Dan Williams, Ph.D

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Experience and Education

Assistant Professor	@	**Virginia Tech** Blacksburg, VA	2021—

Leading the ROSA (Rethinking Operating Systems Abstractions) research group. Mentoring graduate and undergraduate students in systems research. Teaching graduate and undergraduate courses in computer systems. Serving the academic community through program committees and co-chair positions.

Research Staff Member	@	**IBM Research** Yorktown Heights, NY	2012—2021

Defined and executed research agenda based on interactions with business units and strategists within IBM. Contributed to IBM's offerings in secure container runtimes, serverless computing (IBM Functions), service mesh, and API ecosystems. Led research projects resulting in open source community formation (e.g., Solo5, Nabla Containers), as well as publications and talks in top academic and industry venues. Mentored grad student interns.

Adjunct Assistant Professor	@	**Vassar College** Poughkeepsie, NY	2020
Research Intern	@	**IBM Research** Hawthorne, NY	2010—2011
Graduate Student *in CS (MS,PhD)*	@	**Cornell University** (*adv. Hakim Weatherspoon)* Ithaca,NY	2003—2013
Undergraduate *in CS (BS), Math(BA)*	@	**University of Rochester** Rochester,NY	1999—2003

Research Overview

My research interests center around operating system kernels, virtualization, and security. Notable multi-year project arcs listed below:

Agentic Systems: AI-enabled agents typically use an LLM to reason about tasks and make tool calls in an iterative loop, yet this may be expensive, nondeterministic, unsafe and lacking privacy; we are investigating new architectures that prioritize code generation and reuse. (See "Execute-only Agents", AgenticOS '26)

Safe Kernel Extensions: An industry is growing around using verified safe kernel extensions for observability, security, and networking. However, verification limits both extension expressiveness and performance; we are investigating new in-kernel techniques to achieve safety, expressiveness and performance for kernel extensions. (See "KFuse", Eurosys '21 and "Rex", ATC '25)

Unikernels and Nabla Containers: The cloud industry must currently choose to run user workloads in either heavyweight but well-isolated VMs or lightweight but poorly-isolated containers.

We show that, by running a library OS containing only what is needed for an application (e.g., a unikernel), VMs or containers can be both lightweight and isolated. (See Nabla Containers and "Unikernels as Processes", SOCC '18)

Middlebox Architectures: Identified and exploited unique structure in middleboxes, built systems to achieve both, and integrated them into a cloud platform. (See "Split/Merge: System Support for Elastic Execution in Virtual Middleboxes", NSDI '13)

Superclouds: Introduces mechanisms to enable users to manage their own clouds atop (and between multiple) existing clouds and a set of mechanisms for cloud providers to expose user-supplied hypervisor-level features. (See "The Xen-Blanket…", Eurosys '12)

OS support for Trusted Computing: Designed and built a trustworthy OS (from scratch) that safely runs device drivers and storage outside the trusted computing base and leverages attestation primitives rooted in hardware. (See "Device Driver Safety..", OSDI '08)

Teaching Experience

Assistant Professor, Virginia Tech 2021—
- CS 6204, Topics in Adv. OS, Agentic OS (sp '26)
- CS 3214, Computer Systems (sp '22, sp '23, fa '23, sp '25, fa '25)
- CS 6204, Topics in Adv. OS through the lens of system extensibility (sp '24)
- CS 5204, Operating Systems (fa '22, fa '24)

Adjunct Assistant Professor, Vassar College 2020
- CMPU 334, Operating Systems (sp'20)

Students advised in ROSA Group, Virginia Tech 2021—
- Tanuj Rao (co-advised w/ Ali Butt, VT) (PhD, VT) ∼2027
- Zhengjie Ji (PhD, VT) ∼2027
- Quanzhi Fu (PhD, VT) ∼2029
- Eric Schneider(PhD, VT) ∼2029
- Milo Craun (BS, MS, PhD VT) ∼2029
- Kavya Shekar (PhD, VT) ∼2029
- Donia Ghazy (PhD, VT) ∼2029

