

# Dave (Jing) Tian

Curriculum Vitae (2021-07-20)

## Interests

Embedded System Security, Operating System Security, Trusted/Confidential Computing

## Work

- 2019.08– **Assistant Professor**, *Purdue University*, West Lafayette, IN, Department of Computer Science.  
System Security
- 2018.05– **Security Research Engineer Intern**, *Fortanix*, Mountain View, CA, Runtime Encryption.  
2018.08 Intel SGX for Containers
- 2017.05– **Security Research Engineer Intern**, *Samsung Research America (SRA)*, Mountain View, CA, KNOX Security.  
2017.08 Android USB Security
- 2009.07– **Software Engineer**, *Nokia R&D*, Qingdao, China, Linux Control Platform (LCP).  
2012.08 Software Development for Linux
- 2008.12– **Software Engineer Intern**, *Nokia R&D*, Qingdao, China, Linux Control Platform (LCP).  
2009.06 Software Development for Linux
- 2006.03– **POS Tester Intern**, *Hisense R&D*, Qingdao, China, POS Testing.  
2006.04 POS Testing

## Education

- 2015.01– **Ph.D.**, *University of Florida*, Gainesville, FL, Computer & Information Science & Engineering.  
2019.08 System Security and Trusted Computing
- 2012.08– **Ph.D. student**, *University of Oregon*, Eugene, OR, Computer & Information Science.  
2014.07 Machine Learning and Systems Security
- 2006.08– **ME**, *Ocean University of China*, Qingdao, China, Electrical Engineering.  
2009.06 Digital Signal Processing and Machine Learning
- 2002.08– **BS**, *Qingdao University of Technology*, Qingdao, China, Electrical & Information Science.  
2006.06 Electrical Engineering

## Publications

Journals:

- 5 **ProXray: Protocol Model Learning and Guided Firmware Analysis**; Farhaan Fowze, Dave (Jing) Tian, Grant Hernandez, Kevin Butler, Tuba Yavuz; *IEEE Transactions on Software Engineering (TSE'19)*, 2019; *International Conference on Software Engineering (ICSE'20, Journal First)*, 2020; **Selected for Journal-First presentation at ICSE'20**
- 4 **Towards Automated Firmware Analysis in the IoT Era**; Grant Hernandez, Dave (Jing) Tian, Farhaan Fowze, Tuba Yavuz, Patrick Traynor, Kevin Butler; *IEEE Security & Privacy*, 2019
- 3 **Characterizing the Security of the SMS Ecosystem with Public Gateways**; Bradly Reaves, Luis Vargas, Nolen Scaife, Dave Tian, Logan Blue, Patrick Traynor, Kevin Butler; *ACM Transactions on Privacy and Security (TOPS)*, 2018
- 2 **Securing ARP/NDP From the Ground Up**; Dave (Jing) Tian, Kevin R. B. Butler, Joseph I. Choi, Patrick D. McDaniel, Padma Krishnaswamy; *IEEE Transactions on Information Forensics and Security (TIFS)*, 2017
- 1 **Taming the Costs of Trustworthy Provenance through Policy Reduction**; Adam Bates, Dave (Jing) Tian, Grant Hernandez, Thomas Moyer, Kevin R. B. Butler, Trent Jaeger; *ACM Transactions on Internet Technology (TOIT)*, 2017

Conferences:

- 27 **LIGHTBLUE: Automatic Profile-Aware Debloating of Bluetooth Stacks**; Jianliang Wu, Ruoyu Wu, Daniele Antonioli, Mathias Payer, Nils Ole Tippenhauer, Dongyan Xu, Dave (Jing) Tian, Antonio Bianchi; *USENIX Security Symposium*, 2021; Acceptance Rate = TBD%

