

# Yutian Tang

Assistant Professor

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## Research Interests

**Software Engineering** (Program Analysis, Empirical Software Engineering, Blockchain, Software Component Analysis, Android);  
**Security** (Mobile Security, Fuzzing, Software Supply Chain Security)

## Education

2013.8-2018.9 **Ph.D.**, Department of Computing, The Hong Kong Polytechnic University, Hong Kong SAR, China (QS 2022=66)

Advisor ○ Dr. Xiapu Luo (Associate Professor), and Dr. Hareton Leung (Associate Professor Emeritus)

2009.9-2013.6 **B.Sc.**, Department of Computer Science and Technology, Jilin University, Changchun, China

Advisor ○ Prof. Lan Huang, Associate Dean

## Research Positions

2020.10-Present **Assistant Professor**, School of Information Science and Technology, ShanghaiTech University (A university affiliated to Chinese Academic of Sciences), China

2018-2020 **Post-doc Research Fellow**, The Hong Kong Polytechnic University, Hong Kong SAR, China

2017-2018 **Part-time Research Assistant**, The Hong Kong Polytechnic University, Hong Kong SAR, China.

## Fundings

### Solo PI (3)

**G3** Research on Android App Debloating with Multi-dimension, Multi-semantic Module Mining (No. 6220072429)  
National Natural Science Foundation of China (NSFC) -Youth Program  
Grant Amount: 300,000 CNY  
Year 2023-2025

- G2 Vulnerable Components Detection for Apps (No. 21PJ1410700)  
Shanghai Pujiang Program, Science and Technology Commission of Shanghai Municipality  
Grant Amount: 300,000 CNY  
Year 2021-2023
- G1 Early career research fund (No.2020F0203-000-14)  
ShanghaiTech University  
Grant Amount: 3 million CNY  
Year 2020-2023
- Co-PI or Participants (2)
- G2 Improving Mobile Users' Privacy Decisions via Exposing Unexpected Sensitive Operations in Hardened Apps  
Research Grants Council GRF, Hong Kong  
Grant Amount: 416,667 HKD  
Year 2018-2020
- G1 Research and Development of An Advanced IPS System for Aftermarket Telematics  
Innovation and Technology Fund (ITF), Hong Kong  
Grant Amount: 2,386,066 HKD (including 1,899,340 HKD from ITF, and 486,726 from company sponsor);  
2018-2020

## Publication († corresponding author, (s) for my students)

Summary ESEC/FSE (1); WWW (1); ASE (3); IEEE TSE (3); IEEE TReli (1); SANER (3); ICPC (2); ISSRE (2); JSS (2); IST (2); JCST (1); JSEP (1); JCR-Q1 (9), CCF-A (8), CCF-B(13), Core-A/A\*(9)  
Selected Papers are **highlighted**

### Peer-Review Conference Papers (18);

- C.18** Zhichao Zhou<sup>(s)</sup>, Yuming Zhou, Chunrong Fang, Zhenyu Chen, **Yutian Tang**<sup>†</sup>, "Selectively Combining Multiple Coverage Goals in Search-Based Unit Test Generation", *35th IEEE/ACM International Conference on Automated Software Engineering (ASE), 2022* **Core A\*, CCF-A, Top 3 conference in SE**;
- C.17** Guosheng Xu, Siyi Li, Hao Zhou, Shucen Liu, **Yutian Tang**, Li Li, Xiapu Luo, Xusheng Xiao, Guoai Xu and Haoyu Wang, "Lie to Me: Abusing the Mobile Content Sharing Service for Fun and Profit", *The Web Conference (WWW), 2022*, **CORE-A\*, CCF-A**;
- C.16 Zejun Wu, Chao Ma, Xiaochuan Shi, Libing Wu, Dian Zhang, **Yutian Tang**, "BRNN-GAN: Generative Adversarial Networks with Bi-directional Recurrent Neural Networks for Multivariate Time Series Imputation", *IEEE International Conference on Parallel and Distributed Systems, 2021*, CCF-C;
- C.15 Kunsong Zhao, Zhou Xu, Meng Yan, **Yutian Tang**, Ming Fan, Gemma Catolino, "Just-in-Time Defect Prediction for Android Apps via Imbalanced Deep Learning Model", *The 36th ACM/SIGAPP Symposium On Applied Computing, 2021*

