

# Tao Zhang

*Ph.D., Professor*

## Contact Information

Affiliation: School of Computer Science and Engineering, Macau University of Science and Technology  
Office: Block A, Room #321  
Phone: +853 88973009  
E-Mail: tazhang@must.edu.mo  
Homepage: <https://cszhangtao.github.io>

## Education

- Doctor of Philosophy (09/2008-02/2013)  
Department of Computer Science and Engineering, University of Seoul, Seoul, South Korea  
Advisor: Prof. Byungjeong Lee  
Dissertation: A Bug Triage and Localization Technique Based on Bug Reports Classification
- Master of Engineering (09/2005-03/2008)  
College of Software, Northeastern University, Shenyang, China  
Advisor: Prof. Chaowan Yin  
Thesis: Research and Implementation of Globus Sandglass Model Based Steel Transportation Service System
- Bachelor of Science in Engineering (09/2000-07/2005)  
Department of Automation, Northeastern University, Shenyang, China

## Teaching and Research Experience

- Professor (07/2025-Present), School of Computer Science and Engineering, Macau University of Science and Technology, Macao SAR
- Associate Professor (09/2019-06/2025), School of Computer Science and Engineering, Macau University of Science and Technology, Macao SAR
- Associate Professor (12/2016-08/2019), College of Computer Science and Technology, Harbin Engineering University, Harbin, China
- Lecturer (02/2016-12/2016), School of Computer Science, Nanjing University of Posts and Telecommunications, Nanjing, China
- Postdoctoral Fellow (11/2014-11/2015), Department of Computing, The Hong Kong Polytechnic University, Hong Kong SAR
- Postdoctoral Fellow (03/2014-08/2014), Faculty of Computer Science and Information Technology, University of Malaya, Kuala Lumpur, Malaysia
- Research Professor (03/2013-02/2014), Department of Computer Science and Engineering, University of Seoul, Seoul, South Korea

## Industrial Experience

- Software Engineer (03/2008-07/2008), Division of Network Security, Neusoft, China

- Intern (07/2007-11/2007), Division of Network Security, Neusoft, China

## Honors and Awards

- Fellow, British Computer Society (BCS), February 2026
- Distinguished Member, China Computer Federation (CCF), September 2025
- Top Reviewer Award 2023, Journal of Systems and Software (JSS), April 2024
- Distinguished Reviewer in 2023, ACM Transactions on Software Engineering and Methodology (TOSEM), February 2024
- Top Reviewer Award 2020, Information and Software Technology (IST), May 2021
- Senior Member, ACM, October 2020
- Senior Member, IEEE, February 2020
- Senior Member, China Computer Federation (CCF), January 2019
- Best Paper Award, 16th Korea Conference on Software Engineering (KCSE), February 2014
- Honor Prize, 18th Samsung HumanTech Paper Award, February 2012
- Bronze Prize, IEEE Seoul Section Student Paper Contest, December 2011
- Second Place Award, National Senior High School Mathematics Tournament, October 1999

## Research Area

- AI for Software Engineering
- Software Security
- Mining Software Repositories

## Publications

(\* indicates that I am a corresponding/co-corresponding author)

### Representative Papers

- Zhengquan Li, Yao Li, **Tao Zhang\***, Cuiyun Gao, and Zishuo Ding, “Towards More Accurate App Review Response Generation with Fine-Grained Filtering”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Accepted, 2026.
- Jie Cai, Jiachi Chen, **Tao Zhang\***, Xiapu Luo, Xiaobing Sun, and Bin Li, “Detecting Reentrancy Vulnerabilities for Solidity Smart Contracts with Contract Standards-Based Rules”, *IEEE Transactions on Information Forensics and Security (TIFS)*, Vol. 20, pp. 3662-3676, 2025.
- Yao Li, Sen Fang, **Tao Zhang\***, and Haipeng Cai, “Enhancing Android Malware Detection: The Influence of ChatGPT on Decision-centric Task”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Vol. 34, No. 8, Article No. 226, pp. 1-30, November 2025.
- Yao Li, Dawei Yuan, **Tao Zhang\***, Haipeng Cai, David Lo, Cuiyun Gao, Xiapu Luo, and He Jiang, “Meta-Learning for Multi-Family Android Malware Classification”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Vol. 33, No. 7, Article No. 174, pp. 1-27, September 2024.
- Yao Li, **Tao Zhang\***, Xiapu Luo, Haipeng Cai, Sen Fang, and Dawei Yuan, “Do Pretrained Language Models Indeed Understand Software Engineering Tasks?”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 49, No. 10, pp. 4639-4655, October 2023.
- Youshuai Tan, Jinfu Chen, Weiyi Shang, **Tao Zhang\***, Sen Fang, Xiapu Luo, Zijie Chen, and Shuhao Qi, “STRE: An Automated Approach to Suggesting App Developers When to Stop Reading Reviews”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 49, No.

- 8, pp. 4135-4151, August 2023.
- Sen Fang, **Tao Zhang\***, Youshuai Tan, He Jiang, Xin Xia, and Xiaobing Sun, “RepresentThemAll: A Universal Learning Representation of Bug Reports”, in *Proc. of the 45th International Conference on Software Engineering (ICSE'23)*, May 14-20, 2023, pp. 602-614.
  - **Tao Zhang**, Jiachi Chen, Xian Zhan, Xiapu Luo, David Lo, and He Jiang, “Where2Change: Change Request Localization for App Reviews”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 47, No. 11, pp. 2590-2616, November 2021.