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- 26 **M2MON: Building an MMIO-based Security Reference Monitor for Unmanned Vehicles**; Arslan Khan, Hyungsub Kim, Byoungyoung Lee, Dongyan Xu, Antonio Bianchi, Dave (Jing) Tian; USENIX Security Symposium, 2021; Acceptance Rate = TBD%
- 25 **PASAN: Detecting Peripheral Access Concurrency Bugs within Bare-metal Embedded Applications**; Taegyu Kim, Vireshwar Kumar, Junghwan Rhee, Jizhou Chen, Kyungtae Kim, Chung Hwan Kim, Dongyan Xu, Dave (Jing) Tian; USENIX Security Symposium, 2021; Acceptance Rate = TBD%
- 24 **Generic, Sparse Tensor Core for Neural Networks**; Xiaolong Wu, Yang Yi, Dave Tian, Jiajia Li; International Workshop on Machine Learning for Software Hardware Co-Design (MLSH'20), 2020; Acceptance Rate = TBD%
- 23 **Vessels: Efficient and Scalable Deep Learning Prediction on Trusted Processors**; Kyungtae Kim, Chung Hwan Kim, Junghwan Rhee, Xiao Yu, Haifeng Chen, Dave Tian, Byoungyoung Lee; ACM Symposium on Cloud Computing 2020 (SoCC'20), 2020; Acceptance Rate = 24.5%
- 22 **Logging to the Danger Zone: Race Condition Attacks and Defenses on System Audit Frameworks**; Riccardo Paccagnella, Kevin Liao, Dave Tian, Adam Bates; ACM Conference on Computer and Communications Security (CCS'20), 2020; Acceptance Rate = 16.9%
- 21 **BLESA: Spoofing Attacks against Reconnections in Bluetooth Low Energy**; Jianliang Wu, Yuhong Nan, Vireshwar Kumar, Dave (Jing) Tian, Antonio Bianchi, Mathias Payer, Dongyan Xu; USENIX Workshop on Offensive Technologies (WOOT'20), 2020; Acceptance Rate = 33.3%, **Best Paper Award**
- 20 **From Control Model to Program: Investigating Robotic Aerial Vehicle Accidents with MAYDAY**; Taegyu Kim, Chung Hwan Kim, Altay Ozen, Fan Fei, Zhan Tu, Xiangyu Zhang, Xinyan Deng, Dave (Jing) Tian, Dongyan Xu; USENIX Security Symposium, 2020; Acceptance Rate = 16.3%
- 19 **Custos: Practical Tamper-Evident Auditing of Operating Systems Using Trusted Execution**; Riccardo Paccagnella, Pubali Datta, Wajih UI Hassan, Adam Bates, Christopher Fletcher, Andrew Miller, Dave (Jing) Tian; The Network and Distributed System Security Symposium (NDSS'20), 2020; Acceptance Rate = 17.4%
- 18 **BigMAC: Fine-Grained Policy Analysis of Android Firmware**; Grant Hernandez, Dave (Jing) Tian, Anurag Swarnim Yadav, Byron J. Williams, Kevin Butler; USENIX Security Symposium, 2020; Acceptance Rate = 16.3%
- 17 **Examining DES-based Cipher Suite Support within the TLS Ecosystem**; Vanessa Frost, Dave Tian, Christie Ruales, Vijay Prakash, Kevin Butler, Patrick Traynor; ACM ASIA Conference on Computer and Communications Security (ASIACCS'19), 2019; Acceptance Rate = 22% short paper
- 16 **A Hybrid Approach to Secure Function Evaluation using SGX**; Joseph Choi, Dave Tian, Grant Hernandez, Christopher Patton, Benjamin Mood, Thomas Shrimpton, Kevin Butler, Patrick Traynor; ACM ASIA Conference on Computer and Communications Security (ASIACCS'19), 2019; Acceptance Rate = 17%
- 15 **A Practical Intel SGX Setting for Linux Containers in the Cloud**; Dave (Jing) Tian, Joseph Choi, Grant Hernandez, Patrick Traynor, Kevin Butler; ACM Conference on Data and Application Security and Privacy (CODASPY'19), 2019; Acceptance Rate = 23.5%, **Distinguished Poster Award** (for poster accompanying the full paper)
- 14 **LBM: A Security Framework for Peripherals within the Linux Kernel**; Dave (Jing) Tian, Grant Hernandez, Joseph Choi, Vanessa Frost, Peter Johnson, Kevin Butler; IEEE Symposium on Security and Privacy (S&P'19), 2019; Acceptance Rate = 12.5%
- 13 **ATtention Spanned: Comprehensive Vulnerability Analysis of AT Commands Within the Android Ecosystem**; Dave (Jing) Tian, Grant Hernandez, Joseph Choi, Vanessa Frost, Christie Ruales, Patrick Traynor, Hayawardh Vijaykumar, Lee Harrison, Amir Rahmati, Mike Grace, Kevin Butler; USENIX Security Symposium, 2018; Acceptance Rate = 19.1%
- 12 **SoK: "Plug & Pray" Today – Understanding USB Insecurity in Versions 1 through C**; Dave (Jing) Tian, Nolen Scaife, Deepak Kumar, Michael Bailey, Adam Bates, Kevin Butler; IEEE Symposium on Security and Privacy (S&P'18), 2018; Acceptance Rate = 11.5%
- 11 **FirmUSB: Vetting USB Device Firmware using Domain Informed Symbolic Execution**; Grant Hernandez, Farhaan Fowze, Dave Tian, Tuba Yavuz, Kevin Butler; ACM Conference on Computer and Communications Security (CCS'17), 2017; Acceptance Rate = 18.1%
- 10 **CPAC: Securing Critical Infrastructure with Cyber-Physical Access Control**; Sriharsha Etigowni, Dave Tian, Grant Hernandez, Kevin Butler, Saman Zonouz; Annual Computer Security Applications Conference (ACSAC'16), 2016; Acceptance Rate = 22.8%
- 9 **ProvUSB: Block-level Provenance-Based Data Protection for USB Storage Devices**; Dave (Jing) Tian, Adam Bates, Kevin Butler, Raju Rangaswami; ACM Conference on Computer and Communications Security (CCS'16), 2016; Acceptance Rate = 16.5%
- 8 **Making USB Great Again with USBFILTER**; Dave (Jing) Tian, Nolen Scaife, Adam Bates, Kevin Butler, Patrick Traynor; USENIX Security Symposium, 2016; Acceptance Rate = 15.5%