Students graduated from ROSA Group, Virginia Tech 2023—
- Jinghao Jia (co-advised with Tianyin Xu, UIUC) (PhD, UIUC, grad. 2025) →Meta
- Rahul Tiwari (MS, VT, grad. 2026) →Replit
- Egor Lukiyanov (BS, MS, VT, grad. 2026)
- Chinecherem Dimobi (MS, VT, grad. 2025) →Intuit
- Siddharth Chintamaneni (MS, VT, grad. 2025) →Microsoft
- Raj Sahu (MS, VT, grad. 2024) →NetApp
- Roop Somaraju (MS, VT, grad. 2024) →Apple
- Sayeed Islam (MS, VT, grad. 2023)
- Adam Oswald (UG, VT, grad. 2023)

Other students advising and committee service, Virginia Tech 2021—
- Yusheng Zheng (PhD, UC Santa Cruz) ∼2027
- Nick Renner (PhD, NYU) ∼2026
- Ahmad Humayun (PhD, VT) ∼2026

- Ahmad Hossein Yazdani (PhD, VT) ∼2026
- Wesley Woo (PhD, VT) ∼2026
- Sabiha Afroz (PhD, VT) ∼2027
- Adib Rezaei (PhD, VT) ∼2028
- Hamza Muhammad (PhD, VT) ∼2028
- Daniel Chiba (PhD, VT) ∼2028
- Hayden Estes (PhD, VT) ∼2028
- Patrick Flynn (PhD, VT) ∼2028
- Alex Lin (MS, VT) ∼2026
- Yoon Lee (MS, VT) ∼2027
- Monniiesh Velmurugan (MS, VT, grad. 2026)
- Yuze Li (PhD, VT, grad. 2026)
- Ahmad Khan (PhD, VT, grad. 2026)
- Jacob Haltiwanger (MS, VT, grad. 2023)
- Anish Ellore (MS, VT, grad. 2023)
- Alena Graber (UG, VT, grad. 2026) →CMU
- Benjamin Holmes (UG, Vassar, grad. 2023) →PhD@MIT
- Hsuan-Chi (Austin) Kuo (PhD, UIUC, grad. 2022)

Research Intern Mentor, IBM Research (* = joined IBM) 2010—2021

- Hsuan-Chi (Austin) Kuo, UIUC, 2019
- Jim Cadden*, Boston University, 2017
- Tim Stamler, UT Austin, 2017
- Xiaoen Ju, University of Michigan, 2014
- Alex Van't Hof, Columbia University, 2013
- Shriram Rajagopalan*, U. of British Columbia, 2012
- Mohamed Eldehiry, KAUST, 2010

Graduate Teaching Assistant, Cornell University 2003—2010

- CS 6410 Advanced Systems (Ph.D level)
- CS 414 Operating Systems (received outstanding TA recognition)
- CS 513 System Security (Masters level)
- CS 100m Introduction to Programming (MATLAB)

Professional Service

PC chair/co-chair: ACM AgenticOS workshop 2026, USENIX ATC 2023, ACM VEE 2022
Steering committee member: ACM ATC 2026
Finance chair: SOSP 2024
Publication chair: SOSP 2025
NSF panel member: SATC 2022, CISE/CNS/CSR 2024
PC member: ACM SOSP 2026
PC member: USENIX OSDI 2026
PC member: USENIX ATC 2017, 2019, 2022, 2024
PC member: ACM Eurosys 2024, 2025
PC member: ACM ASPLOS 2024, 2025
PC member: ACM HotOS 2025
PC member ACM eBPF workshop 2024, 2025, 2026
PC member: ACM AgenticOS, 2026
PC member ACM KISV workshop 2024, 2025