## Full Paper List

### International Journal Papers

- Zhengquan Li, Yao Li, **Tao Zhang\***, Cuiyun Gao, and Zishuo Ding, “Towards More Accurate App Review Response Generation with Fine-Grained Filtering”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Accepted, 2026.
- Guocang Yang, Dawei Yuan, **Tao Zhang\***, and Zhenghan Chen, “A Sign Language to SQL Query Translation System for Enhancing Database Accessibility”, *Automated Software Engineering*, Vol. 33, No. 1, Article 15, June 2026.
- Jiawei Guo, Xiaoqin Fu, Li Li, **Tao Zhang**, Mattia Fazzini, and Haipeng Cai, “Characterizing Installation- and Run-Time Compatibility Issues in Android Benign Apps and Malware”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Vol. 35, No. 1, Article No. 21, pp. 1-44, January 2026.
- Jican Zhang, Jianeng Zhang, Xin Shen, Lei Xue, Liming Nie, Fengwei Lin, Kefeng Wu, **Tao Zhang**, and Pingxin Du, “Rethinking Code Similarity: A Logic-Based Framework for Cross-Language Analysis beyond Functional Equivalence”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Accepted, 2025.
- Jie Cai, Jiachi Chen, **Tao Zhang\***, Xiapu Luo, Xiaobing Sun, and Bin Li, “Detecting Reentrancy Vulnerabilities for Solidity Smart Contracts with Contract Standards-Based Rules”, *IEEE Transactions on Information Forensics and Security (TIFS)*, Vol. 20, pp. 3662-3676, 2025.
- Yao Li, Sen Fang, **Tao Zhang\***, and Haipeng Cai, “Enhancing Android Malware Detection: The Influence of ChatGPT on Decision-centric Task”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Vol. 34, No. 8, Article No. 226, pp. 1-30, November 2025.
- Dawei Yuan, Guocang Yang, and **Tao Zhang\***, “UI2HTML: Utilizing LLM Agents with Chain of Thought to Convert UI into HTML Code”, *Automated Software Engineering*, Vol. 32, No. 2, Article 41, November 2025.
- Shuo Yang, Jiachi Chen, Lei Xiao, Jinyuan Hu, Dan Lin, Jiajing Wu, **Tao Zhang**, and Zibin Zheng, “Who is Pulling the Strings: Unveiling Smart Contract State Manipulation Attacks Through State-Aware Dataflow Analysis”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 51, No. 10, pp. 2942-2956, October 2025.
- Dawei Yuan, **Tao Zhang\***, and He Jiang, “UNA: Improving Automated PL-NL System by A Unified Neural Architecture”, *IEEE Transactions on Reliability (TRel)*, Vol. 74, No. 3, pp. 3585-3599, September 2025.
- Manqing Zhang, Yunwei Dong, **Tao Zhang**, Kang Su, and Zeshan Li, “Modeling and Verifying Resources and Capabilities of Ubiquitous Scenarios for Unmanned Aerial Vehicle Swarm”, *Journal of Systems and Software (JSS)*, Vol. 226, Article 112416, August 2025.
- Jiashuo Zhang, Jiachi Chen, Yiming Shen, **Tao Zhang**, Yanlin Wang, Ting Chen, Jianbo Gao, and Zhong Chen, “When Crypto Fails: Demystifying Cryptographic Defects in Ethereum Smart Contracts”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 51,

- No. 5, pp. 1381-1398, May 2025.
- Dawei Yuan, Xiao Peng, Zijie Chen, **Tao Zhang\***, and Ruijia Lei, “Code Context-Based Reviewer Recommendation”, *Frontiers of Computer Science (FCS)*, Vol. 19, No. 1, Article 191202, January 2025.
  - Yao Li, Dawei Yuan, **Tao Zhang\***, Haipeng Cai, David Lo, Cuiyun Gao, Xiapu Luo, and He Jiang, “Meta-Learning for Multi-Family Android Malware Classification”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Vol. 33, No. 7, Article No. 174, pp. 1-27, September 2024.
  - Xiaohui Wang, **Tao Zhang\***, Youshuai Tan, Weiyi Shang, and Yao Li, “How to Effectively Mine App Reviews Concerning Software Ecosystem? A Survey of Review Characteristics”, *Journal of Systems and Software (JSS)*, Vol. 213, Article 112040, July 2024.
  - Guodong Fan, Shizhan Chen, Cuiyun Gao, Jianmao Xiao, **Tao Zhang**, and Zhiyong Feng, “Rapid: Zero-shot Domain Adaptation for Code Search with Pre-trained Models”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Vol. 33, No. 5, Article No. 128, pp. 1-35, June 2024.
  - He Jiang, Zun Wang, Zhide Zhou, Xiaochen Li, Shikai Guo, Weifeng Sun, and **Tao Zhang**, “A Testing Program and Pragma Combination Selection Based Framework for High-Level Synthesis Tool Pragma-Related Bug Detection”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 50, No. 4, pp. 937-955, April 2024.
  - Jie Cai, Bin Li, **Tao Zhang**, Jiale Zhang, and Xiaobing Sun, “Fine-Grained Smart Contract Vulnerability Detection by Heterogeneous Code Feature Learning and Automated Dataset Construction”, *Journal of Systems and Software (JSS)*, Vol. 209, Article 111919, March 2024.
  - Sicong Cao, Xiaobing Sun, Lili Bo, Rongxin Wu, Bin Li, Xiaoxue Wu, Chuanqi Tao, **Tao Zhang**, and Wei Liu, “Learning to Detect Memory-Related Vulnerabilities”, *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Vol. 33, No. 2, Article No. 43, pp. 1-35, February 2024.
  - Yao Li, Zhi Xiong, **Tao Zhang\***, Qinkun Zhang, Ming Fan, and Lei Xue, “Ensemble Framework Combining Family Information for Android Malware Detection”, *The Computer Journal*, Vol. 66, No. 11, pp. 2721-2740, November 2023.
  - Yao Li, **Tao Zhang\***, Xiapu Luo, Haipeng Cai, Sen Fang, and Dawei Yuan, “Do Pretrained Language Models Indeed Understand Software Engineering Tasks?”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 49, No. 10, pp. 4639-4655, October 2023.
  - Xiaobing Sun, Zhenlei Ye, Lili Bo, Xiaoxue Wu, Ying Wei, **Tao Zhang**, and Bin Li, “Automatic Software Vulnerability Assessment by Extracting Vulnerability Elements”, *Journal of Systems and Software (JSS)*, Vol. 204, Article 111790, October 2023.
  - Youshuai Tan, Jinfu Chen, Weiyi Shang, **Tao Zhang\***, Sen Fang, Xiapu Luo, Zijie Chen, and Shuhao Qi, “STRE: An Automated Approach to Suggesting App Developers When to Stop Reading Reviews”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 49, No. 8, pp. 4135-4151, August 2023.
  - Dawei Yuan, Xiaohui Wang, Yao Li, and **Tao Zhang\***, “Optimizing Smart Contract Vulnerability Detection via Multi-Modality Code and Entropy Embedding”, *Journal of Systems and Software (JSS)*, Vol. 202, Article 111699, August 2023.
  - Dawei Yuan, Sen Fang, **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 (TRel)*, Vol. 72, No. 2, pp. 511-526, June 2023.
  - Ying Wei, Lili Bo, Xiaobing Sun, Bin Li, **Tao Zhang**, and Chuanqi Tao, “Automated Event Extraction of CVE Descriptions”, *Information and Software Technology (IST)*, Vol. 158, Article 107178, June 2023.

