

# Zhiqiang Wu

Portfolio: [hhhwwwuuu.github.io](http://hhhwwwuuu.github.io)

Expected Graduation: February, 2022

Email: [wzq0515@gmail.com](mailto:wzq0515@gmail.com)

Mobile: +82-10-7245-5521

## EDUCATION

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- **Hanyang University** Korea  
*Doctor of Philosophy in Computer Science* *Sep. 2017 - Feb. 2022*  
**Thesis:** Analyzing Validity of Permission Usages in Android Apps via App Descriptions  
**Advisor:** Scott Uk-Jin Lee
- **Hanyang University** Korea  
*Master of Science in Computer Science* *Sep. 2015 - Aug. 2017*
- **Lunghwa University of Science and Technology** China  
*Academic Exchange Student in Electronic Engineering* *Feb. 2014 - Jun. 2014*
- **Shanghai Polytechnical University** China  
*Bachelor of Engineering in Computer Science* *Sep. 2011 - Jun. 2015*  
**Advisor:** Linxiang Shi

## RESEARCH EXPERIENCE

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- **Android-Specific Code Smell Detection** *May 2021 - Current*
  - Conducting literature reviews to summarize the state-of-the-art of code smell detection in Android apps.
  - Performing an exploratory study on detecting domain code smells with non-code artifacts.
  - Designing and implementing framework to detect Android-specific code smells in multi-languages.
- **Analyzing Permission Usages in Android Apps via App Descriptions** *Jan. 2019 - Dec. 2021*
  - Conducting literature review; investigating the drawbacks of the existing researches on app descriptions.
  - Annotating dataset and implementing deep learning model to classify the imbalanced dataset.
  - Designing and implementing a framework to assess the validity of permission usages via static analysis.
- **Definition and Detection of Practically Valuable Code Smells** *May 2020 - Apr. 2021*
  - Collaborating and sharing the ideas with other researchers.
  - Conducting empirical studies to identify a set of practically valuable code smells.
- **Detecting Conflicts of Access Control based on Machine Learning** *Jul. 2016 - May 2020*
  - Collaborating and sharing the ideas with other researchers.
  - Developing a mock IoT system using Raspberry Pi as a testbed.
- **Verified the Anomalies of Multi-threading Program in ICT Platform** *Jul. 2016 - Feb. 2018*
  - Conducting academic research.
  - Sharing ideas with other lab members.
  - Designing and developing multi-threading programs (written in C) with concurrent anomalies as test cases.
  - Leveraging SPIN to verify the multi-threading programs
- **Graph Modification Program Development** *Oct. 2016 - Mar. 2017*
  - Designing and implementing the algorithm to extract the data points from users drawing.
  - Generating the new graph and exporting its data (written in C#).
  - Optimizing I/O performance while generating and exporting data.

## PROFESSIONAL EXPERIENCE

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- **ACM Club** Shanghai, China  
*Primary Member* *Nov. 2011 - May 2015*
  - Taught competitive programming algorithms to junior students.
  - Organized weekly training and participated various programming contest on behalf of school.
- **China Life Insurance Co. Ltd.** Shanghai, China  
*Summer Intern* *Jun. 2014 - Aug. 2014*
  - Deployed the new software to server based on documentation.
  - Assisted colleagues to test the software.