PC member: ACM SYSTOR 2024
PC member: ICDCS 2022
PC member: USENIX HotCloud 2020
PC member: ACM VEE 2018, 2019
PC member: IEEE IC2E 2013, 2014, 2016
PC member: IEEE WoC 2018
PC member: IEEE/ACM ESSCA 2018
PC member: ACM CAN 2016, 2017
Reviewer: ACM Transactions on Computer Systems 2020
Reviewer: IEEE Transactions on Cloud Computing 2019, 2021
Reviewer: IEEE Internet Computing 2019
Reviewer: Elsevier JPDC 2013
VTCS qualifier committee for Systems/Networking/Cybersecurity 2026
VTCS graduate admissions committee 2023, 2024, 2025
VTCS undergraduate committee 2025, 2026

Funding

NSF CAREER Award (2236966) $602,686.00
New Faculty Mentoring Grant $1,500
4-VA Collaborative Research Award $30,000
Commonwealth Cyber Initiative Southwest Virginia Node $60,000 ($30,000 share)

Open Source (@djwillia on Github)

Rex Kernel Extensions `https://github.com/rex-rs`
Nabla Containers `https://github.com/nabla-containers`
Solo5: A sandboxed execution environment for unikernels `https://github.com/solo5/solo5`

Awards and Honors

Outstanding New Assistant Professor, Dean's Award, Virginia Tech College of Engineering, 2025
IBM Research Accomplishment, A level (2 times) for unikernels, 2017; superclouds, 2015
IBM OSRP (Open Source Recognition Program) award at Leader level for Solo5, 2016
IBM Manager's Choice Award (6 times), 2014-2018
IBM Publication Award, 2013

Peer-reviewed publications

`https://scholar.google.com/citations?user=nLdx2hgAAAAJ`
(h-index:23, citations 2998)

[1] Quanzhi Fu and Dan Williams. "Toward LLM-Driven Rule Generation for Enforcement Systems: An Exploratory Study on WAF". In: *Proc. of ACM ASPLOS Agentic OS workshop*. Mar. 2026.

[2] Rahul Tiwari and Dan Williams. "Execute-Only Agents: Architectural Defense Against Prompt Injection for AI Agents". In: *Proc. of ACM ASPLOS Agentic OS workshop*. Mar. 2026.

[3] Milo Craun and Dan Williams. “Pairwise BPF Programs Should Be Optimized Together”. In: *Proc. of ACM SIGCOMM eBPF Workshop*. Coimbra, Portugal, Sept. 2025.

[4] Chinecherem Dimobi, Rahul Tiwari, Zhengjie Ji, and Dan Williams. “BPFflow - Preventing information leaks from eBPF”. In: *Proc. of ACM SIGCOMM eBPF Workshop*. Coimbra, Portugal, Sept. 2025.

[5] Jinghao Jia, Ruowen Qin, Milo Craun, Egor Lukiyanov, Ayush Bansal, Minh Phan, Michael V. Le, Hubertus Franke, Hani Jamjoom, Tianyin Xu, and Dan Williams. “Rex: Closing the language-verifier gap with safe and usable kernel extensions”. In: *Proc. of USENIX ATC*. Boston, MA, July 2025.

[6] Kavya Shekar and Dan Williams. “SchedBPF - Scheduling BPF programs”. In: *Proc. of ACM SIGCOMM eBPF Workshop*. Coimbra, Portugal, Sept. 2025.

[7] Dan Williams, Milo Craun, Michael V. Le, Julian James Stephen, Salman Ahmed, and Hani Jamjoom. “Towards Safe Agentic AI Performance Engineering”. In: *Proc. of ACM PACMI*. Oct. 2025.

[8] Yusheng Zheng, Tong Yu, Yiwei Yang, Yanpeng Hu, Xiaozheng Lai, Dan Williams, and Andrew Quinn. “Extending Applications Safely and Efficiently”. In: *Proc. of USENIX OSDI*. Boston, MA, July 2025.

