
Yuan Tian

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RESEARCH INTEREST

My research interests involve security and privacy and its interactions with system, networking, machine learning, and human-computer interaction. My current research focuses on developing new technologies for protecting user privacy, particularly in the areas of mobile systems and Internet of Things. My previous work about mobile and web security and privacy have been adopted by Google (Chrome HTML5 privacy), Facebook (flaw analysis for web services, authentication protection), Microsoft (login protection), Samsung (mobile app security), Evernote (OAuth security), Dropbox (OAuth security), and others.

EDUCATION

2012 –2017 (expected)	Carnegie Mellon University (CMU) Department of Electrical and Computer Engineering Ph.D student in Computer Security
2009 – 2012	Beijing University of Posts and Telecommunications (BUPT) Department of Computer Science and Engineering MSc in Information Security GPA: 3.80/4 87/100 Ranking: 2/120
2005 – 2009	Zhengzhou University (ZZU) Department of Information Engineering BSc in Communication Engineering GPA: 3.84/4 91/100 Ranking: 1/160

AWARDS & HONORS

- **2016 Invited to Rising Stars in EECS Workshop (69 female researchers across the world)**
- **2015 BlackHat future female leaders in cybersecurity**
- 2014 Microsoft Research Fellowship Final list
- 2014 Qualcomm Innovation Fellowship Final list
- 2014 Best poster runner up at Women in Cyber Security Conference
- 2014 Security Hall of Fame for Facebook, Dropbox, Evernote, and Tencent
- 2014 CCS Student Travel Grant
- 2014 Oakland Student Travel Grant
- 2013 Two API prizes in AngelHack
- 2012 Dean's Fellowship, Carnegie Mellon University
- 2010 – 2011 IBM Fellowship- 74 students from 30 top universities
- 2009 – 2010 CHANGFEI Scholarship of China - 1 out of 300 CS master students in BUPT
- 2008 China Soong Ching Ling Female Student Fellowship

Research Experience

Research assistant, **2012-Now**
MEWS (Mobile, Embedded, & Wireless Security Lab), Cylab,
Department of Electrical and Computer Engineering,
Carnegie Mellon University

Security Intern, **2015.11-2016.2**
Security Infrastructure team, Facebook
I worked on large-scale behavior analysis to protect information integrity of Facebook. The solution is deployed in Facebook to protect over 1 billion users.

Research Intern, **2015.5-2015.8**
System research group, Microsoft Research
I worked with Dr. Cormac Herley and Dr. Stuart Schechter to build a distributed system to prevent against online password guessing attacks. The solution is open-sourced.

Research Intern, **2013.5-2013.8**
Security group, Samsung
I work with Dr. Peng Ning to design and implement security enhancement on the Android operating system.

Research assistant, **2012.1-2012.6**
NISL (Network and Information Security Lab),
Tsinghua University
I work with Dr. Jianwei Zhuge on program analysis on Android.

Research assistant, **2009.9-2011.12**
State Key Laboratories of Networking and Switching Technology,
Beijing University of Posts and Telecommunications
I work with Dr. Ru Zhang on copyright management and steganography.

Teaching Experience

Mobile Security , Carnegie Mellon University 2013, 2015
Assistant in Instruction for 50 graduate students

Web security and performance, Carnegie Mellon University 2014
Assistant in Instruction for 20 graduate students

Computer Networks, Beijing University of Posts and Telecommunications 2011
Assistant in Instruction for 50 undergraduate students

C++ programming, Beijing University of Posts and Telecommunications 2010
Assistant lab Instructor for 30 undergraduate students

Selected Mentoring Experience

- **Xianzheng Guo** (Graduate student at CMU) 2016
- **João André Sá** (Visiting student at CMU, now at EPFL) 2015
- **Xiaojun Ma** (Graduate student at CMU, now at Google) 2015
- **Ti-fen Pan** (Graduate student at CMU, now at Square) 2014
- **Divya Chandra Sekar** (Graduate student at CMU, now at Intel) 2014
- **Su Mon Kywe** (Visiting student at CMU, now at Appthority) 2013

