in the fields of software engineering, deep learning, and human-computer interaction. My research focus on guaranteeing and supporting responsible software development by design using AI/ML techniques. Specifically, my research includes examining and mitigating accessibility and ethical issues in apps and enhancing the productivity during software development using responsible AI techniques. Total Citation: 708.

EDUCATION

Australian National University

August 2018 – December 2022

Ph.D. in Computer Science

Thesis: Improving the Efficiency of Mobile User Interface Development through Semantic and Data-Driven Analyses

Supervisors: Zhenchang Xing

Sun Yat-Sen University

August 2014 – June 2018

Bachelor in Statistics, School of Mathematics

Honors Graduate

Overall GPA: **3.8/4.0** (89/100)

RESEARCH EXPERIENCE

CSIRO's Data61, Australia

January 2022– Present

Research Scientist – Software Engineering for AI (SE4AI) Team

- *Lead of sub-team UI intelligence in SE4AI Team.*
- *Lead Immersive AI cluster initiatives at Data61.*

Apple Inc., USA (Remotely from Australia due to Covid)

March 2021– September 2021

AI/ML Research Intern - Machine Learning + UI Understanding Team

Project Topic: Enhancing the accessibility for screen readers and mobile users (finished two papers, one accepted at CHI'22)

HONORS & AWARDS

CSIRO SCS Biannual Awards - Women in Science Career Award

June 2023

ACM SIGSOFT Distinguished Paper Award in ICSE 2020

July 2020

Google PhD Fellowship Nomination

2020

ANU HDR Fee Remission Merit Scholarship

2018-2022

ANU Ph.D. Scholarship (International) Full-Time

2018-2021

Honors Graduate of Sun Yat-Sen University

June 2018

IMPACTFUL TOOL AND WORK

UIED (User Interface Element Detection) <http://www.ued.online/>

- Total Citation: 174, GitHub Stars: 336, Fork: 98
- Integrated into an industrial testing tool, VTest, for daily testing of a dozen popular industrial apps, such as Taobao in Alibaba, a highly popular ecommerce app in China, with about one billion monthly active users, Alipay, a highly popular payment app with over one billion users and Software Green Alliance to provide testing services for top smartphone vendors and app vendors in China.

Enhancing the accessibility for screen readers and mobile users

- Published two papers on this topic, one of them is awards SIGSOFT Distinguished Paper Award (C.2)

- Incorporated to iOS'14 as a new feature named “screen recognition” in VoiceOver which significantly improves the accessibility of previously inaccessible apps from operating system level. Based on a survey on the usage of screen reader in 2019, 47% of screen reader users use VoiceOver.

PEER-REVIEWED CONFERENCE PUBLICATIONS – Research/Technical Track

[C. 8] **Where is it? Tracing the Vulnerability-relevant Files from Vulnerability Reports**

Jiamou Sun, Jieshan Chen, Zhenchang Xing, Qinghua Lu, Xiwei Xu, Liming Zhu

Proceedings of the ACM/IEEE International Conference on Software Engineering (ICSE 2024)

Core Ranking A*, Acceptance rate: 22.3% (234/1051)

[C. 7] **Is It a Trap? A Large-scale Empirical Study and Comprehensive Assessment of Online Automated Privacy Policy Generators for Mobile Apps**

Shidong Pan, Dawen Zhang, Mark Staples, Zhenchang Xing, Jieshan Chen, Xiwei Xu, and Thong Hoang

Proceedings of the USENIX Security Symposium (USENIX 2024)

Core Ranking A*

[C. 6] **Unveiling the Tricks: Automated Detection of Dark Patterns in Mobile Applications**

Jieshan Chen, Jiamou Sun, Sidong Feng, Zhenchang Xing, Qinghua Lu, Xiwei Xu, Chunyang Chen

Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2023)

Core Ranking A*, Acceptance Rate 25% (121/483), Cite 4 (Just published in Nov 2023), **First work** on automated detection on deceptive patterns.

[C. 5] **Let's Chat to Find the APIs: Connecting Human, LLM and Knowledge Graph through AI Chain**

Qing Huang, Zhenyu Wan, Zhenchang Xing, Changjing Wang, Jieshan Chen, Xiwei Xu, Qinghua Lu

Proceedings of the IEEE/ACM International Conference on Automated Software Engineering (ASE 2023)

Core Ranking A*, Acceptance Rate 20.3% (134/661)

[C. 4] **Towards Complete Icon Labeling in Mobile Applications**

Jieshan Chen, Amanda Swearngin, Jason Wu, Titus Barik, Jeffrey Nichols and Xiaoyi Zhang.

Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2022)

Core Ranking A*, Cite 17, **Acceptance Rate 12.5%** (324/2,597), **Incorporated into iOS 14.**

[C. 3] **Object Detection for Graphical User Interface: Old Fashioned or Deep Learning or a Combination?**

Jieshan Chen, Mulong Xie, Zhenchang Xing, Chunyang Chen, Xiwei Xu, Liming Zhu and Guoqiang Li.

Proceedings of the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2020)

Core Ranking A*, Cite **122**, Acceptance Rate 28% (101/360).

Incorporated into industrial tools (over 1B monthly active users)

[C. 2] **Unblind Your Apps: Predicting Natural-Language Labels for Mobile GUI Components by Deep Learning.**

Jieshan Chen, Chunyang Chen, Zhenchang Xing, Xiwei Xu, Liming Zhu, Guoqiang Li, and Jinshui Wang.