[9] Siddharth Chintamaneni, Sai Roop Somaraju, and Dan Williams. “Unsafe Kernel Extension Composition via BPF Program Nesting”. In: *Proc. of ACM SIGCOMM eBPF Workshop*. Sydney, Australia, Aug. 2024.

[10] Milo Craun, Khizar Hussain, Uddhav Gautam, Zhengjie Ji, Tanuj Rao, and Dan Williams. “Eliminating eBPF Tracing Overhead on Untraced Processes”. In: *Proc. of ACM SIGCOMM eBPF Workshop*. Sydney, Australia, Aug. 2024.

[11] Benjamin Holmes, Jason Waterman, and Dan Williams. “SEVeriFast: Minimizing the root of trust for fast startup of SEV microVMs”. In: *Proc. of ACM ASPLOS*. San Diego, CA, Apr. 2024.

[12] Jinghao Jia, Michael V Le, Salman Ahmed, Dan Williams, Hani Jamjoom, and Tianyin Xu. “Fast (Trapless) Kernel Probes Everywhere”. In: *Proc. of USENIX ATC*. Santa Clara, CA, July 2024.

[13] Zicheng Wang, Yicheng Guang, Yueqi Chen, Zhenpeng Lin, Michael Le, Dang K Le, Dan Williams, Xinyu Xing, Zhongshu Gu, and Hani Jamjoom. “SeaK: Rethinking the Design of a Secure Allocator for OS Kernel”. In: *Proc. of USENIX Security*. Philadelphia, PA, Aug. 2024.

[14] Ying Zhang, Peng Li, Yu Ding, Wang Lingxiang, Dan Williams, and Na Meng. “Broadly Enabling KLEE to Effortlessly Find Unrecoverable Errors in Rust”. In: *Proc. of ACM ICSE-SEIP*. Lisbon, Portugal, Apr. 2024.

[15] Milo Craun, Adam Oswald, and Dan Williams. “Enabling eBPF on Embedded Systems Through Decoupled Verification”. In: *Proc. of ACM SIGCOMM eBPF Workshop*. New York, NY, Sept. 2023.

[16] Christopher Jelesnianski, Mohannad Ismail, Yeongjin Jang, Dan Williams, and Changwoo Min. “Protect the System Call, Protect (most of) the World with BASTION”. In: *Proc. of ACM ASPLOS*. Vancouver, Canada, Mar. 2023.

[17] Jinghao Jia, Michael V Le, Salman Ahmed, Dan Williams, and Hani Jamjoom. “Practical and Flexible Kernel CFI Enforcement using eBPF”. In: *Proc. of ACM SIGCOMM eBPF Workshop*. New York, NY, Sept. 2023.

[18] Jinghao Jia, Raj Sahu, Adam Oswald, Dan Williams, Michael V Le, and Tianyin Xu. "Kernel extension verification is untenable". In: *Proc. of ACM HotOS*. Providence, RI, June 2023.

[19] Michael V Le, Salman Ahmed, Dan Williams, and Hani Jamjoom. "Securing Container-based Clouds with Syscall-aware Scheduling". In: *Proc. of ACM ASIACCS*. Melbourne, Australia, July 2023.

[20] Raj Sahu and Dan Williams. "Enabling BPF Runtime policies for better BPF management". In: *Proc. of ACM SIGCOMM eBPF Workshop*. New York, NY, Sept. 2023.

[21] Benjamin Holmes, Jason Waterman, and Dan Williams. "KASLR in the Age of MicroVMs". In: *Proc. of ACM EuroSys*. Rennes, France, Mar. 2022.

[22] Sunwoo Jang, Somin Song, Byungchul Tak, Sahil Suneja, Michael V Le, Chuan Yue, and Dan Williams. "SecQuant: Quantifying Container System Call Exposure". In: *Proc. of ESORICS*. Copenhagen, Denmark, Sept. 2022.

