

Dave (Jing) Tian

Curriculum Vitae (2023-03-20)

Interests

Embedded Systems Security, Operating Systems Security, Trusted and Confidential Computing, Hardware Security and Trust

Work

- 2019.08– **Assistant Professor**, *Purdue University*, West Lafayette, IN, Department of Computer Science. Systems 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, Android
2017.08 Security.
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 Systems 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:

- 6 **ENCIDER: Detecting Timing and Cache Side Channels in SGX Enclaves and Cryptographic APIs**; Tuba Yavuz, Farhaan Fowze, Ken (Yihang) Bai, Grant Hernandez, Kevin Butler, Dave (Jing) Tian; IEEE Transactions on Dependable and Secure Computing (TDSC'22); Intel Security Conference (iSecCon'22), 2022
- 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:

- 40 **EC: Embedded Systems Compartmentalization via Intra-Kernel Isolation**; Arslan Khan, Dongyan Xu, Dave (Jing) Tian; IEEE Symposium on Security and Privacy (Oakland'23), 2023; Acceptance Rate=TBD%
- 39 **Low-Cost Privilege Separation with Compile Time Compartmentalization for Embedded Systems**; Arslan Khan, Dongyan Xu, Dave (Jing) Tian; IEEE Symposium on Security and Privacy (Oakland'23), 2023; Acceptance Rate=TBD%
- 38 **Fuzzing Intent-Based Networking with Intent-State Transition Guidance**; Jiwon Kim, Benjamin E. Ujcich, Dave (Jing) Tian; USENIX Security Symposium (Security'23), 2023; Acceptance Rate=TBD%
- 37 **DnD: Decompiling Deep Neural Network Compiled Binary**; Ruoyu Wu, Taegyu Kim, Dave (Jing) Tian, Antonio Bianchi, Dongyan Xu; Black Hat Europe (BH-EU'22), 2022; Acceptance Rate=TBD%
- 36 **GLeeFuzz: Fuzzing WebGL Through Error Message Guided Mutation**; Hui Peng, Zhihao Yao, Ardalan Amiri Sani, Dave (Jing) Tian, Mathias Payer; USENIX Security Symposium (Security'23), 2023; Acceptance Rate=TBD%
- 35 **TruEMU: An Extensible, Open-Source, Whole-System iOS Emulator**; Trung Nguyen, Kyungtae Kim, Antonio Bianchi, Dave (Jing) Tian; Black Hat USA (BH-USA'22), 2022; Acceptance Rate=TBD%
- 34 **DnD: A Cross-Architecture Deep Neural Network Decompiler**; Ruoyu Wu, Taegyu Kim, Dave (Jing) Tian, Antonio Bianchi, Dongyan Xu; USENIX Security Symposium (Security'22), 2022; Acceptance Rate=17.2%
- 33 **Reverse Engineering and Retrofitting Robotic Aerial Vehicle Control Firmware using DisPatch**; Taegyu Kim, Aolin Ding, Sriharsha Etigowni, Pengfei Sun, Jizhou Chen, Luis Garcia, Saman Zonouz, Dongyan Xu, Dave (Jing) Tian; ACM International Conference on Mobile Systems, Applications, and Services (MobiSys'22), 2022; Acceptance Rate=21.6%
- 32 **ShadowAuth: Backward-Compatible Automatic CAN Authentication for Legacy ECUs**; Sungwoo Kim, Gisu Yeo, Taegyu Kim, Junghwan "John" Rhee, Yuseok Jeon, Antonio Bianchi, Dongyan Xu, Dave (Jing) Tian; ACM ASIA Conference on Computer and Communications Security (ASIACCS'22), 2022; Acceptance Rate=18.4%
- 31 **Formal Model-Driven Discovery of Bluetooth Protocol Design Vulnerabilities**; Jianliang Wu, Ruoyu Wu, Dongyan Xu, Dave (Jing) Tian, Antonio Bianchi; IEEE Symposium on Security and Privacy (Oakland'22), 2022; Acceptance Rate=14.5%
- 30 **FuzzUSB: Hybrid Stateful Fuzzing of USB Gadget Stacks**; Kyungtae Kim, Taegyu Kim, Ertza Warraich, Byoungyoung Lee, Kevin Butler, Antonio Bianchi, Dave (Jing) Tian; IEEE Symposium on Security and Privacy (Oakland'22), 2022; Acceptance Rate=14.5%
- 29 **Privacy-Preserving Localization Using Enclaves**; Arslan Khan, Joseph I. Choi, Dave (Jing) Tian, Tyler Ward, Kevin Butler; Patrick Traynor, John Shea, Tan Wong; IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON'21), 2021; Acceptance Rate=TBD%, **Best Presentation Award**
- 28 **Towards Improving Container Security by Preventing Runtime Escapes**; Michael Reeves, Dave (Jing) Tian, Antonio Bianchi, Berkay Celik; IEEE Secure Development Conference (SecDev'21), 2021; Acceptance Rate=TBD%
- 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 = 18.8%
- 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 = 18.8%
- 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 = 18.8%
- 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**; Taegy 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 Ul 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**; US 11568044B2

