

# Tao Zhang

## Personal Particulars

Position: Associate Professor

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## Educational Background

- Doctor of Philosophy (Sept. 2008-Feb. 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 (Sept. 2005-Mar. 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 (Sept. 2000-Jul. 2005)  
Department of Automation, Northeastern University, Shenyang, China

## Research Experience

- Associate Professor (Sept. 2019-Present), School of Computer Science and Engineering, Macau University of Science and Technology, Macao SAR
- Associate Professor (Dec. 2016-Aug. 2019), College of Computer Science and Technology, Harbin Engineering University, Harbin, China
- Assistant Professor (Feb. 2016-Dec. 2016), School of Computer Science and Technology, Nanjing University of Posts and Telecommunications, Nanjing, China
- Postdoctoral Fellow (Nov. 2014-Nov.2015), Department of Computing, The Hong Kong Polytechnic University, Hong Kong SAR
- Postdoctoral Fellow (Mar. 2014-Aug. 2014), Faculty of Computer Science and Information Technology, University of Malaya, Kuala Lumpur, Malaysia
- Research Professor (Mar. 2013-Feb. 2014), Department of Computer Science and Engineering, University of Seoul, Seoul, South Korea

## Industrial Experience

- Software Engineer (Mar. 2008-Jul. 2008), Division of Network Security, Neusoft, China
- Intern (Jul. 2007-Nov. 2007), Division of Network Security, Neusoft, China

## Honors and Awards

- Top Reviewer Award 2020, Information and Software Technology (IST), May 2021
- Best Paper Award, 16th Korea Conference on Software Engineering (KCSE), Feb. 2014
- Honor Prize, 18th Samsung HumanTech Paper Award, Feb. 2012
- Bronze Prize, IEEE Seoul Section Student Paper Contest, Dec. 2011
- Second Place Award, National Senior High School Mathematics Tournament, Oct. 1999

## Research Area

- AI for Software Engineering
- Mining Software Repositories
- Security and Privacy for Mobile Apps

## Publications

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

### Representative Papers

- 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

- Dawei Yuan, Xiao Peng, Zijie Chen, **Tao Zhang\***, and Ruijia Lei, “Code Context-Based Reviewer Recommendation”, *Frontiers of Computer Science (FCS)*, Accepted, 2023.
- 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 (TR)*, 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 (TR)*, 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 (TR)*, 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 Comprehen-

- sive 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 (TR)*, 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 (TR)*, 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, “TSTSS: 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, “Gait-Lock: 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

- 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)*, Oct. 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)*, Dec. 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)*, Nov. 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, Nov. 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)*, Oct. 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)*, Dec. 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)*, Dec. 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 on Software Quality, Reliability, and Security (QRS'20)*, Dec. 11-14, 2020, pp. 273-284.
- 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)*, Jul. 13-17, 2020, pp. 902-911.
- Zhou Xu, **Tao Zhang**, Yifeng Zhang, Yutian Tang, Jin Liu, Xiapu Luo, Jacky Keung, and Xiaohui Cui, “Identifying Crashing Fault Residence Based on Cross Project Model”, in *Proc. of the 30th International Symposium on Software Reliability Engineering (ISSRE'19)*, Oct. 28-Nov. 1, 2019, pp. 183-194.
- Zhou Xu, Sizhe Ye, **Tao Zhang\***, Zhen Xia, Shuai Pang, Yong Wang, and Yutian Tang, “MVSE: Effort-Aware Heterogeneous Defect Prediction via Multiple-View Spectral Embedding”, in *Proc. of the 19th International Conference on Software Quality, Reliability, and Security (QRS'19)*, Jul. 22-26, 2019, pp. 10-17.
- Xian Zhan, **Tao Zhang**, and Yutian Tang, “A Comparative Study of Android Repackaged Apps Detection Techniques”, in *Proc. of the 26th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER'19)*, Feb. 24-27, 2019, pp. 321-331.