- 7 **Detecting SMS Spam in the Age of Legitimate Bulk Messaging**; Bradley Reaves, Logan Blue, Dave Tian, Patrick Traynor, Kevin Butler; ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec'16), 2016; Acceptance Rate = 35.0%
- 6 **Sending out an SMS: Characterizing the Security of the SMS Ecosystem with Public Gateways**; Bradley Reaves, Nolen Scaife, Dave Tian, Logan Blue, Patrick Traynor, Kevin Butler; IEEE Symposium on Security and Privacy (S&P'16), 2016; Acceptance Rate = 13.3%
- 5 **Defending Against Malicious USB Firmware with GoodUSB**; Dave (Jing) Tian, Adam Bates, Kevin Butler; Annual Computer Security Applications Conference (ACSAC'15), 2015; Acceptance Rate = 24.3%
- 4 **Trustworthy Whole-System Provenance for the Linux Kernel**; Adam Bates, Dave Tian, Kevin Butler, Thomas Moyer; USENIX Security Symposium, 2015; Acceptance Rate = 15.7%
- 3 **More Guidelines Than Rules: CSRF Vulnerabilities from Noncompliant OAuth 2.0 Implementations**; Ethan Shernan, Henry Carter, Dave Tian, Patrick Traynor, Kevin Butler; International Conference on Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA'15), 2015; Acceptance Rate = 22.7%
- 2 **Securing ARP from the Ground Up**; Jing (Dave) Tian, Kevin R.B. Butler, Patrick D. McDaniel, Padma Krishnaswamy; ACM Conference on Data and Application Security and Privacy (CODASPY'15), 2015; Acceptance Rate = 33.3%
- 1 **Securing SSL Certificate Validation through Dynamic Linking**; Adam Bates, Joe Pletcher, Tyler Nichols, Braden Hollembaek, Jing (Dave) Tian, Abdulrahman Alkhelaifi, Kevin R. B. Butler; ACM Conference on Computer and Communications Security (CCS'14), 2014; Acceptance Rate = 19.5%

#### Patents:

- 2 **Protocol Model Learning and Guided Firmware Analysis**; United States Patent Application 20200380124
- 1 **Method and Apparatus For Vetting Universal Serial Bus Device Firmware**; United States Patent Application 20190286817