- He Jiang, Yulong Li, Shikai Guo, Xiaochen Li, **Tao Zhang**, Hui Li, and Rong Chen, “DupHunter: Detecting Duplicate Pull Requests in Fork-Based Development”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 49, No. 4, pp. 2920-2940, April 2023.
- Le Yu, Haoyu Wang, Xiapu Luo, **Tao Zhang**, Kang Liu, Jiachi Chen, Hao Zhou, Yutian Tang, and Xusheng Xiao, “Towards Automatically Localizing Function Errors in Mobile Apps with User Reviews”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 49, No. 4, pp. 1464-1486, April 2023.
- Jianwei Zeng, Yutong He, **Tao Zhang\***, Zhou Xu, and Qiang Han, “CLG-Trans: Contrastive Learning for Code Summarization via Graph Attention-Based Transformer”, *Science of Computer Programming (SCP)*, Vol. 226, Article 102925, March 2023.
- Kunsong Zhao, Zhou Xu, Meng Yan, **Tao Zhang**, Lei Xue, Ming Fan, and Jacky Keung, “The Impact of Class Imbalance Techniques on Crashing Fault Residence Prediction models”, *Empirical Software Engineering (EMSE)*, Vol. 28, No. 2, Article 49, March 2023.
- Zhou Liao, Shuwei Song, Hang Zhu, Xiapu Luo, Zheyuan He, Renkai Jiang, Ting Chen, Jiachi Chen, **Tao Zhang**, and Xiaosong Zhang, “Large-Scale Empirical Study of Inline Assembly on 7.6 Million Ethereum Smart Contracts”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 49, No. 2, pp. 777-801, February 2023.
- Zhou Zhou, Lili Bo, Xiaoxue Wu, Xiaobing Sun, **Tao Zhang**, Bin Li, Jiale Zhang, and Sicong Cao, “SPVF: Security Property Assisted Vulnerability Fixing via Attention-Based Models”, *Empirical Software Engineering (EMSE)*, Vol. 27, No. 7, Article 171, December 2022.
- Sen Fang, **Tao Zhang\***, Youshuai Tan, Zhou Xu, Zhixin Yuan, and Lingze Meng, “PRHAN: Automated Pull Request Description Generation Based on Hybrid Attention Network”, *Journal of Systems and Software (JSS)*, Vol. 185, Article 111160, March 2022.
- Yan Lei, Huan Xie, **Tao Zhang**, Meng Yan, Zhou Xu, and Chengnian Sun, “Feature-FL: Feature-Based Fault Localization”, *IEEE Transactions on Reliability (TRel)*, Vol. 71, No. 1, pp. 264-283, March 2022.
- Zhou Xu, Kunsong Zhao, **Tao Zhang**, Chunlei Fu, Meng Yan, Zhiwen Xie, Xiaohong Zhang, and Gemma Catolino, “Effort-Aware Just-in-Time Bug Prediction for Mobile Apps via Cross-Triplet Deep Feature Embedding”, *IEEE Transactions on Reliability (TRel)*, Vol. 71, No. 1, pp. 204-220, March 2022.
- **Tao Zhang**, Jiachi Chen, Xian Zhan, Xiapu Luo, David Lo, and He Jiang, “Where2Change: Change Request Localization for App Reviews”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 47, No. 11, pp. 2590-2616, November 2021.
- Kunsong Zhao, Zhou Xu, Meng Yan, **Tao Zhang**, Dan Yang, and Wei Li, “A Comprehensive Investigation of the Impact of Feature Selection Techniques on Crashing Fault Residence Prediction Models”, *Information and Software Technology (IST)*, Vol. 139, Article 106652, November 2021.
- Muhammad Ashfaq, Rubing Huang, Dave Towey, Michael Omari, Dmitry Yashunin, Patrick Kwaku Kudjo, and **Tao Zhang**, “SWFC-ART: A Cost-Effective Approach for Fixed-Size-Candidate-Set Adaptive Random Testing through Small World Graphs”, *Journal of Systems and Software (JSS)*, Vol. 180, Article 111008, October 2021.
- Jinting Lu, Xiaobing Sun, Bin Li, Lili Bo, and **Tao Zhang**, “BEAT: Considering Question Types for Bug Question Answering via Templates”, *Knowledge-Based Systems (KBS)*, Vol. 225, Article 107098, August 2021.
- Kunsong Zhao, Zhou Xu, **Tao Zhang\***, Yutian Tang, and Meng Yan, “Simplified Deep Forest Model Based Just-in-Time Defect Prediction for Android Mobile Apps”, *IEEE Transactions on Reliability (TRel)*, Vol. 70, No. 2, pp. 848-859, June 2021.
- Sen Fang, Youshuai Tan, **Tao Zhang\***, Zhou Xu, and Hui Liu, “Effective Prediction of