- Haoming Li, **Tao Zhang\***, and Ziyuan Wang, “Bug or Not Bug? Labeling Issue Reports via User Reviews for Mobile Apps”, in *Proc. of the 30th International Conference on Software Engineering and Knowledge Engineering (SEKE'18)*, Jul. 1-3, 2018, pp. 480-485.
- Zhou Xu, Shuai Li, Yutian Tang, Xiapu Luo, and **Tao Zhang**, Jin Liu, and Jun Xu, “Cross Version Defect Prediction with Representative Data via Sparse Subset Selection”, in *Proc. of the 26th IEEE International Conference on Program Comprehension (ICPC'18)*, May 27-28, May 27-28, 2018, pp. 132-143.
- Zhou Xu, Jin Liu, Xiapu Luo, and **Tao Zhang**, “Cross-Version Defect Prediction via Hybrid Active Learning with Kernel Principal Component Analysis”, in *Proc. of the 25th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER'18)*, Mar. 20-23, 2018, pp. 209-220.
- **Tao Zhang**, Jiachi Chen, He Jiang, Xiapu Luo, and Xin Xia, “Bug Report Enrichment with Application of Automated Fixer Recommendation”, in *Proc. of the 25th IEEE International Conference on Program Comprehension (ICPC'17)*, May 22-23, 2017, pp. 230-240.
- He Jiang, Jingxuan Zhang, Zhilei Ren, and **Tao Zhang**, “An Unsupervised Approach for Discovering Relevant Tutorial Fragments for APIs”, in *Proc. of the 39th International Conference on Software Engineering (ICSE'17)*, May 20-28, 2017, pp. 38-48.
- Le Yu, Xiapu Luo, Xule Liu, and **Tao Zhang**, “Can we trust the privacy policies of Android Apps?” In *Proc. of the 46th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN'16)*, Jun. 28-Jul. 1, 2016, pp. 538-549.
- Le Yu, **Tao Zhang**, Xiapu Luo, and Lei Xue, “AutoPPG: Towards Automatic Generation of Privacy Policy for Android Applications”, in *Proc. of the 5th Annual ACM CCS Workshop on Security and Privacy in Smartphones and Mobile Devices (SPSM'15)*, Oct. 12, 2015, pp. 39-50.
- **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)*, Apr. 13-17, 2015, pp. 1553-1558.
- **Tao Zhang**, Geunseok Yang, Byungjeong Lee, and Eng Keong Lua, “A Novel Developer Ranking Algorithm for Automatic Bug Triage Using Topic Model and Developer Relations”, in *Proc. of the 21st Asia-Pacific Software Engineering Conference (APSEC'14)*, Dec. 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)*, Jul. 21-25, 2014, pp. 97-106.
- Geunseok Yang, **Tao Zhang**, and Byungjeong Lee, “Utilizing a Multi-Developer Network-Based Developer Recommendation Algorithm to Fix Bugs Effectively”, in *Proc. of the 29th ACM Symposium on Applied Computing (SAC'14)*, Mar. 24-28, 2014, pp. 1134-1139.
- Rubing Huang, Jinfu Chen, **Tao Zhang**, Rongcun Wang, and Yansheng Lu, “Prioritizing Variable-Strength Covering Array”, in *Proc. of the 37th IEEE Annual International Computer Software and Applications Conference (COMPSAC'13)*, Jul. 22-26, 2013, pp. 502-511.
- **Tao Zhang** and Byungjeong Lee, “A Hybrid Bug Triage Algorithm for Developer Recommendation”, in *Proc. of the 28th ACM Symposium on Applied Computing (SAC'13)*, Mar. 18-22, 2013, pp. 1088-1094.