## Service

#### Organizing Committee

- Midwest Security Workshop (MSW): '20
- EAI SecureComm: '20 (Poster Chair)
- ACSAC: '21 (Student Conferenceship Coordinator)

#### Program Committee

- USENIX Security: '19, '21, '22
- USENIX RAID: '20
- ISOC NDSS: '21
- ISOC NDSS BAR: '20
- ESORICS: '20, '21
- EAI SecureComm: '20
- ACM AsiaCCS: '21, '22
- ACSAC: '21
- IEEE CNS: '21

#### Conference

##### External Review

- IEEE S&P: '16,'17,'18,'20
- USENIX Security: '14,'15,'17,'18,'20
- ISOC NDSS: '16,'17,'18,'19
- ACM CCS: '14,'15,'16
- USENIX OSDI: '16
- ACM AsiaCCS: '15,'17,'18
- USENIX Woot: '16
- ACSAC: '16
- PETS: '15
- IEEE MOST: '15
- IEEE CNS: '17

## Journal

### Review

- Security and Communication Networks (SCN): '17
- Journal of Network and Systems Management (JONS): '17, '21
- Journal of Information Security and Applications (JISA): '20
- Journal of Information Science and Engineering (JISE): '20
- Journal of Computer & Security (JCS): '20
- IEEE Internet of Things Journal (IoT): '19
- IEEE Transactions on Dependable and Secure Computing (TDSC): '20, '21

## Fundings

- ONR Bringing Fuzzing to the Cyber-Physical World; \$800K, co-PI
- DARPA AMP - DICER: Directed Compilation for Assured Patching; \$3.9M, co-PI
- DOE CyManII - Discovering Vulnerabilities in IIoT-Enabled Manufacturing Systems; \$110M, co-PI
- ONR IoT-D: Towards Internets of Dialect-Speaking Things; \$6M, senior personnel

## Invited Talks

- Nov 2018 Defending Operating Systems from Malicious Peripherals, Pennsylvania State University, Host: Patrick McDaniel
- Nov 2018 Defending Operating Systems from Malicious Peripherals, University of Illinois Urbana-Champaign, Host: Adam Bates
- Feb 2019 Defending Operating Systems from Malicious Peripherals, Drexel University, Host: Dario Salvucci
- Feb 2019 Defending Operating Systems from Malicious Peripherals, Duke University, Host: Benjamin Lee
- Feb 2019 Defending Operating Systems from Malicious Peripherals, Purdue University, Host: Dongyan Xu
- Feb 2019 Defending Operating Systems from Malicious Peripherals, Virginia Tech, Host: Matthew Hicks
- Mar 2019 Defending Operating Systems from Malicious Peripherals, University of California Santa Cruz, Host: Owen Arden
- Mar 2019 Defending Operating Systems from Malicious Peripherals, University of Texas Dallas, Host: Murat Kantarcioglu
- Mar 2019 Defending Operating Systems from Malicious Peripherals, Georgetown University, Host: Clay Shields
- Aug 2021 DisPatch: Patching Control-Semantic Bugs in RAV Firmware, DARPA ReMath, Host: Sergey Bratus

## Awards

- 2020 USENIX Workshop on Offensive Technologies Best Paper Award, USENIX
- 2019 IEEE Symposium on Security and Privacy Student Travel Grant, IEEE
- 2019 Distinguished Poster Award, The 9th ACM Conference on Data and Application Security and Privacy
- 2018 Second Place Award, SEC Academic Conference (Cybersecurity) Student Poster Presentation
- 2017 Best Poster Award, FICS Annual Research Conference
- 2017 Gartner Group Info Tech Scholarship, University of Florida
- 2016 Best Poster Award, FICS Annual Research Conference
- 2015 ACSAC Student Conferenceship Award, ACSA
- 2015 CISE Travel Grant, University of Florida
- 2015 USENIX Security Student Grant, USENIX
- 2014 Gartner Group Graduate Fellowship, University of Florida
- 2011 Alcatel-Lucent R&D Well Done Award, Alcatel-Lucent
- 2009 Alcatel-Lucent R&D Innovation Award, Alcatel-Lucent
- 2009 Comprehensive Award of Excellent Graduate Scholarship, Ocean University of China
- 2009 Excellent Graduate Student Scholarship, Ocean University of China
- 2006 Full Graduate Scholarship, Ocean University of China
- 2004 Outstanding Student Cadre Scholarship, Qingdao Technological University