Proceedings of the ACM/IEEE International Conference on Software Engineering (ICSE 2020)

Core Ranking A*, Cite **115**, Acceptance Rate 20.9% (129/617)

ACM SIGSOFT Distinguished Paper Award

[C. 1] **Ensemble Application of Convolutional and Recurrent Neural Networks for Multi-label Text Categorization.**

Guibin Chen, Deheng Ye, Zhenchang Xing, Jieshan Chen, and Erik Cambria.

Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN 2017)

Core Ranking A, Cite **296**

PEER-REVIEWED JOURNAL PUBLICATIONS

- [J. 2] **Prompt Sapper: A LLM-Empowered Production Tool for Building AI Chains**
Yu Cheng, Jieshan Chen*, Qing Huang, Zhenchang Xing, Xiwei Xu, Qinghua Lu
ACM Transactions on Software Engineering and Methodology (TOSEM 2024), Cite 7
- [J. 1] **Wireframe-based UI Design Search through Image Autoencoder.**
Jieshan Chen, Chunyang Chen, Zhenchang Xing, Xin Xia, Liming Zhu, John Grundy, and Jinshui Wang.
ACM Transactions on Software Engineering and Methodology (TOSEM 2020)
Core Ranking A*, Impact Factor: 2.674, Cite 79

OTHER PUBLICATIONS

- [O. 6] **GPTVoiceTasker: LLM-Powered Virtual Assistant for Smartphone**
Minh Duc Vu, Han Wang, Zhuang Li, Jieshan Chen, Shengdong Zhao, Zhenchang Xing, Chunyang Chen
arXiv preprint arXiv:2401.14268
- [O. 5] **Designing with Language: Wireframing UI Design Intent with Generative Large Language Models**
Sidong Feng, Mingyue Yuan, Jieshan Chen, Zhenchang Xing, Chunyang Chen
arXiv preprint arXiv:2312.07755
- [O. 4] **Let's Discover More API Relations: A Large Language Model-based AI Chain for Unsupervised API Relation Inference**
Qing Huang, Yanbang Sun, Zhenchang Xing, Yuanlong Cao, Jieshan Chen, Xiwei Xu, Huan Jin, Jiaxing Lu
arXiv preprint arXiv:2311.01266
- [O. 3] **Towards Real Smart Apps: Investigating Human-AI Interactions in Smartphone On-Device AI Apps**
Jason Ching Yuen Siu, Jieshan Chen*, Yujin Huang, Zhenchang Xing, Chunyang Chen
arXiv preprint arXiv:2307.00756
- [O. 2] **Extracting Replayable Interactions from Videos of Mobile App Usage**
Jieshan Chen, Amanda Swearngin, Jason Wu, Titus Barik, Jeffrey Nichols and Xiaoyi Zhang.
arXiv preprint arXiv:2207.04165
- [O. 1] **UIED: A Hybrid Tool for GUI Element Detection**
Mulong Xie, Sidong Feng, Zhenchang Xing, Jieshan Chen, Chunyang Chen
Proceedings of the ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering – Companion (ESEC/FSE 2020 - Tool Demo)
Cite 59

* means corresponding authors

MENTORSHIP

PhD Student

- (2023 – Present, CSIRO's Data61 & UNSW) Mingyue Yuan (Co-supervised with Aaron Quigley, Zhenchang Xing, Gelareh Mohammadi)

Vacation Student

- (2023 – Present, CSIRO's Data61) Zewei Shi

Research Engineer

- (2023 – Present, CSIRO's Data61) Dustin Minh Duc Vu

Master/Bachelor students – final year project

- (2023 – Present, Jiangxi Normal University) Yu Cheng
- (2023 UNSW) Wenbo Zou

- (2023 Monash) Ziqi Zhao
- (2022 Monash) Jason Ching Yuen Siu (wrote one paper)
- (2020-2021 ANU) Xincheng Xu, Yukang Liu
- (2019-2020 ANU) Zhaowen Xu, Kexin Zhang, Mulong Xie (published FSE2020),
- (2018-2019 ANU) Kai Xi

Research Courses

- (2023 Monash – FIT 4701) Alex Zhou, Sam Howard, Nobert Bayer, Yicheng Peng, Prithviram Prabhuram, Chen Liu (wrote one paper)

SERVICE

Program Committee

- ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA'24)
- International Conference on Software Engineering (ICSE'25)
- IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER'24 ERA Track)
- ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2023-SRC Track)
- IEEE/ACM International Conference on Automated Software Engineering (ASE'23)
- ACM international joint conference on pervasive and ubiquitous computing (UbiComp/ISWC'23 Posters and Demos)
- International Conference on Software and System Processes (ICSSP'23)
- IEEE International Symposium on Software Reliability Engineering (ISSRE'22- Industry Track)
- ACM CHI Conference on Human Factors in Computing Systems (CHI'22-Computational UI Workshop)
- The Mining Software Repositories (MSR'22-Shadow PC, MSE'23-Junior PC)

Reviewer

- IEEE Transactions on Software Engineering and Methodology (TOSEM)
- IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR'23)
- ACM SIGCHI Conference on Computer-Supported Cooperative Work & Social Computing (CSCW '24)
- ACM CHI Conference on Human Factors in Computing Systems (CHI'22, CHI'23, CHI'24)
- The Mining Software Repositories (MSR'22, MSR'23)
- ACM international joint conference on pervasive and ubiquitous computing (UbiComp'22)
- International Journal of Human-Computer Interaction (IJHCI'22)
- IEEE International Symposium on Software Reliability Engineering (ISSRE'22)
- ACM Symposium on User Interface Software and Technology (UIST'22)
- IEEE Transactions on Software Engineering (TSE'22, TSE '23)
- Information and Software Technology (IST Journal'21)