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- **Tao Zhang** and Byungjeong Lee, “How to Recommend Appropriate Developers for Bug Fixing?” in *Proc. of the 36th IEEE Annual International Computer Software and Applications Conference (COMPSAC'12)*, Jul. 16-20, 2012, pp. 170-175.
- **Tao Zhang** and Byungjeong Lee, “A Bug Rule Based Technique with Feedback for Classifying Bug Reports”, in *Proc. of the 11th IEEE International Conference on Computer and Information Technology (CIT'11)*, Aug. 31-Sept. 2, 2011, pp. 336-343.
- Guijia He, **Tao Zhang**, Byungjeong Lee, and Jin Suk Kim, “Utilizing SSTAG: A Novel Tag Recommendation Mechanism to Web Page Search”, in *Proc. of the 11th IEEE International Conference on Computer and Information Technology (CIT'11)*, Aug. 31-Sept. 2, 2011, pp. 455-460.
- **Tao Zhang** and Byungjeong Lee, “Complementary Classification Technique Based Personalized Software Requirements Retrieval with Semantic Ontology and User Feedback”, in *Proc. of the 10th IEEE International Conference on Computer and Information Technology (CIT'10)*, Jun. 29-Jul. 1, 2010, pp. 1358-1363.
- **Tao Zhang**, Byungjeong Lee, Sooyong Kang, Hanjoon Kim, and Jinseog Kim, “Collective Intelligence-Based Web Page Search: Combining Folksonomy and Link-Based Ranking Strategy”, in *Proc. of the 9th IEEE International Conference on Computer and Information Technology (CIT'09)*, Oct. 11-14, 2009, pp. 166-171.

#### 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.

### Selected Research Grants

- 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.

### Academic Service

- **Editorial Board Member**  
Journal of Systems and Software (JSS)
- **Board Member of Distinguished Reviewers**  
ACM Transactions on Software Engineering and Methodology (TOSEM)
- **Guest Editor**  
Empirical Software Engineering (EMSE)  
IEEE Transactions on Reliability (TR)  
Journal of Software: Evolution and Process (JSEP)  
Journal of Systems and Software (JSS)  
Science of Computer Programming (SCP)  
IET Software  
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**  
IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2023)
- **Program Co-Chair**  
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)
- **TPC Member**
  - International Conference on Software Engineering (ICSE 2025)
  - ACM Symposium on the Foundations of Software Engineering (FSE 2024)
  - 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*
  - IEEE/ACM International Conference on Automated Software Engineering (ASE 2023-2024)
  - ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2023)
  - IEEE/ACM International Conference on Software Engineering (ICSE 2023): *Demonstrations Track*
  - Asia-Pacific Software Engineering Conference (APSEC 2023)
  - Asia-Pacific Symposium on Internetware (Internetware 2023)
  - International Conference on Mining Software Repositories (MSR 2022-2023)
  - International Symposium on Software Reliability Engineering (ISSRE 2021-2023)
  - IEEE International Conference on Software Quality, Reliability, and Security (QRS 2020-2023)
  - 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)
  - IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2020)
  - 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 (ASEJ)
  - 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)
  - Software Quality Journal (SQJ)
  - International Journal of Software Engineering and Knowledge Engineering (IJSEKE)
  - IEEE Transactions on Reliability (TR)
  - 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)

- **Professional Organization Membership**

ACM/IEEE/CCF Senior Member

Member of CCF Technical Committee on Software Engineering

Board Member of Supervisors, IEEE Macau

- **University-Level Service**

Member of Teaching Excellence Awards Committee, Macau University of Science and Technology

## Theses and Dissertations Supervised

- 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.
- 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
- SE480 Topics in Software Engineering
- CS240 Database Systems
- CS014 Software Engineering
- CS103 Software Engineering Practices
- 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:** Proficiency in Listening, Speaking, Reading, and Writing
- **Korean:** Elementary Proficiency
- **Programming Language:** Proficiency in Python, C++, C#, Java, and R
- **Development Tool:** Proficiency in VS, NetBeans, MATLAB, and Eclipse

## Hobby

- Reading, Skating, Mountaineering, and Playing Piano