- C.14** Hao Zhou, Haoyu Wang, Yajin Zhou, Xiapu Luo, **Yutian Tang**, Lei Xu, Ting Wang, "Demystifying Diehard Android Apps", *35th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, 2020 **Core A\***, CCF-A, **Top 3 conference in SE**;
- C.13 Kunsong Zhao, Zhou Xu, Tao Zhang, **Yutian Tang**, "Simplified Deep Forest Model based Just-In-Time Defect Prediction for Android Mobile Apps", *20th International Conference on Software Quality, Reliability, and Security (QRS)*, 2020 CCF-C;
- C.12** **Yutian Tang**, Yulei Sui, Haoyu Wang, Xiapu Luo, Hao Zhou, Zhou Xu, "All Your App Links (are) Belong to Us: Understanding the Threats of Instant Apps based Attacks", *The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, 2020, **Core A\***, CCF-A, **Top 2 conference in SE, the vulnerability reported is confirmed by Google**;
- C.11** Yan Cai, **Yutian Tang**, Haicheng Li, Le Yu, Hao Zhou, Xiapu Luo, Liang He, Purui Su, "Resource Race Attacks on Android", *27th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER)*, 2020, CCF-B, **Core A, the vulnerability reported is confirmed by Google**;
- C.10** **Yutian Tang**, Xian Zhan, Hao Zhou, Xiapu Luo, Zhou Xu, Yajin Zhou, Qiben Yan, "Demystifying Application Performance Management Libraries for Android", *The 34th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, 2019, **CCF-A, Core-A\***;
- C.9 Zhou Xu, Sizhe Ye, Tao Zhang, Zhen Xia, Shuai Pang, Yong Wang, **Yutian Tang**, "MVSE: Effort- Aware Heterogeneous Defect Prediction via Multiple-View Spectral Embedding", *19th International Conference on Software Quality, Reliability, and Security (QRS)*, 2019, CCF-C;
- C.8 Zhou Xu, Shuai Pang, Yifeng Zhang, **Yutian Tang**, Jin Liu, Xiapu Luo, Jacky Keung, Xiaohui Cui, "Identifying Crashing Fault Residence Based on Cross Project Model", *International Symposium on Software Reliability Engineering (ISSRE)*, 2019, CCF-B, **Core-A**;
- C.7 Xian Zhan, Tao Zhang, **Yutian Tang**, "A Comparative Study of Android Repackaged Apps Detection Techniques", *2019 IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER)*, 2019, CCF-B, **Core-A**;
- C.6** Xuejiao Zhao, Hongwei Li, **Yutian Tang**, Dongjing Gao, Lingfeng Bao, Chinghung Lee, "A Smart Context-aware Program Assistant based on Dynamic Programming Event Modeling", *The 29th IEEE International Symposium on Software Reliability Engineering (ISSRE)*, 2018, CCF-B, **Core-A, Best Industrial Paper Award**;
- C.5 Zhou Xu, Shuai Li, **Yutian Tang**, Xiapu Luo, Tao Zhang, Jin Liu, Jun Xu, "Cross Version Defect Prediction with Representative Data via Sparse Subset Selection", *26th IEEE/ACM International Conference on Program Comprehension (ICPC)*, 2018, CCF-B, **Core-B**;
- C.4** **Yutian Tang**, Hareton Leung, "Constructing Feature Model by Identifying Variability-aware Modules", *25th IEEE/ACM International Conference on Program Comprehension (ICPC)*, 2017, CCF-B;