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## Teaching

- 2019.08– **Assistant Professor**, *Dept. of Computer Science, Purdue University, West Lafayette, IN.*
- CS59000-OSS Operating System Security (Fall 2019)
  - CS52800 Network Security (Spring 2020)
  - CS59100 CERIAS Security Seminar (Spring 2020)
  - CS50300 Operating Systems (Fall 2020)
  - CS42600 Computer Security (Spring 2021)
  - CS59200 Trusted and Confidential Computing (Fall 2021)
- 2018.09– **Guest Lecturer**, *Dept. of Computer & Information Science & Engineering, University of Florida, Gainesville, FL.*
- 2019.07
- CNT 5410 Computer and Network Security (Fall 2018)
  - CIS 5370 Computer and Information Security (Spring 2019)
- 2012.09– **Graduate Teaching Fellow**, *Dept. of Computer & Information Science, University of Oregon, Eugene, OR.*
- 2013.06
- CIS 122 Intro to Programming & Problem Solving Using Python (Fall 2012, Winter 2013, Lab)
  - CIS 415 Operating Systems (Spring 2013, Lab)

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## Book Review

- 2013.12– **Technical Reviewer**, *Packt Publishing, Birmingham, UK.*
- Present
- Mastering Python Regular Expressions
  - Python 3 Text Processing with NLTK 3 Cookbook
  - Building Probabilistic Graphical Models with Python
  - Mastering Probabilistic Graphical Models with Python
  - Embedded Linux Projects Using Yocto Project Cookbook
  - Yocto for Raspberry Pi
  - LLVM Cookbook

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## Certifications

- 2011 AIX certification (AN10, AN12), IBM
- 2010 Project Management, ChoiZe Management Consulting
- 2010 Linux Debugging and Performance, JOHN BRYCE
- 2008 Sun Certified Java Programmer (SCJP), Sun Microsystems
- 2008 Solaris OS Architecture, Sun ERI & OpenTech
- 2008 Solaris 10 Admin Training, Sun Developer Network (China) & Unix-Center
- 2007 Sun Studio Hands-on Training with Unix/Linux Commands, Sun Developer Network (China) & Unix-Center
- 2004 National Computer Rank Examination (NCRE), Rank 2, C programming, China Education Ministry
- 1998 Microcomputer Operation Certification for Adult (DOS, Foxbase), Pute Computer Training Center of Qingdao Technological University

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## Media Coverage

- Slashdot "Billions of Devices Vulnerable To New 'BLESA' Bluetooth Spoofing Attack", <https://it.slashdot.org/story/20/09/16/220211/billions-of-devices-vulnerable-to-new-blesa-bluetooth-spoofing-attack>
- ZDNet "Billions of devices vulnerable to new 'BLESA' Bluetooth security flaw", <https://www.zdnet.com/article/billions-of-devices-vulnerable-to-new-blesa-bluetooth-security-flaw/>
- NetSec.news "Billions of Devices Vulnerable to 'BLESA' Bluetooth Spoofing Vulnerability", <https://www.netsec.news/billions-of-devices-vulnerable-to-blesa-bluetooth-spoofing-vulnerability/>
- ThreatPost "Bluetooth Spoofing Bug Affects Billions of IoT Devices", <https://threatpost.com/bluetooth-spoofing-bug-iot-devices/159291/>
- Tom's Guide "Billions of Android phones and smart devices open to attack – what to do now", <https://www.tomsguide.com/news/blesa-bluetooth-attack>
- SysDVD "Billions of Bluetooth Devices Vulnerable to BLESA Attack – Hacker", <http://sysdvd.com/billions-of-bluetooth-devices-vulnerable-to-blesa-attack-hacker/>
- TechRadar "Critical Bluetooth security vulnerability could affect billions of devices worldwide", <https://www.techradar.com/news/critical-bluetooth-security-vulnerability-could-affect-billions-of-devices-worldwide>
- International Business Times "What Is BLESA? Hackers Can Potentially Target Billions of Devices with Bluetooth Security Flaw", <https://www.ibtimes.sg/what-blesa-hackers-can-potentially-target-billions-devices-bluetooth-security-flaw-51582>



