VICTOR HEORHIADI

✉v@victorh.net in LinkedIn ◯GitHub 🎓Google Scholar ◉Website

EXPERIENCE

Sr. Applied Scientist
Amazon Web Services

2023 - Present
Seattle, WA

- Worked on implementation of a link-state routing protocol written in Rust
  - Implemented protocol state machines
  - Lead a team to adopt novel distributed system testing techniques (chaos and property-based testing)
- Delivered a "network compiler" – a core component of the AWS intent-driven network control plane

Applied Scientist
Amazon Web Services

2021 - 2023
Seattle, WA

- Designed and implemented a service that uses formal methods for proving correctness of network access control lists
- Contributed to the automated reasoning service that powers AWS Reachability Analyzer

Software Engineer
Intentionet

2017 - 2021
Seattle, WA

- Core developer of Batfish, an open-source network configuration analysis tool. Focus on routing protocols and control plane simulation
- Delivered multiple features in Batfish Enterprise, including an AWS-based cloud offering

Graduate Research Assistant
University of North Carolina at Chapel Hill

2011-2017
Chapel Hill, NC

- Researched global network optimization with applications to Software-Defined Networking (SDN)
  - Built a framework for expressing optimization components of different SDN applications
  - Developed workload distribution techniques for network intrusion detection systems
- Analyzed user behavior and computer infection data from a large enterprise

Research Internship
IBM Research

June-August 2015
Yorktown Heights, NY

- Built a tool for testing microservice applications using distributed fault injection and runtime assertions

Undergraduate Research Assistant
University of Minnesota Twin Cities

2009-2011
Minneapolis, MN

EDUCATION

Doctor of Philosophy in Computer Science
University of North Carolina at Chapel Hill

2017
Chapel Hill, NC

Focus in Software-Defined Networking, network optimization, and security

Master of Science in Computer Science
University of North Carolina at Chapel Hill

2013
Chapel Hill, NC

Focus in network security

Bachelor of Science in Computer Science
University of Minnesota Twin Cities

2011
Minneapolis, MN

Focus in computer security: privacy, anonymity, censorship resistance

National Science Foundation Graduate Research Fellowship

Lando Scholarship
Merit-based scholarship awarded to outstanding computer science undergraduate students

Dean's List
University of Minnesota 3 semesters

Publications

Brown, Matt et al. (2023). "Lessons from the evolution of the Batfish configuration analysis tool". In: *Proceedings of the ACM SIGCOMM 2023 Conference*. ACM SIGCOMM '23. New York, NY, USA: Association for Computing Machinery, pp. 122–135. ISBN: 9798400702365. DOI: 10.1145/3603269.3604866. URL: https://doi.org/10.1145/3603269.3604866.

Heorhiadi, Victor, Sanjay Chandrasekaran, et al. (2018). "Intent-driven Composition of Resource-management SDN Applications". In: *Proceedings of the 14th International Conference on Emerging Networking EXperiments and Technologies*. CoNEXT '18. New York, NY, USA: ACM, pp. 86–97. DOI: 10.1145/3281411.3281431.

Heorhiadi, Victor, Shriram Rajagopalan, et al. (June 2016). "Gremlin: Systematic Resilience Testing of Microservices". In: *Proceedings of the 36th IEEE International Conference on Distributed Computing Systems*. ICDCS'16.

Heorhiadi, Victor, Michael K. Reiter, and Vyas Sekar (Mar. 2016). "Simplifying Software-Defined Network Optimization Using SOL". In: *Proceedings of the 13th USENIX Symposium on Networked Systems Design and Implementation*. NSDI'16.

Chan-Tin, Eric et al. (2014). "Hijacking the Vuze BitTorrent network: all your hop are belong to us". In: *IET Information Security*.

Heorhiadi, Victor, Seyed K. Fayaz, et al. (Dec. 2014). "SNIPS: A software-defined approach for scaling intrusion prevention systems via offloading". In: *Proceedings of the 10th International Conference on Information Systems Security*. ICISS'14.

Yen, Ting-Fang et al. (Nov. 2014). "An Epidemiological Study of Malware Encounters in a Large Enterprise". In: *Proceedings of the 21st ACM Conference on Computer and Communications Security*. CCS'14.

Heorhiadi, Victor, Michael K. Reiter, and Vyas Sekar (Dec. 2012b). "New opportunities for load balancing in network-wide intrusion detection systems". In: *Proceedings of the 8th international Conference on Emerging networking experiments and technologies*. CoNeXT'12.

Vasserman, Eugene Y., Victor Heorhiadi, Nicholas Hopper, et al. (Aug. 2012). "One-Way Indexing for Plausible Deniability in Censorship Resistant Storage". In: *Proceedings of the 2nd Usenix Workshop on Free and Open Communications on the Internet*. FOCI'12.

Chan-Tin, Eric et al. (Nov. 2011). "The Frog-Boiling Attack: Limitations of Secure Network Coordinate Systems". In: *ACM Transactions on Information and System Security* 14.3.

Schucard, Max et al. (Oct. 2010). "Balancing the shadows". In: *Proceedings of the 9th annual ACM Workshop on Privacy in the Electronic Society*. WPES '10.

Patents

Backes, John David et al. (Nov. 24, 2023). "Intent-driven network management". US-12155530-B1. Inc. Amazon Technologies. URL: https://patents.google.com/patent/US12155530B1/en.

Bayless, Samuel et al. (Mar. 30, 2022). "Network change verification based on observed network flows". US-11743122-B1. Inc. Amazon Technologies. URL: https://patents.google.com/patent/US11743122B1/en.

Qian, Baihu, Bashuman Deb, Justin Lin Hsieh, Daniel William Dacosta, Nick Matthews, Anoop Dawani, et al. (Dec. 10, 2021). "Dynamic evaluation and implementation of network mutations". US-11936558-B1. Inc. Amazon Technologies. URL: https://patents.google.com/patent/US11936558B1/en.

Qian, Baihu, Bashuman Deb, Justin Lin Hsieh, Daniel William Dacosta, Nick Matthews, Viktor Heorhiadi, et al. (Dec. 10, 2021). "Network configuration analysis and management". US-12021902-B1. Inc. Amazon Technologies. URL: https://patents.google.com/patent/US12021902B1/en.

Heorhiadi, Viktor, Hani T. Jamjoom, and Shriram Rajagopalan (Feb. 19, 2016). "Failure recovery testing framework for microservice-based applications". US-9842045-B2. International Business Machines Corporation. URL: https://patents.google.com/patent/US9842045B2/en.

Oprea, Alina M. et al. (Nov. 26, 2014). "Determining risk of malware infection in enterprise hosts". US-9674210-B1. University Of North Carolina At Chapel Hill EMC IP Holding Company LLC. URL: https://patents.google.com/patent/US9674210B1/en.