- C.3 **Yutian Tang**, Hareton Leung, “StiCProb: A Novel Feature Mining Approach using Conditional Probability”, 24th IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER), 2017, CCF-B, **Core-A**
- C.2 **Yutian Tang**, Hareton Leung, “Feature Mining for Product Line Construction”, The First International Conference on Advances and Trends in Software Engineering (SOFTENG), 2015;
- C.1 **Yutian Tang**, Hareton Leung, “A Top-down Feature Mining Framework for Software Product Line”, 17th International Conference on Enterprise Information Systems (ICEIS), 2015;

#### Peer-Review Journal Articles (12)

- J.12 Hongchen Chao<sup>(s)</sup>, Shuai Li, Yuming Zhou, Ming Fan, Xuejiao Zhao, **Yutian Tang**<sup>†</sup>, “Cheating Your Apps: Black-box Adversarial Attacks on Deep Learning Apps”, *Journal of Software: Evolution and Process*, 2022 CCF-B, IF=1.932
- J.11 Le Yu, Haoyu Wang, Xiapu Luo, Tao Zhang, Kang Liu, Jiachi Chen, Hao Zhou, **Yutian Tang**, Xusheng Xiao, “Towards Automatically Localizing Function Errors in Mobile Apps with User Reviews”, *IEEE Transactions on Software Engineering*, 2022 **Top-1 Journal in SE field, CCF-A, IF=9.322**
- J.10 Jian Huang, Shanhui Liu, **Yutian Tang\***, Xiushan Zhang, “Object-Level Remote Sensing Image Augmentation Using U-Net-Based Generative Adversarial Networks”, *Wireless Communication and Mobile Computing*, CCF-C, 2021; IF=2.146
- J.9 **Yutian Tang**, Hao Zhou, Xiapu Luo, Ting Chen, Haoyu Wang, Zhou Xu, and Yan Cai, “XDebloat: Towards Automated Feature-Oriented App Debloating”, *IEEE Transactions on Software Engineering*, 2021 **Top-1 Journal in SE field, CCF-A, IF=9.322**
- J.8 Zhen Yang, Jacky Keung, Md Alamgir Kabir, Xiao Yu, **Yutian Tang**, Miao Zhang, Shuo Feng, “AComNN: Attention Enhanced Compound Neural Network For Financial Time-Series Forecasting With Cross-Regional Features”, *Applied Soft Computing*, 2021 **JCR-Q1, IF=5.47**
- J.7 Kunsong Zhao, Zhou Xu, Tao Zhang, **Yutian Tang**, Meng Yan, “Simplified Deep Forest Model based Just-In-Time Defect Prediction for Android Mobile Apps”, *IEEE Transactions on Reliability*, 2021 JCR-Q1; IF=5.883
- J.6 **Yutian Tang\***, Haoyu Wang, Xian Zhan, Xiapu Luo\*, Yajin Zhou, Hao Zhou, Qiben Yan, Yulei Sui, Jacky Keung, “A Systematical Study on Application Performance Management Libraries for Apps”, *IEEE Transactions on Software Engineering*, 2021 **Top-1 Journal in SE field, JCR-Q1; IF=9.322;**
- J.5 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)*, 2020, CCF-B, JCR-Q2; IF=3.862
- J.4 Zhou Xu, Shuai Li, Jun Xu, Jin Liu, Xiapu Luo, Yifeng Zhang, Tao Zhang, Jacky Keung, **Yutian Tang**, “LDFR: Learning deep feature representation for software defect prediction”, *Journal of Systems and Software (JSS)*, 2019, **JCR-Q1; IF=3.514**