- Bug-Fixing Priority via Weighted Graph Convolutional Networks”, *IEEE Transactions on Reliability (TRel)*, Vol. 70, No. 2, pp. 563-574, June 2021.
- Sen Fang, Youshuai Tan, **Tao Zhang\***, and Yepang Liu, “Self-Attention Networks for Code Search”, *Information and Software Technology (IST)*, Vol. 134, Article 106542, June 2021.
  - Jingxuan Zhang, He Jiang, Zhilei Ren, **Tao Zhang**, and Zhiqiu Huang, “Enriching API Documentation with Code Samples and Usage Scenarios from Crowd Knowledge”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 47, No. 6, pp. 1299-1314, June 2021.
  - Zhou Xu, **Tao Zhang**, Jacky Keung, Meng Yan, Xiapu Luo, Xiaohong Zhang, Ling Xu, Yutian Tang, “Feature Selection and Embedding Based Cross Project Framework for Identifying Crashing Fault Residence”, *Information and Software Technology (IST)*, Vol. 131, Article 106452, March 2021.
  - Le Yu, Xiapu Luo, Jiachi Chen, Hao Zhou, **Tao Zhang**, Henry Chang, and Hareton. K. N. Leung, “PPChecker: Towards Accessing the Trustworthiness of Android Apps’ Privacy Policies”, *IEEE Transactions on Software Engineering (TSE)*, Vol. 47, No. 2, pp. 221-242, February 2021.
  - Youshuai Tan, Sijie Xu, Zhaowei Wang, **Tao Zhang\***, Zhou Xu, and Xiapu Luo, “Bug Severity Prediction Using Question-and-Answer Pairs from Stack Overflow”, *Journal of Systems and Software (JSS)*, Vol. 165, Article 110567, July 2020.
  - **Tao Zhang**, Haoming Li, Zhou Xu, Jian Liu, Rubing Huang, and Yiran Shen, “Labeling Issue Reports in Mobile Apps”, *IET Software*, Vol. 13, No. 6, pp. 528-542, December 2019.
  - Zhou Xu, Shuai Li, Jun Xu, Jin Liu, Xiapu Luo, Yifeng Zhang, **Tao Zhang**, Jacky Keung, and Yutian Tang, “LDFR: Learning Deep Feature Representation for Software Defect Prediction”, *Journal of Systems and Software (JSS)*, Vol. 158, Article 110402, December 2019.
  - Zhou Xu, Shuai Pang, **Tao Zhang\***, Xiapu Luo, Jin Liu, Yutian Tang, Xiao Yu, and Lei Xue, “Cross Project Defect Prediction via Balanced Distribution Adaptation Based Transfer Learning”, *Journal of Computer Science and Technology (JCST)*, Vol. 34, No. 5, pp. 1039-1062, August 2019.
  - Zhou Xu, Shuai Li, Xiapu Luo, Jin Liu, **Tao Zhang**, Yutian Tang, Jun Xu, Peipei Yuan, and Jacky Keung, “TSTS: A Two-Stage Training Subset Selection Framework for Cross Version Defect Prediction”, *Journal of Systems and Software (JSS)*, Vol. 154, pp. 59-78, August 2019.
  - Yiran Shen, Chengwen Luo, Hongkai Wen, **Tao Zhang**, Wen Hu, and Daniela Rus, “GaitLock: Protect Virtual and Augmented Reality Headsets Using Gait”, *IEEE Transactions on Dependable and Secure Computing (TDSC)*, Vol. 16, No. 3, pp. 484-497, May 2019.
  - **Tao Zhang**, Wenjun Hu, Xiapu Luo, and Xiaobo Ma, “A Commit Message-Based Bug Localization for Android Applications”, *International Journal of Software Engineering and Knowledge Engineering (IJSEKE)*, Vol. 29, No. 4, pp. 457-487, April 2019.
  - Zhou Xu, Jin Liu, Xiapu Luo, Zijiang Yang, Yifeng Zhang, Peipei Yuan, Yutian Tang, and **Tao Zhang**, “Software Defect Prediction Based on Kernel PCA and Weighted Extreme Learning Machine”, *Information and Software Technology (IST)*, Vol. 106, pp. 182-200, February 2019.
  - He Jiang, Liming Nie, Zeyi Sun, Zhilei Ren, Weiqiang Kong, **Tao Zhang**, and Xiapu Luo, “ROSF: Leveraging Information Retrieval and Supervised Learning for Recommending Code Snippets”, *IEEE Transactions on Services Computing (TSC)*, Vol. 12, No. 1, pp. 34-46, January 2019.

- **Tao Zhang**, Jiachi Chen, Xiapu Luo, and Tao Li, “Bug Reports for Desktop Software and Mobile Apps in GitHub: What’s the Difference?”, *IEEE Software*, Vol. 36, No. 1, pp. 63-71, January 2019.
- Zhou Xu, Peipei Yuan, **Tao Zhang\***, Yutian Tang, Shuai Li, and Zhen Xia, “HDA: Cross-Project Defect Prediction via Heterogeneous Domain Adaptation with Dictionary Learning”, *IEEE Access*, Vol. 6, pp. 57597-57613, October 2018.
- Geunseok Yang, **Tao Zhang**, and Byungjeong Lee, “An Emotion Similarity Based Severity Prediction of Software Bugs: A Case Study of Open Source Projects”, *IEICE Transactions on Information and Systems*, Vol. E101-D, No. 8, pp. 2015-2026, August 2018.
- He Jiang, Najam Nazar, Jingxuan Zhang, **Tao Zhang**, and Zhilei Ren, “PRST: A PageRank-Based Summarization Technique for Summarizing Bug Reports with Duplicates”, *International Journal of Software Engineering and Knowledge Engineering (IJSEKE)*, Vol. 27, No. 6, pp. 869-896, August 2017.
- Le Yu, **Tao Zhang**, Xiapu Luo, Lei Xue, and Henry Chang, “Toward Automatically Generating Privacy Policy for Android Apps”, *IEEE Transactions on Information Forensics and Security (TIFS)*, Vol. 12, No. 4, pp. 865-880, April 2017.
- **Tao Zhang**, Jiachi Chen, Geunseok Yang, Byungjeong Lee, and Xiapu Luo, “Towards More Accurate Severity Prediction and Fixer Recommendation of Software Bugs”, *Journal of Systems and Software (JSS)*, Vol. 117, pp. 166-184, July 2016.
- Najam Nazar, He Jiang, Guojun Gao, **Tao Zhang**, Xiaochen Li, and Zhilei Ren, “Source Code Fragment Summarization with Small-Scale Crowdsourcing Based Features”, *Frontiers of Computer Science (FCS)*, Vol. 10, No. 3, pp. 504-517, June 2016.
- **Tao Zhang**, He Jiang, Xiapu Luo, and Alvin T.S. Chan, “A Literature Review of Research in Bug Resolution: Tasks, Challenges, and Future Directions”, *The Computer Journal*, Vol. 59, No. 5, pp. 741-773, May 2016.
- **Tao Zhang**, Geunseok Yang, Byungjeong Lee, and Alvin T.S. Chan, “Guiding Bug Triage through Developer Analysis in Bug Reports”, *International Journal of Software Engineering and Knowledge Engineering (IJSEKE)*, Vol. 26, No. 3, pp. 405-431, April 2016.
- **Tao Zhang** and Byungjeong Lee, “A Novel Technique for Duplicate Detection and Classification of Bug Reports”, *IEICE Transactions on Information and Systems*, Vol. E97-D, No. 7, pp. 1756-1768, July 2014.
- **Tao Zhang**, Byungjeong Lee, Hanjoon Kim, and Sooyong Kang, “Folksonomy Reasoning Based Personalized Tagging and Tag Recommendation for Web Page Search”, *INFORMATION-An International Interdisciplinary Journal*, Vol. 15, No. 4, pp. 1727-1743, April 2012.

