Alexander Van't Hof

New York, NY 10025
alexvh@cs.columbia.edu
www.alexvh.com

Research Interests

Operating Systems, Containers, Mobile Computing, Virtualization

Education

2013–2023 **Doctor of Philosophy**, *Columbia University*, New York, NY, *Computer Science*
Advisor: Jason Nieh
Successfully Defended: March 10, 2022

2013–2015 **Master of Philosophy**, *Columbia University*, New York, NY, *Computer Science*

2010–2011 **Master of Science**, *Columbia University*, New York, NY, *Computer Science*

2006–2010 **Bachelor of Science**, *Michigan Technological University*, Houghton, MI, *Computer Science*
Summa Cum Laude

Work Experience

Dec 2022–Present **Senior Software Engineer**, *Elpha Secure Technology, Inc.*, New York, NY
- Involved in the development of endpoint detection & response software.

Jan 2013–Dec 2022 **Graduate Research Assistant**, *Columbia University*, New York, NY
- Built a cloud-container architecture enabling container memory confidentiality and integrity.
- Built a drone-as-service solution making drones accessible in the cloud.
- Co-built a framework for sharing mobile device hardware.
- Co-built a kernel-level system enabling Android phones to run unmodified iOS applications.

June 2013–Jul 2015 **Services Research Intern**, *IBM Research*, Yorktown Heights, NY
- Built a system enabling live migration of Android applications between heterogeneous devices.
- Developed post-copy based live migration of Docker containers.

June 2011–Jan 2013 **Senior Software Developer**, *Cellrox, Ltd.*, Tel Aviv, Israel
First employee at mobile virtualization startup ($4.7 million series A round funding, Dec. 2012).
- Designed and developed substantial portions of Cellrox's early framework.
- Thoroughly investigated and modified portions of the Android operating system.
- Frequently led designs, mentored colleagues, and acted as a critical source of knowledge for others.

Aug 2012–Dec 2012 **Head Teaching Assistant (Operating Systems)**, *Columbia University*, New York, NY
- Designed and solved assignments involving the Linux kernel and Android userspace.
- Created custom version of ReviewBoard to allow students to anonymously grade each other.
- Maintained Git repositories used by students for working on and submitting assignments.

June 2010–Aug 2011
Feb 2012–June 2012 **Web Operations Intern/On Call Associate**, *American Greetings*, Cleveland, OH
- Involved in deployment, operation, and maintenance of Linux-based web and development servers.
- Automated installations of Xen hosts, load balancers, development servers, and web servers.
- Completed Python-based web application for scheduling tasks and maintaining PCI compliance.

Awards/Scholarships

2014 IBM Ph.D. Fellowship

2014 Columbia CS Dept., Kosoresow Award for Outstanding Performance in TA-ing and Service

2012 National Science Foundation Graduate Research Fellowship Honorable Mention

October 2011 23rd Symposium on Operating System Principles Best Paper Award

Fall 2008 Michigan Tech Class of 1959 Scholarship

2006-2010 Michigan Tech Presidential Scholar of Excellence

Technical Skills

Expert	C, C++, Java	Expert	Python, Bash shell scripting
Expert	Android framework code	Expert	Linux system administration
Expert	Linux kernel development	Proficient	SQL (MySQL, SQLite)

Publications

[1] A. Van't Hof, J. Nieh. BlackBox: A Container Security Monitor for Protecting Containers on Untrusted Operating Systems. *Proceedings of the 16th USENIX Symposium on Operating Systems Design and Implementation (OSDI 2022)*, Carlsbad, CA, Jul. 2022.

[2] N. AlDuaij, A. Van't Hof, J. Nieh. Heterogeneous Multi-Mobile Computing. *Proceedings of the 17th ACM International Conference on Mobile Systems, Applications, and Services (MobiSys 2019)*, Seoul, South Korea, Jun. 2019.

[3] A. Van't Hof, J. Nieh. AnDrone: Virtual Drone Computing in the Cloud. *Proceedings of the 14th ACM European Conference on Computer Systems (EuroSys 2019)*, Dresden, Germany, Mar. 2019.

[4] A. Van't Hof, H. Jamjoom, J. Nieh, and D. Williams. Flux: Multi-Surface Computing In Android. *Proceedings of the 10th ACM European Conference on Computer Systems (EuroSys 2015)*, Bordeaux, France, Apr. 2015.

[5] J. Andrus, A. Van't Hof, N. AlDuaij, C. Dall, N. Viennot, and J. Nieh. Cider: Native Execution of iOS Apps on Android. *Proceedings of the 19th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2014)*, Salt Lake City, UT, Mar. 2014.

[6] C. Dall, J. Andrus, A. Van't Hof, O. Laadan, and J. Nieh. The Design, Implementation, and Evaluation of Cells: A Virtual Smartphone Architecture. *ACM Transactions on Computer Systems (TOCS)*, 30(3):9:1–9:31, Aug. 2012 (Invited Paper).

[7] J. Andrus, C. Dall, A. Van't Hof, O. Laadan, and J. Nieh. Cells: A Virtual Mobile Smartphone Architecture. *Proceedings of the 5th Annual Haifa Experimental Systems Conference (SYSTOR 2012)*, Haifa, Israel, Jun. 2012 (Invited Paper).

[8] J. Andrus, C. Dall, A. Van't Hof, O. Laadan, and J. Nieh. Cells: A Virtual Mobile Smartphone Architecture. *Proceedings of the Twenty-Third ACM Symposium on Operating Systems Principles (SOSP 2011)*, Cascais, Portugal, Oct. 2011 (Best Paper Award).

Technical Reports

[1] N. AlDuaij, A. Van't Hof, and J. Nieh. Heterogeneous Multi-Mobile Computing. *Technical Report CUCS-008-16*, Dept. of Computer Science, Columbia University, Aug. 2016.

[2] N. AlDuaij, A. Van't Hof, and J. Nieh. M2: Multi-Mobile Computing. *Technical Report CUCS-005-15*, Dept. of Computer Science, Columbia University, Mar. 2015.

[3] J. Andrus, A. Van't Hof, N. AlDuaij, C. Dall, N. Viennot, and J. Nieh. Chameleon: Multi-Persona Binary Compatibility for Mobile Devices. *Technical Report CUCS-011-13*, Dept. of Computer Science, Columbia University, Apr. 2013.

[4] J. Andrus, C. Dall, A. Van't Hof, O. Laadan, and J. Nieh. Cells: A Virtual Mobile Smartphone Architecture. *Technical Report CUCS-022-11*, Dept. of Computer Science, Columbia University, May 2011.