- J.3 Zhou Xu, Shuai Pang, Tao Zhang, Xiapu Luo, **Yutian Tang**, Xiao Yu, Lei Xue, "Cross Project Defect Prediction via Balanced Distribution Adaptation based Transfer Learning", Journal of Computer Science and Technology (JCST), 2019, CCF-B; IF=1.87
- J.2 Zhou Xu, Shuai Li, Xiapu Luo, Jin Liu, Tao Zhang, **Yutian Tang**, Jun Xu, Peipei Yuan, Jacky Keung, "TSTSS: A Two-Stage Training Subset Selection Framework for Cross Version Defect Prediction", Journal of System and Software (JSS), 2019, CCF-B, **JCR-Q1; IF=3.514**
- J.1 Zhou Xu, Jin Liu, Xiapu Luo, Zijiang Yang, Yifeng Zhang, Peipei Yuan, **Yutian Tang**, Tao Zhang, "Software Defect Prediction Based on Kernel PCA and Weighted Extreme Learning Machine", Information and Software Technology (IST), 2018, CCF-B, JCR-Q1; IF=3.862

## Academic Service

### Grant Referee

Grant Reviewing Committee **Shanghai Innovation Grant Reviewing Committee**, 2021

### Editorship

Review Editor **Frontiers in Computer Science** (ESCI Indexed), 2021-now

Academic Editor **Scientific Computing** (SCIE Indexed), 2021-now

Academic Editor **PLOS One** (SCI Indexed), 2021-now

### Technical Committee Member

Committee Member **CCF-Technical Committee of Software Engineering**

Committee Member **CCF-Technical Committee of System Software**

Committee Member **Shanghai Computer Society-Technical Committee of Software Engineering**

Technical Committee Member **IEEE Technical Committee on Software Engineering (TCSE)**

### Conference Technical Program Committee (TPC) Memberships

- 2023 **The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)** **Core A\***, **CCF-A**  
 Research Track  
**IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER)** **Core A**, **CCF-B**  
 Research Track, Tool Demo Track  
**International Conference on Software Engineering & Knowledge Engineering, (SEKE)** **CCF-C**  
 Research Track;  
**International Working Conference on Variability Modelling of Software-Intensive Systems**  
 Research Track;
- 2022 **The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)** **Core A\***, **CCF-A**  
 Artefact Evaluation Track  
**Programming Language Design and Implementation (PLDI)** **Core A\***, **CCF-A**  
 Artefact Evaluation Track  
**International Conference on Software Engineering (ICSE)** **Core A\***, **CCF-A**  
 Artefact Evaluation Track  
**International Conference on Program Comprehension (ICPC)** **Core A**, **CCF-B**  
 Research Track;  
**IEEE/ACM International Conference on Mobile Software Engineering and Systems (MobileSoft)**  
 Research Track, Industry Track;  
**International Conference on Software Engineering & Knowledge Engineering, (SEKE)** **CCF-C**  
 Research Track;  
**International Conference of Modern Systems Engineering Solutions**  
 Research Track  
**Future Technologies Conference**  
 Research Track  
**Computing Conference**  
 Research Track
- 2021 **The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)** **Core A\***, **CCF-A**  
 Artefact Evaluation Track  
**CCF Chinasoft Conference (ChinaSoft)**  
 Software & Data Intelligence Track  
[Journal Reviewer](#)
- Reviewer **IEEE Transactions on Dependable and Secure Computing;**  
 Reviewer **Journal of Computer Security;**  
 Reviewer **IEEE Transactions on Reliability;**  
 Reviewer **ACM Transactions on Software Engineering and Methodology (TOSEM)**  
 Reviewer **IEEE Transactions on Software Engineering;**

Reviewer **Automated Software Engineering (ASE);**  
 Reviewer **Empirical Software Engineering (EMSE);**  
 Reviewer **Frontier of Computer Science;**  
 Reviewer **SN Applied Sciences;**  
 Reviewer **Scientific Programming;**  
 Reviewer **The Journal of System and Software;**  
 Reviewer **Frontiers of Information Technology & Electronic Engineering;**  
 Reviewer **SCIENCE CHINA Information Sciences;**  
 Reviewer **IEEE Access;**  
 Reviewer **Security and Communication Networks;**  
 Ad-hoc **Journal of Information Technology Research;**  
 Reviewer  
 Sub-reviewer IEEE Transactions on Services Computing, IEEE Transactions on Biometrics, Behavior and Identity Science