### International Conference Papers

- Zexu Wang, Jiachi Chen, **Tao Zhang**, Yu Zhang, Weizhe Zhang, Yuming Feng, and Zibin Zheng, “Copy-and-Paste? Identifying EVM-Inequivalent Code Smells in Multi-chain Reuse Contracts”, in *Proc. of the ACM on Software Engineering (PACMSE-ISSTA’25)*, June 25-28, 2025, Vol. 2, No. ISSTA, Article ISSTA046, pp. 1031-1053.
- He Ye, Aidan Z.H. Yang, Chang Hu, Yanlin Wang, **Tao Zhang**, and Claire Le Goues, “AdverIntent-Agent: Adversarial Reasoning for Repair Based on Inferred Program Intent”, in *Proc. of the ACM on Software Engineering (PACMSE-ISSTA’25)*, June 25-28, 2025, Vol. 2, No. ISSTA, Article ISSTA062, pp. 1398-1420.
- Youwei Huang, Sen Fang, Jianwen Li, Bin Hu, Jiachun Tao, and **Tao Zhang\***, “Deep Smart Contract Intent Detection”, in *Proc. of the 32nd IEEE International Conference on*

- Software Analysis, Evolution and Reengineering (SANER'25)*, March 4-7, 2025, pp. 124-135.
- Liu Wang, Haoyu Wang, **Tao Zhang**, Haitao Xu, Guozhu Meng, Peiming Gao, Chen Wei, and Yi Wang, “Android Malware Family Labeling: Perspectives from the Industry”, in *Proc. of the 39th IEEE/ACM International Conference on Automated Software Engineering (ASE'24)*, Industry Showcase Track, October 27-November 1, 2024, pp. 2176-2186.
  - Haoran Yang, Yu Nong, **Tao Zhang**, Xiapu Luo, and Haipeng Cai, “Learning to Detect and Localize Multilingual Bugs”, in *Proc. of the ACM on Software Engineering (PACMSE-FSE'24)*, July 15-19, 2024, Vol. 1, No. FSE, Article 97, pp. 2190-2213.
  - Manqing Zhang, Renliang Wu, Kang Su, Yunwei Dong, and **Tao Zhang**, “Application Scenario Modeling and Verification for Unmanned Aerial Vehicle Swarm”, in *Proc. of the 24th International Conference on Software Quality, Reliability, and Security (QRS'24)*, July 1-5, 2024, pp. 364-375.
  - Wei Luo, Yemao Luo, Yao Li, and **Tao Zhang\***, “StructureTester: Automatic Machine Translation Testing Based on Variation Feature Vector”, in *Proc. of the 23rd International Conference on Software Quality, Reliability, and Security (QRS'23)*, October 22-26, 2023, pp. 301-312.
  - Sen Fang, **Tao Zhang\***, Youshuai Tan, He Jiang, Xin Xia, and Xiaobing Sun, “RepresentThemAll: A Universal Learning Representation of Bug Reports”, in *Proc. of the 45th International Conference on Software Engineering (ICSE'23)*, May 14-20, 2023, pp. 602-614.
  - Cong Li, Qiang Han, **Tao Zhang**, Bingbing Lei, and Yu He, “Quantity-Simulation-Analysis Method Based Novel RSA Timing Attack Algorithm for Single-Chip Microcomputer Platform”, in *Proc. of the 22nd International Conference on Software Quality, Reliability, and Security (QRS'22)*, December 5-9, 2022, pp. 1026-1035.
  - Yucen Shi, Ying Yin, Zhengkui Wang, David Lo, **Tao Zhang**, Xin Xia, Yuhai Zhao, and Bowen Xu, “How to Better Utilize Code Graphs in Semantic Code Search?”, in *Proc. of the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE'22)*, November 14-18, 2022, pp. 722-733.
  - Liu Wang, Haoyu Wang, Xiapu Luo, **Tao Zhang**, Shangguang Wang, and Xuanzhe Liu, “Demystifying “Removed Reviews” in iOS App Store”, in *Proc. of the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE'22)*, Industry Track, November 14-18, 2022, pp. 1489-1499.
  - He Ye, Matias Martinez, Xiapu Luo, **Tao Zhang**, and Martin Monperrus, “SelfAPR: Self-supervised Program Repair with Test Execution Diagnostics”, in *Proc. of the 37th IEEE/ACM International Conference on Automated Software Engineering (ASE'22)*, October 10-14, 2022, Article 92, pp. 1-13.
  - Zijie Chen, **Tao Zhang\***, and Xiao Peng, “A Novel API Recommendation Approach by Using Graph Attention Network”, in *Proc. of the 21st International Conference on Software Quality, Reliability, and Security (QRS'21)*, December 6-10, 2021, pp. 726-737.
  - Jianwei Zeng, **Tao Zhang\***, and Zhou Xu, “DG-Trans: Automatic Code Summarization via Dynamic Graph Attention-Based Transformer”, in *Proc. of the 21st International Conference on Software Quality, Reliability, and Security (QRS'21)*, December 6-10, 2021, pp. 786-795.
  - Xiaoqi Li, Ting Chen, Xiapu Luo, **Tao Zhang**, Le Yu, and Zhou Xu, “STAN: Towards Describing Bytecodes of Smart Contract”, in *Proc. of the 20th International Conference*

