

Bernard Lampe, Ph.D.

Professional Experience

Vice President, Research Division

11/2022 – Present

Grayshift, Remote

Principal leader of the applied research division consisting of 30 highly skilled employees of researchers, engineers, and developers across three teams. Daily research collaborator while also setting policies to maintain an environment that originates new ideas for vulnerability discovery and fosters the creation of new exploit classes. Oversees the development and deployment of a large library of robust exploits and frameworks across two principal platforms.

Principal Android Vulnerability Researcher and Manager

05/2020 – 11/2022

Grayshift, Remote

Software vulnerability practitioner and manager, discovering 0-day and building offensive capabilities for initial access, privilege escalation, and cryptologic analysis serving the law enforcement community. Specialize in performing and teaching binary analysis, binary reverse engineering, source code auditing, emulation, 0-day discovery, proof-of-concept development, and system integration. Hiring, training, and mentoring vulnerability researchers in addition to coordinating attack surfaces and workloads to meet product and mission objectives.

Senior Principal Vulnerability Researcher

03/2010 – 05/2020

Raytheon, SI Government Solutions, National Business Park, Annapolis Junction, MD

Software vulnerability researcher supported U.S. government agencies developing offensive capabilities. Personally employed static and dynamic analysis techniques during vulnerability assessments including distributed fuzz testing, source code auditing, protocol reverse engineering, binary reverse engineering and proof-of-concept exploit development. Specialized in vulnerability research specific to the Linux kernel, the Android software stack, Mozilla Firefox, Google Chrome, cellular basebands, routers, firewalls and embedded systems. Supervisor, trainer, and mentor of up to 10 junior vulnerability researchers simultaneously. Leader of teams up to 19 members performing software vulnerability assessments. Assumed the role of customer interface, single-handedly coordinating workloads, target priorities, and authoring periodic reports and presentations.

Research Software Engineer

11/2005 – 10/2009

Science Applications International Corporation, Ann Arbor, MI

Researched and developed custom software solutions for the exploitation of remotely sensed data. Supported contracts with U.S. government agencies engaged in pursuing intelligence exploitation technology. Prevailing problems consisted of image domain feature extraction, pose estimation, and matching algorithms for 3D target reconstruction and automatic target recognition. Additional duties included serving as the sole system administrator for resident high-end cluster computing resources and inter-company collaboration web resources. Served as the information system security officer.

Staff Sergeant (E-5), United States Air Force

12/1999 – 11/2005

National Air and Space Intelligence Center, Wright-Patterson AFB, OH

Member of a full-time, two-person system administration team, dedicated to providing 100% uptime of a research and development intelligence production system. Provided first tier support for all technical issues regarding production including systems, networking, storage, and security. Routinely developed custom software solutions to overcome administration tasks. Served as the information security officer.

Education

The University of Maryland Baltimore Campus Ph.D. Electrical Engineering: Hyperspectral Imaging, Compressive Sensing	01/2015 – 05/2019
The University of Maryland Baltimore Campus Master's Degree , M.S. Electrical Engineering	01/2012 – 12/2015
The University of Michigan, Ann Arbor, MI Bachelor's Degree , B.S. Computer Science	12/2005 – 12/2009
The Community College of the Air Force, Maxwell AFB Associate Degree , Scientific Analysis Technology	01/2000 – 04/2005

Publications

- B. Lampe**, C.-I Chang, "Advances in Hyperspectral Image Processing Techniques", Chapter 7, "Restricted Entropy and Spectrum Properties for Hyperspectral Imaging", ISBN: 978-1-119-68776-4, Wiley-IEEE Press, November 2022
- B. Lampe**, "Dissertation: Compressive sensing with applications to hyperspectral image processing," Mentor: C.-I Chang, University of Maryland Baltimore County (UMBC), Published May 2020.
- B. Lampe**, C.-I Chang, A. Bekit, C. J. Della Porta, and C. Wu, "Restricted Entropy and Spectrum Properties for the Compressively Sensed Domain in Hyperspectral Imaging," in *IEEE Transactions on Geoscience and Remote Sensing*, Accepted 10 Jan. 2020.
- B. Lampe**, A. Bekit, C.J. Della Porta, Bai Xue, and C.-I Chang, "Unsupervised hyperspectral band selection in the compressive sensing domain," *Proc. SPIE 10986, Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imagery XXV*, 109860A, 14 May 2019.
- C. J. Della Porta, **B. Lampe**, A. Bekit, and C.-I Chang, "A compressed sensing approach to hyperspectral classification," *Proc. SPIE 10989, Big Data: Learning, Analytics, and Applications*, 1098908, 13 May 2019.
- A. Bekit, C.-I Chang, **B. Lampe**, C. J. Della Porta, and C. Wu, "N-FINDER for Finding Endmembers in Compressively Sensed Band Domain," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 58, no. 2, pp. 1087-1101, Feb. 2020.
- C. J. Della Porta, A. Bekit, **B. Lampe**, and C.-I Chang, "Hyperspectral Image Classification via Compressive Sensing," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 57, no. 10, pp. 8290-8303, Oct. 2019.
- A. Bekit, C.J. Della Porta, **B. Lampe**, Bai Xue, and C.-I Chang, "Unsupervised automatic target generation process via compressive sensing," *Proc. SPIE 10989, Big Data: Learning, Analytics, and Applications*, 109890G, 13 May 2019.
- C. J. Della Porta, A. Bekit, **B. Lampe**, and Chein-I Chang, "A universal sensing model for compressed hyperspectral image analysis," *Proc. SPIE 10986, Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imagery XXV*, 109860P, 14 May 2019.
- N. Subotic, *et.al.*, **B. Lampe**, *et.al.*, "Parametric reconstruction of internal building structures via canonical scattering mechanisms," *2008 IEEE International Conference on Acoustics, Speech and Signal Processing*, 2008, pp. 5189-5192.

Professional Tools

Languages: C, C++, Python, MATLAB, Bash, x86, x86-64, ARM, ARM64, LaTeX
Tools: Vim, IDA Pro, VSCode, Eclipse, GCC, GDB, LLDB, Qemu, VMWare, SciPy, Numpy

Miscellaneous

GitHub: <https://github.com/bernielampe1>

References

Upon Request