## News Interview/Media Report

VOC, CCTV 12/Aug/2021 – The Voice of China, China Central Television; [see <https://mp.weixin.qq.com/s/glvaDNdsAAXrdAn9imDgnQ> (in Chinese)]  
 VOC, CCTV 25/May/2022 – The Voice of China, China Central Television; [see [https://content-static.cctvnews.cctv.com/snow-book/index.html?toc\\_style\\_id=feeds\\_default&share\\_to=wechat&item\\_id=631265256291590857&track\\_id=ABAA3E71-3BC8-468E-BB30-E7749E30EBB7\\_675580162403](https://content-static.cctvnews.cctv.com/snow-book/index.html?toc_style_id=feeds_default&share_to=wechat&item_id=631265256291590857&track_id=ABAA3E71-3BC8-468E-BB30-E7749E30EBB7_675580162403) (in Chinese)]  
 VOC, CCTV 26/June/2022 – The Voice of China, China Central Television; [see [https://content-static.cctvnews.cctv.com/snow-book/index.html?toc\\_style\\_id=feeds\\_default&share\\_to=wechat&item\\_id=7098209212896444086&track\\_id=9CEB9984-7D6A-4A10-8AF3-73D7EADCA068\\_677671690278](https://content-static.cctvnews.cctv.com/snow-book/index.html?toc_style_id=feeds_default&share_to=wechat&item_id=7098209212896444086&track_id=9CEB9984-7D6A-4A10-8AF3-73D7EADCA068_677671690278) (in Chinese)]

## Awards & Scholarships

2021 **Shanghai Pujiang Talent Program**, Science and Technology Commission of Shanghai Municipality  
 2018 **Best Industry Paper Award** International Symposium on Software Reliability Engineering, Paper: “A Smart Context-aware Program Assistant based on Dynamic Programming Event Modeling”  
 2013–2017 **Ph.D. Scholarships**, The Hong Kong Polytechnic University  
 2012 **Undergraduate Research Award, First Prize**, Jilin University  
 2012 **Undergraduate Scholarships, Second Prize**, Jilin University  
 2011 **Undergraduate Scholarships, Third Prize**, Jilin University

## Professional Qualifications & Membership

2020–Present **Member**, China Computer Federation (CCF)  
 2020–Present **Member**, EuroSys  
 2017–Present **Member**, ISACA  
 2017–Present **Member**, IEEE  
 2021–Present **Member**, ACM  
 2017–Present **Member**, HKCS  
 2012–Present **Senior Software Engineer**, under “China Qualification Certificate of Computer Science Technology Proficiency”

## Teaching

### Instructor

Instructor-ShanghaiTech CS132 Software Engineering, ShanghaiTech University; 2021 (Spring, Fall) (Course for Undergraduate), (in English and Chinese);

Instructor-ShanghaiTech CS224 Program Analysis, ShanghaiTech University; 2022 (Spring) (Course for Graduate), in English and Chinese);

### Teaching Assistant

TA-PolyU.HK COMP3235, Software Project Management, Department of Computing; (Course for both Undergraduate);

TA-PolyU.HK COMP3233, Software Testing and Quality Assurance, Department of Computing; (Course for both Undergraduate);

TA-PolyU.HK COMP4911, Capstone Project, Department of Computing; (Course for both Undergraduate);

TA-PolyU.HK COMP3211, Software Engineering, Department of Computing; (Course for both Undergraduate);

TA-PolyU.HK COMP309, System Programming, Department of Computing; (Course for both Undergraduate);

TA-PolyU.HK COMP322, Enterprise Information Systems Project Implementation, Department of Computing (Course for both Undergraduate);

## Mentoring Experience

### MSc. and Ph.D. Student

2022–2025 2 Students: Z. Liu, H. Hu

2021–2024 5 Students: k. Cao, Y. Su, Z. Zhou, X. Zhang, M. Yang

### Undergraduate Research Interns

2021–Present 2 Students: H. Cao, P. He

### Undergraduate Final Year Project

2022 4 Students: H. Jing, X. Shen, Y. Feng, Z. Tang

2021 1 Student: T. Zhao (TICP Shanghai)