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- Xiaoyun Cheng, Naming Liu, Lin Guo, Zhou Xu, and **Tao Zhang\***, “Blocking Bug Prediction Based on XGBoost with Enhanced Features”, in *Proc. of the 44th IEEE Annual International Computers, Software, and Applications Conference (COMPSAC'20)*, July 13-17, 2020, pp. 902-911.
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  - **Tao Zhang**, Geunseok Yang, Byungjeong Lee, and Alvin T.S. Chan, “Predicting Severity of Bug Report by Mining Bug Repository with Concept Profile”, in *Proc. of the 30th ACM Symposium on Applied Computing (SAC'15)*, April 13-17, 2015, pp. 1553-1558.
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- Relations”, in *Proc. of the 21st Asia-Pacific Software Engineering Conference (APSEC'14)*, December 1-4, 2014, pp. 223- 230.
- Geunseok Yang, **Tao Zhang**, and Byungjeong Lee, “Towards Semi-automatic Bug Triage and Severity Prediction Based on Topic Model and Multi-Feature of Bug Reports”, in *Proc. of the 38th IEEE Annual International Computers, Software, and Applications Conference (COMPSAC'14)*, July 21-25, 2014, pp. 97-106.
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## Patents

- **Tao Zhang** and Zi-ang Zhang, “A Semantic Concept-Based Software Bug Search and Analysis System and Method”, *Chinese Patent*, No. ZL-2018-1-1285850.5, 2020.
- **Tao Zhang** and Naming Liu, “A User Feedback-Based Software Requirement Search System”, *Chinese Patent*, No. ZL-2018-1-1172938.6, 2020.
- **Tao Zhang**, “A Commit Message-Based Fault Localization Method for Mobile Apps”, *Chinese Patent*, No. ZL-2018-1-0392611.3, 2020.
- **Tao Zhang**, Sijie Xu, and Youshuai Tan, “A Bug Rule and Classification Feedback-Based Bug Detection Method”, *Chinese Patent*, No. ZL-2018-1-1209067.0, 2019.

- **Tao Zhang** and Haoming Li, “An Automated Label Recommendation Method for Issue Reports in Mobile Apps”, *Chinese Patent*, No. ZL-2018-1-1087855.7, 2019.
- **Tao Zhang**, Jiachi Chen, and Xiapu Luo, “A Bug Localization Method for Mobile Apps Based on User Reviews”, *Chinese Patent*, No. ZL-2018-1-0509592.8, 2019.
- Byungjeong Lee, **Tao Zhang**, and Geunseok Yang, “Bug Severity Prediction System and Method Using the Concept Profile”, *Korean Patent*, No. 10-1775006, 2017.
- Byungjeong Lee, **Tao Zhang**, and Geunseok Yang, “System and Method for Recommending Bug Fixing Developers Based on Multi-Developer Network”, *Korean Patent*, No. 10-1697992, 2017.
- Byungjeong Lee, **Tao Zhang**, and Geunseok Yang, “System and Method for Bug Fixing Developers Recommendation and Bug Severity Prediction Based on Topic Model and Multi- Feature”, *Korean Patent*, No. 10-1691083, 2016.
- Byungjeong Lee and **Tao Zhang**, “A Hybrid Bug Triage System and Method for Recommending Bug Fixing Developers”, *Korean Patent*, No. 10-1538131, 2015.
- Byungjeong Lee and **Tao Zhang**, “Method for Recommending Appropriate Developers for Software Bug Fixing and Apparatus Thereof”, *Korean Patent*, No. 10-1390220, 2014.
- Byungjeong Lee, **Tao Zhang**, and Hanjoon Kim, “System and Method for Utilizing Personalized Tag Recommendation Model in Web Page Search”, *Korean Patent*, No. 10-1137491, 2012.
- Byungjeong Lee, **Tao Zhang**, and Hanjoon Kim, “Method of Searching Web Pages Based on a Collective Intelligence Using Folksonomy and Linked-Based Ranking Strategy, and System for Performing the Method”, *Korean Patent*, No. 10-1132393, 2012.

## Competitive Research Grants

- PI, “Large Language Model Unlearning in Conical Subspaces for Rapid Mitigation of Book Copyright Risks”, supported by the CCF-Huawei Populus Grove Fund, CNY 500,000, 11/2025-10/2026.
- PI, “A Privacy Leakage Detection System for Mobile Applications Based on Large Language Model”, supported by the Macao Science and Technology Development Fund (FDCT), MOP 785,400, 05/2024-05/2026.
- PI, “Ensemble Detection System Combining Family Information for Android Malware Detection”, supported by the Macao Science and Technology Development Fund (FDCT), MOP 739,700, 09/2022-09/2024.
- PI, “Security Vulnerabilities Localization and Report Generation Method for Closed Source Mobile Apps”, supported by the Macao Science and Technology Development Fund (FDCT), MOP 1,123,000, 09/2020-09/2023.
- PI, “Bug Localization for Mobile Apps”, supported by the National Natural Science Foundation (NSFC), CNY 200,000, 01/2017-12/2019.

## Industrial Projects

- PI, “Implementation of an Intelligent Debt Collection System Based on Deep Learning”, Shenzhen Jiayutai Technology Co., Ltd., CNY 300,000, 06/2022-05/2023.