PUBLICATIONS

- **Conferences**

1. **Y. Tian**, N. Zhang, Y. Lin, X. Wang, X. Guo, P. Tague, "Smart Things to Secure", to appear in *26th Usenix Security Symposium (Usenix Security)*, 2017. Acceptance rate: 16.3%
2. P. Marinescu, C. Parry, M. Pomarole, **Y. Tian**, P. Tague, I. Papagiannis, "IVD: Automatic Learning and Enforcement of Authorization", to appear in *38th IEEE Symposium on Security and Privacy (Oakland)*, 2017. Acceptance rate: 13.3%
3. **Y. Tian**, S. Chen, E. Chen, X. Ma, X. Wang, and P. Tague, "Swords and Shields - A Study of Mobile Game Hacks and Existing Defenses", *2016 Annual Computer Security Applications Conference (ACSAC)*, 2016. Acceptance rate: 22.8%
4. **Y. Tian**, Y. Pei, E. Chen, S. chen, R. Kotcher, and P. Tauge, "1000 Ways to Die in Moble OAuth", *Black Hat*, 2016.
5. L. Bauer, S. Cai, L. jia, T. Passaro, M. Stroucken, and **Y. Tian**, "Run-time Monitoring and Formal Analysis of Information Flows in Chromium", *Network and Distributed System Security Symposium (NDSS)*, 2015. Acceptance rate: 16.9%
6. **Y. Tian**, K. Liu, A. Bhosale, L. Huang, P. Tague, and C. Jackson, "All Your Screens Are Belong to Us: Attacks Exploiting the HTML5 Screen Sharing", *35th IEEE Symposium on Security and Privacy (Oakland)*, 2014. Acceptance rate: 13.1%
7. E. Chen, S. Chen, Y. Pei, **Y. Tian**, R. Kotcher, and P. Tague, "OAuth Demystified for Mobile Application Developers", *ACM Conference on Computer and Communications Security (CCS)*, 2014. Acceptance rate: 18.6%
8. L. Bauer, S. Cai, L. Jia, T. Passaro and **Y. Tian**, "Analyzing the Dangers Posed by Chrome Extensions: A Case for Information-Flow-Based Protection", *IEEE Conference on Communications and Network Security(CNS)*, 2014. Acceptance rate: 29.2%
9. Y. Kim, **Y. Tian**, L. Nguyen and P. Tague, "LAPWiN: Location-Aided Probing for Protecting User Privacy in Wi-Fi Networks", *IEEE Conference on Communications and Network Security(CNS)*, 2014. Acceptance rate: 29.2%
10. S. Kywe, C. Landis, Y. Pei, J. Satterfield, **Y. Tian**, and Patrick Tague, "PrivateDroid: Private Browsing Mode for Android", *IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom)*, 2014
11. L. Nguyen, **Y. Tian**, S. Cho, W. Kwak, S. Parab, Y. Kim, P. Tague, and J. Zhang, "UnLoIn: Unauthorized Location Inference on Smartphones without Being Caught", *International Conference on Security and Privacy in Mobile Information and Communication Systems (PRISMS)*, June 2013.
12. **Y. Tian**, R. Zhang, and Y. Ding, "Decentralized Authentication and Piracy Preservation in P2P Content Delivery Networks," *IEEE International Conference on Information Theory and Information Security*, 2011.
13. K. Deng, R. Zhang, **Y. Tian**, X. Yu, X. Niu, and Y. Yang, "Steganalysis of the MP3 Steganographic Algorithm Based on Huffman Coding", *IEEE International Conference on Intelligent Computing and Integrated Systems (ICISS)*, 2010.
14. **Y. Tian**, R. Zhang, J. Wu, and E. Chen, "Analysis of Security Against a Steganographic Algorithm," *14th National Youth Communication Conference of China*, 2009.

- **Workshops**

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15. **Y. Tian**, B. Liu, W. Dai, B. Ur, P. Tague, and L. Cranor, "Supporting Privacy-Conscious App Update Decisions with User Reviews", to appear in *ACM CCS Workshop on Security and Privacy in Smartphones and Mobile Devices (SPSM)*, 2015. Acceptance rate: 38%
 16. H. Wang, A. Moshchuk, M. Gamon, M. Haraty, S. Iqbal, E. Brown, A. Kapoor, C. Meek, E. Chen, **Y. Tian**, J. Teevan, M. Czerwinski, and S. Dumais, "The Activity Platform", *Workshop on Hot Topics in Operating Systems(HotOS)*, 2015. Acceptance rate: 31.8%
 17. **Y.Tian**, C. Zheng, A. Desnos, "APKInspector: Static Analysis of Android Applications", *Honeynet Workshop, 2013*