[23] Hsuan-Chi Kuo, Kai-Hsun Chen, Yicheng Lu, Dan Williams, Sibin Mohan, and Tianyin Xu. "Verified Programs Can Party: Optimizing Kernel Extensions via Post-Verification Merging". In: *Proc. of ACM EuroSys*. Rennes, France, Mar. 2022.

[24] Hsuan-Chi Kuo, Dan Williams, Ricardo Koller, and Sibin Mohan. "A Linux in Unikernel Clothing". In: *Proc. of ACM EuroSys*. Heraklion, Greece, Apr. 2020.

[25] Ricardo Koller and Dan Williams. "An Ounce of Prevention is Worth a Pound of Cure: Ahead-of-time Preparation for Safe High-level Container Interfaces". In: *Proc. of USENIX HotStorage*. Renton, WA, July 2019.

[26] Dan Williams, Ricardo Koller, Martin Lucina, and Nikhil Prakash. "Unikernels As Processes". In: *Proc. of ACM SoCC*. Carlsbad, CA, Oct. 2018.

[27] Dan Williams, Ricardo Koller, and Brandon Lum. "Say Goodbye to Virtualization for a Safer Cloud". In: *Proc. of USENIX HotCloud*. Boston, MA, July 2018.

[28] Kartik Gopalan, Rohit Kugve, Hardik Bagdi, Yahui Hu, Dan Williams, and Nilton Bila. "Multi-Hypervisor Virtual Machines: Enabling an Ecosystem of Hypervisor-level Services". In: *Proc. of USENIX ATC*. Santa Clara, CA, July 2017.

[29] Ricardo Koller and Dan Williams. "Will Serverless End the Dominance of Linux in the Cloud?" In: *Proc. of ACM HotOS*. Whistler, BC, Canada, May 2017.

[30] Xiaoen Ju, Dan Williams, Hani Jamjoom, and Kang Shin. "Version Traveler: Fast and Memory-Efficient Version Switching in Graph Processing Systems". In: *Proc. of USENIX ATC*. Denver, CO, June 2016.

[31] Dan Williams, Yaohui Hu, Umesh Deshpande, Piush K Sinha, Nilton Bila, Kartik Gopalan, and Hani Jamjoom. "Enabling Efficient Hypervisor-as-a-Service Clouds with Ephemeral Virtualization". In: *Proc. of ACM VEE*. Atlanta, GA, Apr. 2016.

[32] Dan Williams and Ricardo Koller. "Unikernel Monitors: Extending Minimalism Outside of the Box". In: *Proc. of USENIX HotCloud*. Denver, CO, June 2016.

[33] Alexander Van't Hof, Hani Jamjoom, Jason Nieh, and Dan Williams. "Flux: Multi-Surface Computing in Android". In: *Proc. of ACM EuroSys*. Bordeaux, France, Apr. 2015.

[34] Hani Jamjoom, Dan Williams, and Upendra Sharama. "Don't Call Them Middleboxes, Call Them Middlepipes". In: *Proc. of ACM HotSDN*. Chicago, IL, Aug. 2014.

[35] Dan Williams, Hani Jamjoom, and Hakim Weatherspoon. "Software Defining System Devices with the Banana Double-Split Driver Model". In: *Proc. of USENIX HotCloud*. Philadelphia, PA, June 2014.

[36] Dan Williams, Shuai Zheng, Xiangliang Zhang, and Hani Jamjoom. "TideWatch: Fingerprinting the Cyclicality of Big Data Workloads". In: *Proc. of IEEE INFOCOM*. Toronto, Canada, Apr. 2014.

[37] Zuhair Khayyat, Karim Awara, Amani Alonazi, Hani Jamjoom, Dan Williams, and Panos Kalnis. "Mizan: A System for Dynamic Load Balancing in Large-scale Graph Processing". In: *Proc. of ACM EuroSys*. Prague, Czech Republic, Apr. 2013.