## PUBLICATIONS

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1. Xin Chen, **Zhiqiang Wu**, and Scott Uk-Jin Lee, Analyzing Technical Debt Prioritization Methods and Tools: How Do Practitioners Meet Their Expectations?, *IEEE Software (work in progress)*
2. **Zhiqiang Wu**, Xin Chen, and Scott Uk-Jin Lee, A Systematic Literature Review on Android-Specific Code Smells Detection, *Journal of Systems and Software (work in progress)*
3. Muhammad Umair Khan, Scott Uk-Jin Lee, **Zhiqiang Wu**, and Shanza Abbas, Wake Lock Leak Detection in Android Apps Using Multi-Layer Perceptron, *Electronics*, vol. 10, issue 18, arti. no. 2211, Sep. 2021.
4. **Zhiqiang Wu**, Xin Chen, Muhammad Umair Khan, and Scott Uk-Jin Lee, Enhancing Fidelity of Description in Android Apps with Category-based Common Permissions, *IEEE ACCESS*, vol. 9, Jul. 2021, pp. 105493-105505.
5. **Zhiqiang Wu**, Hakjin Lee, and Scott Uk-Jin Lee, An Empirical Study on the Impact of Permission Smell in Android Applications, *Journal of Korea Society of Computer Information*, vol. 26, no. 6, pp. 89-96, Jun. 2021.
6. **Zhiqiang Wu** and Scott Uk-Jin Lee, Forgotten Permission Usages: An Empirical Study on App Description Based Android App Analysis, *Journal of Korea Society of Computer Information*, vol. 26, no. 6, pp. 107-113, Jun. 2021.
7. **Zhiqiang Wu**, Xin Chen, and Scott Uk-Jin Lee, FCDP: Fidelity Calculation of Description-to-Permissions in Android Apps, *IEEE ACCESS*, vol. 9, 2021, pp. 1062-1075.
8. Xin Chen, **Zhiqiang Wu**, and Scott Uk-Jin Lee, Duplicate Code Detection Based on Geometric Center for IoT Application, in *Proc. International Conference on Information System and Convergence Applications*, Feb. 2020.
9. **Zhiqiang Wu**, Xin Chen, and Scott Uk-Jin Lee, Permissions Smells Detection for IoT Applications on Android Platform, in *Proc. Korea Software Congress*, Dec. 2019, pp. 293-295.
10. Xin Chen, **Zhiqiang Wu**, and Scott Uk-Jin Lee, Web Attack Detection Based on ResNet and RNN, in *Proc. International Conference on Computational Sciences and Technologies*, Apr. 2019, pp. 64-67.
11. **Zhiqiang Wu**, Xin Chen, and Scott Uk-Jin Lee, Identifying Latent Android Malware from Application's Description using LSTM, in *Proc. 6th International Conference on Information, System and Convergence Applications*, Jan. 2019, pp. 40-42.
12. **Zhiqiang Wu**, Xin Chen, and Scott Uk-Jin Lee, Permissions based Automatic Android Malware Repair using Long Short-Term Memory, in *Proc. Korean Society of Computer Information Conference*, 2019, pp. 387-388. (**Best Paper**)
13. **Zhiqiang Wu**, Asad Abbas, Xin Chen, and Scott Uk-Jin Lee, Classification of Concurrent Anomalies for IoT Software based Support Vector Machine, *Journal of Theatrical and Applied Information Technology*, vol. 96, no. 3, pp. 832-842, Feb. 2018.
14. Xin Chen, **Zhiqiang Wu**, and Scott Uk-Jin Lee, Testing and Evaluation of Free/Open Source Web Vulnerability Scanners for IoT Web Applications, in *Proc. International Workshop on Convergence Information Technology*, Dec. 2017.
15. **Zhiqiang Wu**, Support Vector Machine Based Concurrency Anomaly Classification for Mobile Applications, *Hanyang Univeristy, master thesis*, Aug. 2017.
16. **Zhiqiang Wu**, Asad Abbas, and Scott Uk-Jin Lee, Multiple Concurrency Anomalies Classification for Mobile Applications using Support Vector Machine, in *Proc. International Conference on Computing Convergence and Applications*, Aug. 2017, pp. 103-106. (**Best Paper**)
17. Asad Abbas, Isma Farah Siddiqui, **Zhiqiang Wu**, Mohsin Javaid Siddiqui, and Scott Uk-Jin Lee, Contextual Variability Management for Multi-Software Product Line, in *Proc. International Conference on Computing Convergence and Applications*, Aug. 2017, pp. 71-74.
18. **Zhiqiang Wu** and Scott Uk-Jin Lee, The Application of Banker's Algorithm in Order Scheduling Management for Deadlock Avoidance, in *Proc. Korea Computer Comprehensive Congress*, 2016, pp. 660-662.
19. Asad Abbas, **Zhiqiang Wu**, Isma Farah Siddiqui, and Scott Uk-Jin Lee, Challenges of Multi-Objective Optimization in Feature Model of Software Product Line, in *Proc. 3rd International Conference on Information, System and Convergence Applications*, Jul. 2016, pp. 15-17.
20. Asad Abbas, **Zhiqiang Wu**, Isma Farah Siddiqui, and Scott Uk-Jin Lee, An Approach for Optimized Feature Selection in Software Product Line using Union-Find and Genetic Algorithms, *Indian Journal of Science and Technology*, vol. 9, no. 17, pp. 1-8, May 2016.

21. Asad Abbas, **Zhiqiang Wu**, Isma Farah Siddiqui, and Scott Uk-Jin Lee, Optimized Feature selection with Crosscutting Concerns in Software Product Line Feature Model, in *Proc. 2nd International Conference on Information and Convergence Technology for Smart Society, 2016*, pp. 1-3.
22. **Zhiqiang Wu**, Seonwoong Kim, Abdul Rahim Mohamed Ariffin, and Scott Uk-Jin Lee, An Effect Attendance Management System Based on Browser/Server Technique, in *Proc. 18nd Korea Computer Congress, 2015*, pp. 505-507.

## HONORS AND AWARDS

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- Chinese Government Scholarship for Ph.D. Degree *Ministry of Education of China, 2017-2021*
- University Scholarships, *consecutive* *HYU, 2015-2019*
- Outstanding Graduate Awards *SSPU, 2015*
- Outstanding Student Awards (Top 5%) *SSPU, 2014*
- 3rd Prize of 2014 Taiwan Open Hardware Application Innovation Contest *KSU, 2014*
- 1st Prize of the 1st Taiwan Innovation Contest *Taoyuan city, 2014*
- University Scholarships, *consecutive* *SSPU, 2011-2015*
- 3rd Prize of 3th Lan Qiao Cup Programming Contest *MIITC, 2013*

## ACADEMIC SERVICES

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**Journal Reviewer:** IEEE ACCESS

**External Reviewer:** APSEC 2016, ICECCS 2016, 2020, 2022, Information 2020, ISSE 2020, Electronics 2020

**Student Volunteer:** ICSE 2020

*Lasted updated: January 14, 2022*