- **Posters**

16. **Y. Tian**, E. Chen, J. Sousa, P. Tague, and H. Wang, "Privacy-Preserving Context Sharing in Social Platforms", *25th Usenix Security Symposium (Usenix Security)*, 2016
17. **Y. Tian**, K. Liu, A. Bhosale, L. Huang, P. Tague, and C. Jackson, "Attacks Exploiting the HTML5 Screen Sharing", *Women in Cyber Security (WiCys)*, 2014
18. Y. Kim, **Y. Tian**, L. Nguyen, and P. Tague, "LAPWiN: Location-Aided Probing in Wi-Fi Networks", *34th IEEE Symposium on Security and Privacy (Oakland 2013)*, 2013
19. A. Athreya, Y. Kim, X. Wang, **Y. Tian**, and P. Tague, "Packet Conductance for Statistical Intrusion Detection in Anonymous Networks", *34th IEEE Symposium on Security and Privacy (Oakland 2013)*, 2013

- **Patents**

20. Y. Kim, L. Nguyen, **Y. Tian**, and P. Tague, "LAPWiN: Location-Aided Probing in Wi-Fi Networks", pending

- **Technical Reports**

21. **Y. Tian**, C. Herley, and S. Schechter, "Exploring Mechanisms to Defend Against Online Password Guessing", Microsoft Technical Report, 2016
22. L. Bauer, S. Cai, L. jia, T. Passaro, M. Stroucken, and **Y. Tian**, "Run-time Monitoring and Formal Analysis of Information Flows in Chromium", CMU Cylab Technical Report, 2015

- **Work In Progress**

23. **Y. Tian**, N. Zhang, Y. Lin, X. Wang, X. Guo, P. Tague, "Smart Things to Secure", in submission to *26th Usenix Security Symposium (Usenix Security)*, 2017.
24. **Y. Tian**, C. Herley, and S. Schechter, "Exploring Mechanisms to Defend Against Online Password Guessing", 2017.
26. **Y. Tian**, E. Chen, J. Sousa, P. Tague, and H. Wang, " Rethink Designing Permission System for Social Networks"

TALKS

- OAuth Security Analysis, Tsinghua University, Beijing, China, 2016
- Security and Privacy in Mobile and Ubiquitous Computing, UCLA, Los Angeles, CA, 2016
- Protecting User Security and Privacy in Modern and Emerging Platforms, Rising Star in EECS, Pittsburgh, PA, 2016
- Introduction to Android Security, Cal Poly, San Luis Obispo, CA, 2016
- Mobile OAuth: attacks and defenses, Baidu, Sunnyvale, CA, 2016
- 1000 Ways to Die in Mobile OAuth, *Blackhat'16*, Las Vegas, NV, 2016
- Privacy-Preserving Context Sharing for Social Platforms, *Usenix Security' 16*, poster session,

Austin, TX, 2016

- Invariant Detector: Automatically Protecting User Privacy in Graph-Based Web Applications, Facebook, London, UK, 2016
- Supporting Privacy-Conscious App Update Decisions with User Reviews, *SPSM'15*, Denver, CO, 2015
- Use Guessed Passwords to Stop Online Password Guessing Attacks, Microsoft Research, Redmond, WA, 2015
- Analyzing the dangers posed by Chrome extensions, *CNS'14*, San Francisco, CA, 2014
- Attacks Exploiting the HTML5 Screen Sharing", *WiCys'14*, Nashville, TN 2014
- Privacy Preserving Large-Scale Machine Learning, Qualcomm, 2014
- All Your Screens Are Belong to Us: Attacks Exploiting the HTML5 Screen Sharing API, *Oakland'14*, 2014
- Program Analysis Tools in Android, CMU ECE student seminar, Moffett Field, CA 94035
- APKInspector: Static Analysis for Android, *Honeynet 2013*, Dubai, UAE, 2013

PROFFESIONAL SERVICES

- **External Reviewers**

CCS 2013-2014, 2016

NDSS 2014, 2017

Oakland 2014, 2016-2017

Usenix Security 2017

ACSAC 2013- 2014

Infocom 2015,2017

Mobicom 2014

CNS 2014-2016

WCNC 2013-2016

SECON 2014

ASIACCS 2014-2015

WiSec 2014-2016

- **Reviewers**

Ubicomp 2015

ISWC 2015

Journal of Security and Communication Networks 2016

LEADERSHIP & ACTIVITIES

- 2016 Women in ECE organizer
- 2015 NASA 75-year Anniversary Open House volunteer
- 2014-2015 CMU SV Graduate Student Organization Chair
- 2014 CNS student volunteer
- 2014 CMU Privacy Day volunteer
- 2011 UBICOMP 2011 student Volunteer
- 2011 NETCOD 2011 student Volunteer
- 2010 Team leader in the Windows Mobile Challenge Cup held by Microsoft
 - We are among the Top 10 teams in the national final
- 2009 – 2010 Vice secretary general in the university student union
- 2010 Team leader in the Business Plan Competition