[38] Vasileios Pappas, Hani Jamjoom, and Dan Williams. "AIN: A Blueprint for an All-IP Data Center Network". In: *Proc. of USENIX HotCloud*. San Jose, CA, June 2013.

[39] Shriram Rajagopalan, Dan Williams, and Hani Jamjoom. "Pico Replication: A High Availability Framework for Middleboxes". In: *Proc. of ACM SoCC*. Santa Clara, CA, Oct. 2013.

[40] Shriram Rajagopalan, Dan Williams, Hani Jamjoom, and Andrew Warfield. "Escape Capsule: Explicit State Is Robust and Scalable". In: *Proc. of USENIX HotOS*. Santa Ana Pueblo, NM, May 2013.

[41] Shriram Rajagopalan, Dan Williams, Hani Jamjoom, and Andrew Warfield. "Split/Merge: System Support for Elastic Execution in Virtual Middleboxes". In: *Proc. of USENIX NSDI*. Lombard, IL, Apr. 2013.

[42] Dan Williams. "Towards Superclouds". PhD thesis. Cornell University, Jan. 2013.

[43] Dan Williams and Hani Jamjoom. "Cementing High Availability in OpenFlow with RuleBricks". In: *Proc. of ACM HotSDN*. Hong Kong, Aug. 2013.

[44] Dan Williams, Hani Jamjoom, and Hakim Weatherspoon. "Plug into the Supercloud". In: *IEEE Internet Computing Special Issue on Virtualization* 17.2 (Mar. 2013).

[45] Dan Williams, Hani Jamjoom, and Hakim Weatherspoon. "The Xen-Blanket: Virtualize Once, Run Everywhere". In: *Proc. of ACM EuroSys*. Bern, Switzerland, Apr. 2012.

[46] Emin Gün Sirer, Willem de Bruijn, Patrick Reynolds, Alan Shieh, Kevin Walsh, Dan Williams, and Fred B. Schneider. "Logical Attestation: An Authorization Architecture for Trustworthy Computing". In: *Proc. of ACM SOSP*. Cascais, Portugal, Oct. 2011.

[47] Dan Williams, Eslam Elnikety, Mohamed Eldehiry, Hani Jamjoom, Hai Huang, and Hakim Weatherspoon. "Unshackle the Cloud!" In: *Proc. of USENIX HotCloud*. Portland, OR, June 2011.

[48] Dan Williams, Hani Jamjoom, Yew-Huey Liu, and Hakim Weatherspoon. "Overdriver: Handling Memory Overload in an Oversubscribed Cloud". In: *Proc. of ACM VEE*. Newport Beach, CA, Mar. 2011.

[49] Dan Williams, Patrick Reynolds, Kevin Walsh, Emin Gün Sirer, and Fred B. Schneider. "Device Driver Safety Through a Reference Validation Mechanism". In: *Proc. of USENIX OSDI*. San Diego, CA, Dec. 2008.

[50] Alan Shieh, Dan Williams, Emin Gün Sirer, and Fred B. Schneider. "Nexus: A New Operating System for Trustworthy Computing (extended abstract)". In: *Proc. of ACM SOSP*. Brighton, UK, Oct. 2005.

[51] Dan Williams and Emin Gün Sirer. "Optimal Parameter Selection for Efficient Memory Integrity Verification Using Merkle Hash Trees". In: *Proc. of IEEE (NCA) - Trustworthy Network Computing Workshop*. Cambridge, MA, Aug. 2004.

