

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 by 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.

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 and Chunyang Chen

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 *January 2022– Present*

Research Scientist – Software Engineering for AI (SE4AI)

- Designed a dark pattern detection system and implement into an Android app.
- Supervised students to investigate how designers design the AI apps to allow better interact with the end-users, and summarized three primary types of interaction patterns, namely minimal feedback, general feedback, and fine-grained feedback, and ten secondary and nine tertiary patterns.
- Presented dark patterns demo to different stakeholders and companies.

Apple Inc. *March 2021– September 2021*

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

- Prototyped a system using different strategies for enhancing 100% icon accessibility for screen readers (accepted at CHI'22)
- Prototyped a system to extract interactions from usage recordings to assist developers and end-users (wrote a paper and uploaded to ArXiv)

Guangzhou, Haolan Information Technology Co., Ltd *November 2017 – March 2018*

Artificial Intelligence Research Intern

Project Topic: Chinese Medicine's Image Recognition Project based on Deep Learning

- Collaborated in a six-person team of software development engineers, algorithm engineers to develop an Android application for instantly identifying the Chinese traditional herbal medicine.
- Implemented Image Enhancement Technology to augment the sparse raw data (150 pictures, 14 classes), developed image classification model achieving 95% accuracy in testing data; received great feedback from the client.

Guangdong Province Key Laboratory of Computational Science *July 2016 – November 2016*

Data Mining Team – Researcher

Project Topic: Efficient Movie Recommendation System for Large-Scale Dataset

- Implemented Matrix Factorization Model in C & Python for training the large-scale rating matrix from Netflix.

- Utilized MPI to parallelize the training process, up to 25 times faster than the original one.
- Optimized the model by an online learning framework, Alternating Direction Method of Multipliers (ADMM), to quickly adapt the model to new records.

MENTORSHIP

PhD Student

- Mingyue Yuan (Feb. 2023-) CSIRO's Data61 & University of New South Wales (Co-supervised with Aaron Quigley, Zhenchang Xing, Gelareh Mohammadi)

Master/Bachelor students – final year project

- (2023 Monash) Ziqi Zhao
- (2022 Monash) Jason Siu (will submit paper to UIST2023)
- (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

- (2023-2024 Monash – FIT 4701) Alex Zhou, Sam Howard, Nobert Bayer, Yicheng Peng, Prithviram Prabhuram, Chen Liu

SERVICE

Program Committee

- 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 Conference on Virtual Reality and 3D User Interfaces (IEEE VR'23)
- ACM CHI Conference on Human Factors in Computing Systems (CHI'22, CHI'23)
- 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)

HONORS & AWARDS

CSIRO SCS Biannual Awards - Women in Science Career Award	<i>June 2023</i>
ACM SIGSOFT Distinguished Paper Award in ICSE 2020	<i>July 2020</i>
Google PhD Fellowship Nomination	<i>2020</i>
ANU HDR Fee Remission Merit Scholarship	<i>2018-2022</i>
ANU Ph.D. Scholarship (International) Full-Time	<i>2018-2021</i>
Honors Graduate of Sun Yat-Sen University	<i>June 2018</i>
Second Class Scholarship of Sun Yat-Sen University (Top 10%)	<i>2017</i>
Meritorious Winners in Interdisciplinary Contest in Modeling	<i>January 2017</i>
The Most Commercial Potential Award in Intel Cup Parallel Application Challenge	<i>October 2016</i>
Second Prize in China Undergraduate Mathematical Contest in Modeling	<i>September 2016</i>
Third Class Scholarship of Sun Yat-Sen University (Top 15%)	<i>2016</i>
Second Class Scholarship of Sun Yat-Sen University (Top 10%)	<i>2015</i>

PUBLICATIONS

[UIST 2023] 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

To appear

[Preprint 2023] 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

July 2023. [PDF](#)

[Preprint 2023] Prompt Sapper: A LLM-Empowered Production Tool for Building AI Chains

Yu Cheng, Jieshan Chen, Qing Huang, Zhenchang Xing, Xiwei Xu, Qinghua Lu

June 2023. [PDF](#)

[Preprint 2022] Extracting Replayable Interactions from Videos of Mobile App Usage

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

July 2022. [PDF](#)

[CHI 2022] Towards Complete Icon Labeling in Mobile Applications

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

[PDF](#) · [Talk](#). Acceptance Rate 12.5% (324/2,597)

[ESEC/FSE 2020] 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.

[PDF](#) · [Tool](#) · [Video](#) · [Code](#) · Acceptance Rate 28% (101/360)

[TOSEM 2020] Wireframe-based UI Design Search through Image Autoencoder.

Jieshan Chen, Chunyang Chen, Zhenchang Xing, Xin Xia, Liming Zhu, John Grundy, and Jinshui Wang.

Present in ICSE 2021.

[PDF](#) · [Video](#) · [Code](#)

[ICSE 2020] 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.

ACM SIGSOFT Distinguished Paper Award

[PDF](#) · [Video](#) · [Code](#) · Acceptance Rate 20.9% (129/617)

[IJCNN 2017] Ensemble Application of Convolutional and Recurrent Neural Networks for Multi-label Text Categorization.

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

[PDF](#)