## Conference Talks & Invited Talks



- Fudan University "Demystifying Application Performance Management Libraries for Android", **Yutian Tang**, Fudan University, 8/4/2021, Seminar;
- ShanghaiTech University "System Security, Are We There Yet?", **Yutian Tang**, School of Information Science and Technology, ShanghaiTech University, 6/11/2020, Undergraduate Seminar;
- Invited Speaker The 12th International Conference on Advanced Infocomm Technology(2020);
- ShanghaiTech University "Android, Don't Lie to Me", **Yutian Tang**, ShanghaiTech University, China;
- Queen's University Belfast "Android, Don't Lie to Me", **Yutian Tang**, Queen's University Belfast, United Kingdom;
- University of East London "Android, Don't Lie to Me", **Yutian Tang**, University of East London, United Kingdom;
- University of Dundee "Android, Don't Lie to Me", **Yutian Tang**, University of Dundee, United Kingdom;
- University of Central Lancashire "Android, Don't Lie to Me", **Yutian Tang**, University of Central Lancashire, United Kingdom;
- University of Canterbury "Android, Don't Lie to Me", **Yutian Tang**, University of Canterbury, New Zealand;
- ESEC/FSE'20 "All Your App Links are Belong to Us: Understanding the Threats of Instant Apps based Attacks", **Yutian Tang**, in *The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering*;
- Tongji University "All Your App Links are Belong to Us: Understanding the Threats of Instant Apps based Attacks", **Yutian Tang**, School of Software, Tongji University;
- ASE'19 "Demystifying Application Performance Management Libraries for Android", **Yutian Tang** in *34th IEEE/ACM International Conference on Automated Software Engineering*;
- SANER'17 "StiCProb: A Novel Feature Mining Approach Using Conditional Probability", **Yutian Tang**, in *Proceedings of 24th IEEE International Conference on Software Analysis, Evolution, and Reengineering*;
- ICPC'17 "Constructing Feature Model by Identifying Variability-aware Modules", **Yutian Tang**, in *IEEE/ACM International Conference on Program Comprehension*;
- SOFTENG'15 "Feature Mining for Product Line Construction", **Yutian Tang**, in *The First International Conference on Advances and Trends in Software Engineering*;
- ICEIS'15 "Top-down Feature Mining Framework for Software Product Line", **Yutian Tang**, in *Proceedings of the International Conference on Enterprise Information System*;

## University & Department Service

- 2021 Undergraduate Admission Coordinator, ShanghaiTech University, Hangzhou (Zhejiang); 28/6/2021-1/7/2021
- 2021 Graduate recruiting at Jilin University, Changchun, 11/6/2021

- 2021 Graduate recruiting at Northeastern University, Shenyang
- 2021 Undergraduate Admission Coordinator, ShanghaiTech University, Tianjin City; 24/4/2021, 25/4/2021
- 2021 PI Interview Committee, System and Security Center, 1C-201, SIST, ShanghaiTech University, 4/3/2021; 11/3/2021
- 2021 Graduate Admission Interview, School of Information Science and Technology, 1A-302, SIST, ShanghaiTech University, 19/3/2021
- 2020 Modular High Performance Computing Application Innovation Workshop, 26/11/2020-Room 110, Administration Center, ShanghaiTech University
- 2020 Graduate Admission Interview, School of Information Science and Technology, 1A-212, SIST, ShanghaiTech University, 23/10/2020;13/09/2020
- 2020 Undergraduate Seminar, "System Security, Are We There Yet?", School of Information Science and Technology, ShanghaiTech University, 6/11/2020
- 2020 PI Interview Committee, System and Security Center, 1C-201, SIST, ShanghaiTech University, 19/11/2020

## References

Available upon requests.