## Academic Service

### Associate Editor

- IEEE Open Journal of the Computer Society (OJCS), 2026-Present  
IEEE Transactions on Reliability (TRel), 2025-Present  
IEEE Transactions on Software Engineering (TSE), 2024-Present  
Journal of Systems and Software (JSS), 2024-Present

- IEEE Access, 2018-2019
- **Editorial Board Member**
  - Empirical Software Engineering (EMSE), 2024-Present
  - Science of Computer Programming (SCP), 2024-Present
  - Journal of Systems and Software (JSS), 2022-2024
- **Board Member of Distinguished Reviewers**
  - ACM Transactions on Software Engineering and Methodology (TOSEM), 2022-2024
- **Guest Editor**
  - Journal of Software: Evolution and Process (JSEP)
  - Journal of Systems and Software (JSS)
  - Science of Computer Programming (SCP)
  - Frontiers of Information Technology and Electronic Engineering (FITEE)
- **Steering Committee Member**
  - IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER), 2023-Now
- **General Chair/Co-Chair**
  - Asia-Pacific Software Engineering Conference (APSEC 2025)
  - IEEE Services Workshop on Emerging Services in the Greater Bay Area (ES-GBA 2024)
  - IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2023)
- **Program Co-Chair**
  - CCF International Conference on Service Science (ICSS 2026)
  - International Conference on Advanced Security on Software and Systems (ASSS 2025)
  - Asia-Pacific Symposium on Internetware (Internetware 2024)
  - International Conference on Dependable Systems and Their Applications (DSA 2021)
- **Local Organizing Co-Chair**
  - IEEE International Conference on Software Quality, Reliability, and Security (QRS 2020)
- **Organizing Committee Co-Chair**
  - IEEE International Workshop on Bug Fixing (IBF 2019-2021)
- **Track Co-Chair**
  - ACM Symposium on Applied Computing (SAC 2017-2022): *Software Engineering Track*
- **Publicity Chair/Co-Chair**
  - International Joint Conference on Artificial Intelligence (IJCAI 2023)
  - International Conference on Blockchain and Trustworthy Systems (BlockSys 2023)
  - IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2019)
  - IEEE International Conference on Software Quality, Reliability, and Security (QRS 2019)
- **Financial Chair**
  - International Conference on Internetware (Internetware 2025)
- **Proceedings Co-Chair**
  - IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2025)
- **Registration Chair**
  - IEEE World Congress on Services (SERVICES 2024)
- **TPC Member**
  - ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2025-2026)
  - International Conference on Software Engineering (ICSE 2025-2026)
  - International Symposium on Software Fault Prevention, Verification, and Validation

- (SFPVV 2025-2026)
- IEEE/ACM International Conference on Automated Software Engineering (ASE 2023-2024, 2026)
- ACM Symposium on the Foundations of Software Engineering (FSE 2023-2024, 2026)
- International Conference on Mining Software Repositories (MSR 2022-2023, 2026)
- IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2020, 2026)
- IEEE/ACM International Conference on Automated Software Engineering (ASE 2025): *Industry Showcase Track*
- International Conference on AI Foundation Models and Software Engineering (FORGE 2024)
- International Conference on Software Engineering for Adaptive and Self-Managing Systems (SEAMS 2024): *Artifact Track*
- Asia-Pacific Software Engineering Conference (APSEC 2023-2024)
- International Symposium on Software Reliability Engineering (ISSRE 2021-2024)
- IEEE International Conference on Software Quality, Reliability, and Security (QRS 2020-2024)
- IEEE/ACM International Conference on Software Engineering (ICSE 2023): *Demonstrations Track*
- Asia-Pacific Symposium on Internetware (Internetware 2023)
- IEEE/ACM International Conference on Automated Software Engineering (ASE 2019, 2023): *Tool Demonstrations Track*
- IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2022)
- IEEE International Conference on Software Maintenance and Evolution (ICSME 2020-2022)
- International Conference on Network and System Security (NSS 2018, 2020-2022)
- Innovations in Software Engineering Conference (ISEC 2020-2021)
- ACM Symposium on Applied Computing (SAC 2015-2016): *Software Engineering Track*
- **Journal Reviewer**
    - ACM Computing Surveys (CSUR)
    - ACM Transactions on Software Engineering and Methodology (TOSEM)
    - IEEE Transactions on Software Engineering (TSE)
    - IEEE Transactions on Dependable and Secure Computing (TDSC)
    - Empirical Software Engineering (EMSE)
    - IEEE Software
    - Automated Software Engineering
    - Journal of Software: Evolution and Process (JSEP)
    - Journal of Systems and Software (JSS)
    - IET Software
    - Software: Practice and Experience (SPE)
    - Information and Software Technology (IST)
    - Computers & Security
    - Software Quality Journal (SQJ)
    - International Journal of Software Engineering and Knowledge Engineering (IJSEKE)
    - IEEE Transactions on Reliability (TRel)
    - IEEE Transactions on Haptics (TH)
    - SCIENCE CHINA Information Sciences
    - Journal of Software (in Chinese)
    - Journal of Computer Science and Technology (JCST)

Frontiers of Computer Science (FCS)  
Neural Networks  
Knowledge-Based Systems (KBS)  
SN Computer Science  
Innovations in Systems and Software Engineering: A NASA Journal (ISSE)  
Sustainable Computing: Informatics and Systems (SUSCOM)  
Journal of Ambient Intelligence and Humanized Computing (JAIHC)  
Journal of KING SAUD University-Computer and Information Sciences  
IEEE Access  
Journal of Supercomputing  
Connection Science  
Cluster Computing  
Security and Communication Networks (SCN)  
IEEE Signal Processing Letters  
Applied Intelligence (APIN)  
Tsinghua Science and Technology

- **Professional Organization Service**

Conferences Co-Chair (Paper Awards), IEEE Computer Society Technical Community on Software Engineering (TCSE), 2025-Present  
Chair, IEEE Macau Computer Society Chapter, 2025-Present  
Member of Executive Board, IEEE Macau, 2026-Present  
Board Member of Supervisors, IEEE Macau, 2022-2025  
Executive Member, CCF Macau, 2025-Present  
Executive Member, CCF Technical Committee on Systems Software, 2025-Present  
Executive Member, CCF Technical Committee on Software Engineering, 2017-Present