- Silicon Angle "Vulnerability in the Bluetooth software stack opens the door to hackers", <https://siliconangle.com/2020/09/16/vulnerability-bluetooth-software-stack-opens-door-hackers/>
- Sensors Tech "Bluetooth Low Energy Spoofing Attack Endangers Billions of Devices", <https://sensorstechforum.com/blesa-attack-endangers-billions-devices/>
- How To Fix "Experts discovered BLESA attack, to which are vulnerable billions of Bluetooth devices", <https://howtofix.guide/experts-discovered-blesa-attack-to-which-are-vulnerable-bluetooth-devices/>
- Google News "Critical Bluetooth safety vulnerability may just have an effect on billions of gadgets international", <http://googlenewspost.com/2020/09/16/critical-bluetooth-security-vulnerability-could-affect-billions-of-devices-worldwide/>
- Cyware "Cyware Daily Threat Intelligence, September 16, 2020", <https://cyware.com/daily-threat-briefing/cyware-daily-threat-intelligence-september-16-2020-bc5d>
- Threats Hub "Billions of devices vulnerable to new 'BLESA' Bluetooth security flaw", <https://www.threatshub.org/blog/billions-of-devices-vulnerable-to-new-blesa-bluetooth-security-flaw/>
- Editorials 360 "Billions of Units Susceptible To New 'BLESA' Bluetooth Spoofing Assault", <https://www.editorials360.com/2020/09/17/billions-of-units-susceptible-to-new-blesa-bluetooth-spoofing-assault/>
- Sec News "BLESA: billions of devices vulnerable to Bluetooth security flaw", <https://en.secnews.gr/267536/bluetooth-flash/>
- Remark Board "Billions of devices vulnerable to new 'BLESA' Bluetooth security flaw", <https://remarkboard.com/m/researchers-unveil-a-bluetooth-le-attack-impacting-billions/1e2twiylfko6v>
- Security Boulevard "Bluetooth Reconnection Flaw Could Lead to Spoofing Attacks", <https://securityboulevard.com/2020/07/bluetooth-reconnection-flaw-could-lead-to-spoofing-attacks/>
- ESET "ESET discovers Attor, a spy platform with curious GSM fingerprinting", <https://www.welivesecurity.com/2019/10/10/eset-discovers-attor-spy-platform/>
- Firmware Security "USB Fuzzing: A USB Perspective", <https://firmwaresecurity.com/2019/07/20/usb-fuzzing-a-usb-perspective/>
- Hacker News "USB Fuzzing: A USB Perspective", <https://news.ycombinator.com/item?id=20478548>
- LWN.net "Revenge of the modems", <https://lwn.net/Articles/766766/>
- Wired "Exploiting Decades-Old Telephone Tech to Break into Android Devices", <https://www.wired.com/story/at-commands-android-vulnerability/>
- Threatpost "AT Command Hitch Leaves Android Phones Open to Attack", <https://threatpost.com/at-command-hitch-leaves-android-phones-open-to-attack/136938/>
- UF News "Smartphone security risk compared to 'having a ghost user on your phone'", <http://news.ufl.edu/articles/2018/08/smartphone-security-risk-compared-to-having-a-ghost-user-on-your-phone.php>
- independent florida alligator "What the hack: UF research reveals smartphones can be hacked via USB", [https://www.alligator.org/news/what-the-hack-uf-research-reveals-smartphones-can-be-hacked/article\\_4480693e-aced-11e8-b68e-675760f71388.html](https://www.alligator.org/news/what-the-hack-uf-research-reveals-smartphones-can-be-hacked/article_4480693e-aced-11e8-b68e-675760f71388.html)
- Bleeping Computer "Smartphones From 11 OEMs Vulnerable to Attacks via Hidden AT Commands", <https://www.bleepingcomputer.com/news/security/smartphones-from-11-oems-vulnerable-to-attacks-via-hidden-at-commands/>
- How-To Geek "How to Protect Yourself From Public USB Charging Ports", <https://www.howtogeek.com/364032/how-to-protect-yourself-from-public-usb-charging-ports/>
- Slashdot "Smartphones from 11 OEMs, Including Google, Samsung, HTC, Lenovo and Sony, Vulnerable to Attacks Via Hidden AT Commands", <https://mobile.slashdot.org/story/18/08/26/1910246/smartphones-from-11-oems-including-google-samsung-htc-lenovo-and-sony-vulnerable-to-attacks-via-hidden-at-commands>
- Hacker News "ATtention Spanned: Comprehensive Android Vulnerability Analysis of AT Commands", <https://news.ycombinator.com/item?id=17837035>
- Security Affairs "Android mobile devices from 11 vendors are exposed to AT Commands attacks", <https://securityaffairs.co/wordpress/75683/hacking/at-commands-attacks-android.html>
- Fudzilla "Android at the mercy of AT Commands", <https://www.fudzilla.com/news/mobile/47037-android-at-the-mercy-of-at-commands>
- Tech Worm "Android smartphones can be hacked with AT commands attacks", <https://www.techworm.net/2018/08/android-smartphones-hacked-at-commands-attacks.html>
- Fossbytes "How These Android Smartphone Can Be Hacked With Simple AT commands", <https://fossbytes.com/android-smartphone-can-be-hacked-with-at-commands/>