Conference and Invited Talks

1. Specialization and Extension: An Agentic Future. Invited keynote, 1st AgenticOS workshop with ASPLOS, Pittsburgh, PA, March, 2026.
2. Protecting AI with Security Guarantees using Confidential Virtual Machines with GPUs. CCI SWVA Annual Meeting, Virginia Tech, October, 2025.
3. BPFflow - Preventing information leaks from eBPF. ACM SIGCOMM eBPF Workshop, Coimbra, Portugal, September 2025.
4. SchedBPF - Scheduling BPF programs. ACM SIGCOMM eBPF Workshop, Coimbra, Portugal, September 2025.
5. Unsafe Kernel Extension Composition via BPF Program Nesting. ACM SIGCOMM eBPF Workshop, Sydney, Australia, August 2024.
6. The Future of Safe Kernel Extensions. Invited keynote, Bytedance November, 2023.
7. Are Safe Kernel Extensions the Key to Safe OS Kernels? Invited keynote, DARPA V-SPELLS PI meeting, March 2023.
8. The Good, Bad, and Ugly of Verified Safe Kernel Extensions. DARPA eBPF Working Group meeting, February 2023; University of Maryland, March 2023.
9. Verified programs can party: Optimizing Kernel Extensions via Post-Verification Merging. Eurosys, Rennes, France, April 2022.
10. Isolation in the cloud: control the system calls, control the attackers. ETH Zurich, March 2022; Northwestern University, May 2022; Northeastern University, June 2022.
11. From Unikernels to Nabla Conatiners and Beyond. William and Mary, March 2021; SUNY Buffalo, March 2021; Virginia Tech, February 2021; Simon Fraser University, February 2021.
12. Lupine Linux: A Linux in Unikernel Clothing. Invited keynote, Betriebssysteme Fachgruppentreffen in Aachen, September 2020 (virtual).
13. Container Isolation via Virtualization: Don't forget to shrink the guest. KubeCon+CloudNativeCon Europe, August 2020 (virtual).
14. Adventures in Container Isolation: the Return of Virtualization. CNCF SIG-Runtime, June 2020 (virtual); Brown University, February 2020.
15. From Unikernels to Nabla Containers. SUNY Binghamton, October 2019; Cornell University, September 2019; University of Cambridge, January 2019; UC San Diego, October 2018.
16. Unikernels as Processes. ACM SOCC, Carlsbad, CA, October 2018.
17. Unikernel Research at IBM. Boston University, February 2018

18. Will Serverless End the Dominance of Linux in the Cloud? ACM SIGOPS HotOS, Whistler, BC, May 2017.

19. Unikernels: Containers for Tomorrow's Cloud. IBM Interconnect, Las Vegas, NV, March 2017.

20. Solo5 Unikernel Tech Talk. developerWorks Open Tech Talks, August 2016.

21. Unikernel Monitors: Extending Minimalism Outside of the Box. USENIX HotCloud, Denver, CO, June 2016.

22. Solo5: Building a Unikernel Base From Scratch. Unikernels and More: Cloud Innovators Forum at SCaLE14X, Pasadena, CA, January 2016.

23. Version Traveler: Fast and Memory-Efficient Version Switching in Graph Processing Systems. USENIX ATC, Denver, CO, June 2016.

24. Enabling Efficient Hypervisor-as-a-Service Clouds with Ephemeral Virtualization. ACM SIGPLAN/SIGOPS VEE, Atlanta, GA, April 2016.

25. Software Defining System Devices with the 'Banana' Double-Split Driver Model. USENIX HotCloud, Philadelphia, PA, June 2014.

26. AIN: A Blueprint for an All-IP Data Center Network. USENIX HotCloud, San Jose, CA, June 2013.

27. The Xen-Blanket: Virtualize Once, Run Everywhere. ACM EuroSys, Bern, Switzerland, April 2012.

28. Unshackle the Cloud! USENIX HotCloud, Portland, OR, June 2011.

29. Overdriver: Handling Memory Overload in an Oversubscribed Cloud. ACM VEE, Newport Beach, CA, March 2011.

30. Overdriver: Enabling High Data Center Utilization Through Aggressive Memory Oversubscription. INFORMS Cloud Computing Cluster, Austin, TX, November 2010.

31. Nexus: A New Operating System For Trustworthy Computing (WIP). ACM SOSP, Brighton, UK, October 2005.

32. Optimal Parameter Selection for Efficient Memory Integrity Verification Using Merkle Hash Trees. IEEE NCA - Trustworthy Network Computing Workshop, Cambridge, MA, August 2004.