- **University-Level Service**

Member of Teaching Excellence Award Committee, Macau University of Science and Technology, 2021-Present

- **Faculty/School-Level Service**

Chair of Research Committee, School of Computer Science and Engineering, Macau University of Science and Technology, 2024-Present

## Talks

- Keynote Speaker, “AI-Powered Software Data Analysis for Automated Software Engineering”, *The 10th International Conference on Computer Science and Application Engineering (CSAE 2026)*, Shanghai, October 17, 2026.
- Keynote Speaker, “AI and Automated Software Engineering: How Far Can We Go?”, *The 16th International Conference on Software Engineering and Service Science (ICSESS 2025)*, Macau, December 16, 2025.
- Invited Speaker, “Advanced Explorations in Intelligent Software Data Analytics”, *The 27th GOPS Global Operations Conference*, Shanghai, October 18, 2025.
- Keynote Speaker, “How AI is Changing the World of Software Engineering”, *IEEE Services Workshop on Emerging Services in the Greater Bay Area (ES-GBA 2024)*, Shenzhen, July 7, 2024.

## Dissertations and Theses Supervised

### Dissertations

- Supervisor, “Cognizant Detection of Android Malware: Intuitive Classification and Explication of Harmful Effects”, Dissertation by Yao Li, Ph.D. in Artificial Intelligence,

- Macau University of Science and Technology, 2024.
- Supervisor, “Detecting Smart Contract Vulnerabilities through Analysis of Control and Data Flow in Code Call Graphs”, Dissertation by Dawei Yuan, Ph.D. in Artificial Intelligence, Macau University of Science and Technology, 2023.

### Theses

- Supervisor, “Automatic Smart Contract Vulnerability Detection Based on Large Language Model”, Thesis by Ruixiong Yang, Master of Science in Information Technology, Macau University of Science and Technology, 2025.
- Supervisor, “Automatic Patch Backporting”, Thesis by Yiming Sun, Master of Science in Information Technology, Macau University of Science and Technology, 2025.
- Supervisor, “A New Framework for Intelligent Log Analysis and Detection”, Thesis by Xinyue Li, Master of Science in Information Technology, Macau University of Science and Technology, 2025.
- Supervisor, “An Innovative Framework for Enhancing Bug Report Information”, Thesis by Hongrong Yin, Master of Science in Information Technology, Macau University of Science and Technology, 2025.
- Supervisor, “Bug Discovery from App User Reviews Using Sentiment Analysis”, Thesis by Junhao Chen, Master of Science in Information Technology, Macau University of Science and Technology, 2024.
- Supervisor, “Automatic Program Repair Based on Large Language Model”, Thesis by Chang Hu, Master of Science in Information Technology, Macau University of Science and Technology, 2024.
- Supervisor, “Guiding User on How to Effectively Use Apps by Automated Responses”, Thesis by Zhengquan Li, Master of Science in Information Technology, Macau University of Science and Technology, 2024.
- Supervisor, “A New Framework for Security Bug Report Identification”, Thesis by Yansheng Liao, Master of Applied Mathematics and Data Science, Macau University of Science and Technology, 2024.
- Supervisor, “Analyzing User Reviews for App Release Strategy”, Thesis by Xiaohui Wang, Master of Applied Mathematics and Data Science, Macau University of Science and Technology, 2023.
- Supervisor, “STRE: An Automated Approach to Suggesting App Developers When to Stop Reading Reviews”, Thesis by Youshuai Tan, Master of Applied Mathematics and Data Science, Macau University of Science and Technology, 2023.
- Supervisor, “Towards Context-Aware Based Bug Localization”, Thesis by Xiao Peng, Master of Applied Mathematics and Data Science, Macau University of Science and Technology, 2022.
- Supervisor, “Q2Q: A Query-to-Query Neural Code Search Approach”, Thesis by Yutong He, Master of Applied Mathematics and Data Science, Macau University of Science and Technology, 2022.
- Supervisor, “API Usage Pattern Recommendation Considering Human Intentions”, Thesis by Zijie Chen, Master of Applied Mathematics and Data Science, Macau University of Science and Technology, 2022.
- Supervisor, “Automatic Code Summarization Research Based on Graph Attention Mechanism”, Thesis by Jianwei Zeng, Master of Science in Information Technology, Macau University of Science and Technology, 2022.
- Supervisor, “Bug Report Enrichment Based on BERT Model”, Thesis by Lingze Meng, Master of Science in Information Technology, Macau University of Science and Technology, 2021.

- Supervisor, “The Research on Automatic Labeling Method for Mobile Application Issue Reports”, Thesis by Haoming Li, Master of Engineering in Software Engineering, Harbin Engineering University, 2020.

## Teaching Courses

### Macau University of Science and Technology

- SE252 Software Project Management
- SE251 Software Engineering
- SE250 Software Engineering Practices
- SE480 Topics in Software Engineering
- CS240 Database Systems
- SE111 Object-Oriented Programming for Java
- ST001 Special Topic in New Computer Technology
- CS190 Professional Ethics and Communication Skills

### Harbin Engineering University

- 201406323 Software Quality Assurance and Testing
- 201406415 Software Testing Comprehensive Experiment
- 201406421 Advanced Labs in Software Engineering

### Nanjing University of Posts and Telecommunications

- B0301340S Algorithm Analysis and Design

## Language and Technical Ability

- **Chinese:** Native Language
- **English:** High Level of Proficiency in Listening, Speaking, Reading, and Writing
- **Korean:** Elementary Proficiency in Listening, Speaking, Reading, and Writing
- **Programming Language:** High Level of Proficiency in Python, Java, C, C++, and C#
- **Development Tool:** High Level of Proficiency with VS, NetBeans, Eclipse, and MATLAB

## Hobby

- Reading, Skating, Mountaineering, and Piano Performance