Kim Komando	"Modern smartphones vulnerable to old-school attack", <a href="https://www.komando.com/happening-now/483269/modern-smartphones-vulnerable-to-old-school-attack">https://www.komando.com/happening-now/483269/modern-smartphones-vulnerable-to-old-school-attack</a>
Hacker Combat	"Open AT Commands: a Huge Loophole Exploit in Android Revealed", <a href="https://hackercombat.com/open-at-commands-a-huge-loophole-exploit-in-android-revealed/">https://hackercombat.com/open-at-commands-a-huge-loophole-exploit-in-android-revealed/</a>
SecurePoint	"Vulnerability Found in Major Manufacturers of Android Phones", <a href="https://www.securepointtech.com/2018/09/07/vulnerability-found-in-major-manufacturers-of-android-phones/">https://www.securepointtech.com/2018/09/07/vulnerability-found-in-major-manufacturers-of-android-phones/</a>
Hybrid Techcar	"Smartphones are vulnerable to hacking commands for ancient modems", <a href="https://hybridtechcar.com/2018/08/28/smartphones-are-vulnerable-to-hacking-commands-for-ancient-modems/">https://hybridtechcar.com/2018/08/28/smartphones-are-vulnerable-to-hacking-commands-for-ancient-modems/</a>
Android Community	"New security risk for smartphones brings you a 'ghost user'", <a href="https://androidcommunity.com/new-security-risk-for-smartphones-brings-you-a-ghost-user-20180827/">https://androidcommunity.com/new-security-risk-for-smartphones-brings-you-a-ghost-user-20180827/</a>
SANS	"AT Commands", <a href="https://isc.sans.edu/podcastdetail.html?id=6140">https://isc.sans.edu/podcastdetail.html?id=6140</a>
golem.de	"Android-Smartphones durch Modem-Befehle verwundbar", <a href="https://www.golem.de/news/at-commands-android-smartphones-durch-modem-befehle-verwundbar-1808-136205.html">https://www.golem.de/news/at-commands-android-smartphones-durch-modem-befehle-verwundbar-1808-136205.html</a>
Tproger	"11 manufacturers of Android smartphones have discovered a vulnerability to AT-commands", <a href="https://tproger.ru/news/at-commands-deface-smartphones/">https://tproger.ru/news/at-commands-deface-smartphones/</a>
habr	"Attackers can get full remote access to the Android device through a public USB charging port", <a href="https://habr.com/company/crossover/blog/421295/">https://habr.com/company/crossover/blog/421295/</a>
Niebezpiecznik	"Miliony smartfonów można zhackować ukrytymi komendami AT", <a href="https://niebezpiecznik.pl/post/miliony-smartfonow-mozna-zhackowac-ukrytymi-komendami-at/">https://niebezpiecznik.pl/post/miliony-smartfonow-mozna-zhackowac-ukrytymi-komendami-at/</a>
Trails of Bits	"Binary Analysis: Identifying bugs in binary-only USB firmware", <a href="https://www.trailofbits.com/expertise/binary-analysis/">https://www.trailofbits.com/expertise/binary-analysis/</a>
Helpnetsecurity	"USBFILTER: Packet-level firewall for blocking USB-based threats", <a href="https://www.helpnetsecurity.com/2016/08/12/usbfilter-blocking-threats/">https://www.helpnetsecurity.com/2016/08/12/usbfilter-blocking-threats/</a>
ePlace Solutions	"USB Related Cyber Attacks and How to Defend Against Them", <a href="https://blog.eplaceinc.com/cyber/2016/09/08/usb-devices-exposing-organizations/">https://blog.eplaceinc.com/cyber/2016/09/08/usb-devices-exposing-organizations/</a>
BankInfo Security	"A New Way to Mitigate USB Risks", <a href="https://www.bankinfosecurity.com/make-usb-great-again-a-9350">https://www.bankinfosecurity.com/make-usb-great-again-a-9350</a>
RedesZone	"USBfilter, un concepto de firewall para los puertos USB", <a href="https://www.redeszone.net/2016/08/16/usbfilter-concepto-firewall-los-puertos-usb/">https://www.redeszone.net/2016/08/16/usbfilter-concepto-firewall-los-puertos-usb/</a>
Hacker News	"No one, not even the Secret Service, should randomly plug in a strange USB stick", <a href="https://news.ycombinator.com/item?id=19609239">https://news.ycombinator.com/item?id=19609239</a>
Serman	"La revolución USB contra los malware", <a href="https://serman.com/blog-recuperacion-datos/la-revolucion-usb-contra-los-malware/">https://serman.com/blog-recuperacion-datos/la-revolucion-usb-contra-los-malware/</a>