Industry Talks Given by Students

1. Rex and its integration with Rust-for-Linux. Linux Plumbers Conference, Tokyo, Japan, December 2025. (presented by Jinghao Jia)

2. Rex: Safe and Usable Kernel Extensions in Rust. Open Source Summit, Denver, CO, June 2025. (presented by Jinghao Jia)

3. When BPF programs need to die: exploring the design space for early BPF termination. Linux Plumbers Conference, Richmond, VA, November 2023. (presented by Raj Sahu)

4. Overflowing the kernel stack with BPF. Linux Plumbers Conference, Richmond, VA, November 2023. (presented by Sai Roop Somaraju and Siddharth Chintamaneni)

5. Advancing Kernel Control Flow Integrity with eBPF. Linux Plumbers Conference, Richmond, VA, November 2023. (presented by Jinghao Jia)

6. Revisiting eBPF Seccomp Filters. Linux Plumbers Conference, Dublin, Ireland, September 2022. (presented by Jinghao Jia)

US Patents Filed

1. US20180176127A1. Mutipathing using a network of overlays. Xiao Cai, Hani T. Jamjoom, Thai Franck Le, Daniel J. Williams. International Business Machines Corp. Granted 2021.

2. US9886303B2. Specialized micro-hypervisors for unikernels. Ricardo A. Koller Jemio, Daniel J. Williams. International Business Machines Corp. Granted 2018.

3. US10073694B2. Dynamic extensibility of application programming interfaces. Hani T. Jamjoom, Yew-Huey Liu, Daniel J. Williams. International Business Machines Corp. Granted 2018.

4. US9602599B2. Coordinating application migration processes. Kamal K. Bhattacharya, Chen Hua Feng, Yun-Wu Huang, Ying Huang, Hani Jamjoom, Pu Jin, Fan Jing Meng, Michael Montinarelli, Mark E. Podlaseck, Zon-Yin Shae, Daniel J. Williams. International Business Machines Corp. Granted 2017.

5. US9588739B2. Supporting software application developers to iteratively refine requirements for web application programming interfaces. Gennaro A. Cuomo, Hani T. Jamjoom, Jim A. Laredo, Arjun Natarajan, Shriram Rajagopalan, Daniel J. Williams, John E. Wittern. International Business Machines Corp. Granted 2017.

6. US9256464B2. Method and apparatus to replicate stateful virtual machines between clouds. Hani Jamjoom, Daniel J. Williams. International Business Machines Corp. Granted 2016.

7. US9110864B2. Fault tolerance solution for stateful applications. Hani T. Jamjoom, Shriram Rajagopalan, Daniel J. Williams. International Business Machines Corp. Granted 2015.

Hobbies and Community

Youth Sports Coaching	recreational soccer (9 seasons), mountain bike team (3 seasons)
Music and Art	upright bass, guitar, songwriting, jazz trombone, drawing
Exercise and the Great Outdoors	bicycling, swimming, hiking, camping
Tinkering and Electronics	bicycle maintenance, microcontrollers

References

Hani Jamjoom, Ph.D
Principal Research Staff Member
Manager, Cloud and System Security
Member of the IBM Academy of Technology
IBM T.J. Watson Research Center

jamjoom@us.ibm.com

Prof. Hakim Weatherspoon
Associate Director for Cornell Institute for Digital Agriculture (CIDA)
Chief Executive Officer (CEO) and Co-Founder of Exotanium, Inc.
Professor
Cornell University
hweather@cs.cornell.edu

Prof. Dilma Da Silva
Department Head, Professor, and Holder of the Ford Motor Company Design Professorship II
Department of Computer Science and Engineering
Texas A&M University
dilma@cse.tamu.edu

Prof. Jason Waterman
Associate Professor of Computer Science
Vassar College
jawaterman@vassar.edu