Service

Organizing
Committee

- Midwest Security Workshop (MSW): '20
- EAI SecureComm: '20 (Poster Chair)
- ACSAC: '21 (Student Conferenceship Coordinator)
- USENIX Security: '21 (Session Co-chair)
- IEEE SafeThings: '22 (TPC Co-chair), '23 (General Co-Chair)

Technical
Program
Committee

- USENIX Security: '19, '21, '22
- USENIX RAID: '20
- USENIX WOOT: '23
- ISOC NDSS: '21
- ISOC NDSS BAR: '20, '22, '23
- ISOC NDSS AutoSec: '22
- ISOC NDSS VehicleSec: '22
- ESORICS: '20, '21, '22
- EAI SecureComm: '20
- ACM AsiaCCS: '21, '22
- ACSAC: '21, '22, '23
- IEEE Security & Privacy (Oakland): '23, '24
- IEEE CNS: '21
- IEEE SafeThings: '22 (co-chair)
- IEEE SecDev: '22, '23

Conference

External
Review

- IEEE S&P: '16, '17, '18, '20
- USENIX Security: '14, '15, '17, '18, '20, '23
- 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, '22
- 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, '22
- Journal of Purdue Undergrad Research (JPUR): '22

Others

- NSF Panel: '22

Fundings

- ONR Bringing Fuzzing to the Cyber-Physical World; \$800K, co-PI
- DARPA AMP - DICER: Directed Compilation for Assured Patching; \$3.9M, co-PI
- ONR IoT-D: Towards Internets of Dialect-Speaking Things; \$6M, Senior Personnel
- NSF Faculty Early Career Development Program (CAREER); \$520K, sole-PI
- ONR An Integrated Toolkit for IoT Protocol Dialecting with Formal Verification; \$620K, co-PI
- Wistron Securing AI Workload on Edge/IoT Devices; \$248K, co-PI
- Wistron Securing Hardware and Firmware Supply Chain; \$248K, PI
- ONR Semantic Decompilation of Deep Neural Network Binaries and Its Adversarial and Defensive Implications; \$750K, PI
- Rolls-Royce FailFlow – Tracing the flow of cyber-attacks from one domain to another to motivate the development of a Common Applicability Enumeration; \$110K, co-PI

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 PI Meeting, Host: Sergey Bratus

Awards

- 2022 NSF CAREER Award, NSF
- 2021 Best Presentation Award, IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference
- 2020 Cyber Security Awareness Week (CSAW) Applied Research Award, (Top-10) Finalist
- 2020 Best Paper Award, USENIX Workshop on Offensive Technologies
- 2019 Student Travel Grant, IEEE Symposium on Security and Privacy
- 2019 Distinguished Poster Award, 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

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, Spring 2023)
 - CS59100 CERIAS Security Seminar (Spring 2020)
 - CS50300 Operating Systems (Fall 2020)
 - CS42600 Computer Security (Spring 2021, Fall 2022)
 - CS59200-TCC Trusted and Confidential Computing (Fall 2021)
 - CS59200-PES Peripheral and Embedded Security (TBD)
- 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)

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

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

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-bleesa-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/bleesa-bluetooth-attack>
- SysDVD "Billions of Bluetooth Devices Vulnerable to BLESA Attack – Hacker", <http://sysdvd.com/billions-of-bluetooth-devices-vulnerable-to-bleesa-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-bleesa-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 Forum "Bluetooth Low Energy Spoofing Attack Endangers Billions of Devices", <https://sensorestechforum.com/bleesa-attack-endangers-billions-devices/>
- How To Fix "Experts discovered BLESA attack, to which are vulnerable billions of Bluetooth devices", <https://howtofix.guide/experts-discovered-bleesa-attack-to-which-are-vulnerable-bluetooth-devices/>
- Google News Post "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-bleesa-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-bleesa-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
- 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 Show "Modern smartphones vulnerable to old-school attack", <https://www.komando.com/happening-now/483269/modern-smartphones-vulnerable-to-old-school-attack>
- Hacker Combat "Open AT Commands: a Huge Loophole Exploit in Android Revealed", <https://hackercombat.com/open-at-commands-a-huge-loophole-exploit-in-android-revealed/>
- SecurePoint "Vulnerability Found in Major Manufacturers of Android Phones", <https://www.securepointtech.com/2018/09/07/vulnerability-found-in-major-manufacturers-of-android-phones/>
- Hybrid Techcar "Smartphones are vulnerable to hacking commands for ancient modems", <https://hybridtechcar.com/2018/08/28/smartphones-are-vulnerable-to-hacking-commands-for-ancient-modems/>
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Links

- My web <https://davejingtian.org>
- My code <https://github.com/daveti>
- AT command <https://atcommands.org/>
- 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>
- Peri Sec <https://perisec.org>