## Students

Ph.D. Students	Arslan Khan (CS, Fall 2019 -, co-advised with Prof. Dongyan Xu), Kyungtae Tim (CS, Fall 2019 -, co-advised with Prof. Byoungyoung Lee), Muqi Zou (CS, Fall 2020 -), Xiaolong Wu (ECE, Fall 2020 -), Jiwon Kim (CS, Fall 2020 -), Zheng Zhong (CS, Spring 2021 -), Dikaimin Simon (CS, Spring 2021 -), Sungwoo Kim (CS, Fall 2021 -)
Master Students	Mark Mikhail (Spring 2021 -)
Undergrads	
Committees	Jianliang Wu (Ph.D., Fall 2019 -), Le Yu (Ph.D., Fall 2019 -), Rohit Bhatia (Ph.D., Fall 2019 - Spring 2020), Imtiaz Karim (Ph.D., Fall 2020 -), Reham Aburas (Ph.D., Fall 2020 -), Hyungsub Kim (Ph.D., Fall 2020 -), Ruoyu Wu (Ph.D., Fall 2020 -), Michael Reeves (MS, Fall 2020 - Spring 2021)
Interns	
Ph.D. Alumni	Taegyu Kim (Ph.D., ECE, Fall 2019 - Spring 2021, co-advised with Prof. Dongyan Xu, Assistant Professor, PSU-IST), Hui Peng (Ph.D., CS, Fall 2020 - Spring 2021, co-advised with Prof. Mathias Payer, Baidu USA)
Alumni	Ertza Warraich (Ph.D. student, CS, Spring 2020 - Summer 2021), Benjamin Nwachukwu (Master student, CS, Fall 2019 - Spring 2020), Arushi Arora (Master student, CS, Summer 2020), Steven Dellamore (Undergrad, CS, Fall 2019), Gisu Yeo (Undergrad, CS, Fall 2020)

## Links

My web	<a href="https://davejingtian.org">https://davejingtian.org</a>
My code	<a href="https://github.com/daveti">https://github.com/daveti</a>
AT command	<a href="https://atcommands.org/">https://atcommands.org/</a>

Provenance <https://linuxprovenance.org/>  
FW analysis <https://firmware-analysis.org/>  
OS Sec <https://ossec.home.blog>  
OS <https://os1.home.blog>  
Network Sec <https://netsec.travel.blog>  
PurSec Lab <https://pursec.cs.purdue.edu>