Victor Heorhiadi

victor@cs.unc.edu
http://www.cs.unc.edu/~victor

University of North Carolina
Department of Computer Science
Campus Box 3175, Sitterson Hall
Chapel Hill, NC 27599

Education

Doctor of Philosophy in Computer Science *expected 2017*
University of North Carolina at Chapel Hill Chapel Hill, NC
Focus in software-defined networking, security, and network optimization.
Advised by Michael Reiter.

Master of Science in Computer Science *2013*
University of North Carolina at Chapel Hill Chapel Hill, NC
Focus in networking and security. Advised by Michael Reiter.

Bachelor of Science in Computer Science *2011*
University of Minnesota Twin Cities Minneapolis, MN
Focus in computer security. Advised by Nicholas Hopper and Yongdae Kim.

Awards and Honors

National Science Foundation Graduate Fellowship

Lando Scholarship Merit based scholarship awarded to outstanding computer science students

Dean's List at University of Minnesota 3 semesters

Experience

Graduate Research Assistant *2011-present*
University of North Carolina at Chapel Hill Chapel Hill, NC

- Researched global network optimization with linear programming
- Built a tool for network policy enforcement using software defined networking
- Developed workload distribution techniques for network intrusion detection systems by implementing a traffic selector for Snort using Click
- Analyzed user behavior as it relates to security policies and computer infection data from large enterprise
- Modified Linux kernel for research purposes

Summer Internship *June-August 2015*
IBM Research Yorktown Heights, NY

- Built and tested custom microservice-based applications
- Gained experience with IBM Bluemix and Docker
- Created an SDN-inspired tool for testing microservice applications

Undergraduate Research Assistant *2009-2011*
University of Minnesota Twin Cities Minneapolis, MN

- Built a distributed censorship-resistant content publishing system
- Improved a distributed anonymity system (ShadowWalker) to resist malicious attacks

– Modified open-source torrent client (Vuze) for research purposes

Freelance Software Developer   *2011*

– Implemented custom cryptographic key exchange protocols

Technical Skills

Networking Extensive experience with building networking applications, simulations (Emulab, Planetlab, Mininet), and software-defined networking (ONOS, OpenDaylight).

Security In-depth knowledge of anonymity and privacy, intrusion detection, intrusion prevention (Snort, Bro, Surricata), network attacks. Have experience with malware analysis.

Distributed systems Proficient at implementing and deploying custom distributed systems.

Data analysis Competent at analyzing large amounts of scientific data and network traffic (using packet dissectors and Netflow).

System Development Intermediate knowledge of kernel development and low-level programming.

Languages/Tools Proficient in C/C++, Java, Go, Python, LaTeX. Comfortable with MySQL databases.

Communication skills Fluent in 3 languages, gave numerous technical talks.

Publications

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

[2]   Victor Heorhiadi, Shriram Rajagopalan, Hani Jamjoom, Michael K. Reiter, and Vyas Sekar. "Gremlin: Systematic Resilience Testing of Microservices". In: *Proceedings of the 36th IEEE International Conference on Distributed Computing Systems*. ICDCS'16. 2016.

[3]   Eric Chan-Tin, Victor Heorhiadi, Nicholas Hopper, and Yongdae Kim. "Hijacking the Vuze BitTorrent network: all your hop are belong to us". In: *IET Information Security* (2014).

[4]   Victor Heorhiadi, Seyed K. Fayaz, Michael K. Reiter, and Vyas Sekar. "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. Dec. 2014.

[5]   Ting-Fang Yen, Victor Heorhiadi, Alina Oprea, Michael K. Reiter, and Ari Juels. "An Epidemiological Study of Malware Encounters in a Large Enterprise". In: *Proceedings of the 21st ACM Conference on Computer and Communications Security*. CCS'14. Nov. 2014.

[6]   Victor Heorhiadi, Michael K. Reiter, and Vyas Sekar. "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. Dec. 2012.

[7]   Eugene Y. Vasserman, Victor Heorhiadi, Nicholas Hopper, and Yongdae Kim. "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. Aug. 2012.

[8]   Eric Chan-Tin, Victor Heorhiadi, Nicholas Hopper, and Yongdae Kim. "The Frog-Boiling Attack: Limitations of Secure Network Coordinate Systems". In: *ACM Transactions on Information and System Security* 14.3 (Nov. 2011).

[9]   Max Schucard, Alexander W. Dean, Victor Heorhiadi, Nicholas Hopper, and Yongdae Kim. "Balancing the shadows". In: *Proceedings of the 9th annual ACM Workshop on Privacy in the Electronic Society*. WPES '10. Oct. 2010.

Posters, Talks

- **Simplifying Policy Enforcement**, Talk, *Science of Security Community Forum*, 2015

- **Simplifying Policy Enforcement using SOL**, Poster, *Science of Security Community Forum*, 2015

- **Enabling Software-Defined Network Optimization Applications Using SOL**, Poster, *NSDI*, 2015

- **Scaling Network Intrusion Prevention Systems**, Talk, *Science of Security Community Forum*, 2014

- **SNIPS: A Software-Defined Approach for Scaling Intrusion Prevention Systems**, Poster, *Science of Security Community Forum*, 2014