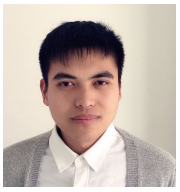

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Siyuan Tang

Curriculum Vitae

About Me I am a fifth-year Ph.D. student in the School of Informatics, Computing, and Engineering at Indiana University, Bloomington. I joined the System Security Lab under the supervision of Prof. Xiaofeng Wang. So far, I have led successfully two research projects and published four papers on top security conferences. My research focuses on web security and cybercrime. I am expected to achieve my Ph.D. degree by December 2023.

Education

2018 - Now, Indiana University, Bloomington
PhD in Computer Science

2014 - 2017, Nanjing University
MS in Computer Science & Technology

2010 - 2014, Nanjing University
BS in Computer Science & Technology

Internship

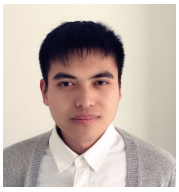
2019.06 - 2019.08, Tencent CSIG, Shenzhen
I had an internship in Tencent, CSIG to build a threat intelligence platform, which automatically collects the latest sink-holed domains from sinkhole operators. The product was integrated into their internal security system.

2017 Summer, WAP, Shanghai
In the short summer internship, I presented a demo that provides real-time review feedback to enterprise products.

Project Experience

Mobile/Web SDK Security
My previous research projects investigated the security impacts of mobile/web SDKs, including third-party proxy SDKs and P2P service SDKs. Through a large-scale scanning of over 2M Android APKs, we identified 963 Android apps integrated with third-party proxy SDKs, which utilize their customers as proxy peers without proper user consent. In another project, we also discovered 134 highly popular video websites and 38 Android apps integrated with a P2P video streaming service, which are proven to have serious security and privacy problems, including content pollution and IP leakage. Our findings revealed the concerning security issues on mobile/web SDKs, which may affect millions of end users. One of our work has been published by NDSS 2021 and the other is under peer review.

Threat Intelligence
Another important issue of my research is threat intelligence. In this area, one of the kernel challenges is to collect the security intelligence timely. To resolve such challenge, we came up with a novel solution to collect threat intelligence from social networks like Twitter. In one of our research, we collected over 20K spam SMS from tweets attached with SMS screenshots. We designed a framework, *SpamHunter*, to automatically recognize the reported spam SMS texts and URLs. Such dataset turns out to be more diverse and timely than existing spam SMS collections and threat intelligence engines, i.e., VirusTotal.



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We also designed an automatic evaluation framework to test the feasibility of these spam SMS texts against the existing anti-spam systems. Our submission has been accepted by CCS 2022 in the first cycle.

Skill Experience

Program Analysis

From the previous projects, I accumulated many useful skills in program developing and analysis. Specifically, I am familiar with static code analysis and dynamic traffic analysis on websites and Android apps. In the mobile/SDK security analysis, I decompiled Android APKs to smali and Java codes and detected if their codes contain a specific SDK from code structures and signatures. I also deploy a simulation environment to simulate the user behaviors on apps and monitor the suspicious traffic.

Machine Learning

I am also interested in advanced deep learning and NLP techniques. In our projects, I trained CNN to recognize SMS texts in an image and analyzed user reports with the state-of-the-art NLP techniques, which achieved a precision of 95% and a recall of 87%.

Programming Experience

I am experienced in multiple programming languages, including C++, Java, Python, and also functional programming languages like Racket. My personal github repository is https://github.com/opmusic.

Publications

"Gradient Shaping: Understanding When Backdoor Inversion Fails", *Rui Zhu, Di Tang,* ***Siyuan Tang****, Yongming Fan, Shiqing Ma, Haixu Tang, XiaoFeng Wang*, **submitted to Usenix 2023**

"Selective Amnesia: On Efficient, High-Fidelity and Blind Unlearning of Trojan Backdoors", *Rui Zhu, Di Tang,* ***Siyuan Tang****, XiaoFeng Wang, Haixu Tang*, **S & P (Oakland) 2023**

"Stealthy Peers: Understanding Security Risks of WebRTC-based Peer-Assisted Video Streaming", ***Siyuan Tang****, Eihal Alowaisheq, Xianghang Mi, Yi Chen, XiaoFeng Wang, Yanzhi Dou*, https://arxiv.org/abs/2212.02740

"Clues in Tweets: Twitter-Guided Discovery and Analysis of SMS Spam", ***Siyuan Tang****, Xianghang Mi, Ying Li, XiaoFeng Wang, Kai Chen*, **CCS 2022**

"Your Phone is My Proxy: Detecting and Understanding Mobile Proxy Networks", *Xianghang Mi,* ***Siyuan Tang****, Zhengyi Li, Xiaojing Liao, Feng Qian, XiaoFeng Wang*, **NDSS 2021**

"Zombie Awakening: Stealthy Hijacking of Active Domains Through DNS Hosting Referral", *Eihal Alowaisheq,* ***Siyuan Tang****, Zhihao Wang, Fatemah Alharbi, Xiaojing Liao, XiaoFeng Wang*, **CCS 2020**

"Cracking Wall of Confinement: Understanding and Analyzing Malicious Domain Takedowns", *Eihal Alowaisheq, Peng Wang, Sumayah Alrwais, Xiaojing Liao, XaioFeng Wang, Tasneem Alowaisheq, XiangHang Mi,* ***Siyuan Tang****, Baojun Liu*, **NDSS 2019 (Distinguished Paper Award)**

"Competitive Auctions for Cost-aware Cellular Traffic Offloading with Optimized Capacity Gain", *Yuan Zhang,* ***Siyuan Tang****, Tingting Chen, Sheng Zhong*, **INFOCOM 2016**

"Designing Secure and Dependable Mobile Sensing Mechanisms With Revenue Guarantees", *Yuan Zhang, He Zhang,* ***Siyuan Tang****, Sheng Zhong*, **TIFS 2016**