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Paul D. Martin, Ph.D.

Chief Scientist at Harbor Experts
Part-Time Lecturer at Johns Hopkins University

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Profile

Dr. Martin is the Chief Scientist at Harbor Experts. He is also a lecturer at Johns Hopkins University, teaching courses on computer and network security as well as cryptography. His research interests include embedded system security, operating system security, vulnerability analysis, reverse engineering, network protocol analysis, applied cryptography, cryptanalysis and privacy-preserving protocols.

Education

2011-2016	*Ph.D. Computer Science, Johns Hopkins University, Baltimore, MD* *Securing Medical Devices and Protecting Patient Privacy in the Technological Age of Healthcare*
2011-2013	*M.S.E. Computer Science, Johns Hopkins University, Baltimore, MD*
2007-2011	*B.S. Computer Science, Johns Hopkins University, Baltimore, MD*

Industry Experience

2024-Present	*Harbor Experts*	**Chief Scientist**
2023-2024	*Harbor Labs*	**Vice President of Applied Research and Technology**
2023-Present	*Johns Hopkins University*	**Part-Time Lecturer**
2018-2024	*Harbor Labs*	**Director of Firmware Security, Senior Research Scientist**
2013-2018	*Harbor Labs*	**Research Scientist**
2011-2016	*Johns Hopkins University*	**PhD Candidate, Research Assistant**
2013	*Applied Communication Sciences*	**Graduate Intern**
2011	(ICPSR) *University of Michigan Inter-university Consortium for Political and Social Research*	**Penetration Tester**
2009-2011	*Independent Security Evaluators*	**Security Intern**
2008-2010	(DRCC) *Johns Hopkins University Digital Research and Curation Center*	**Student Programmer**
2008	*Brandeis University Hardware Repair Shop*	**Freelance Programmer**

Teaching Experience

2024	Security and Privacy in Computing	**Instructor**
2023	Security and Privacy in Computing	**Instructor**
2015	*Introduction to Hardware Hacking*	**Instructor**
2012-2014	*Security and Privacy*	**Teaching Assistant**
2011	*Practical Cryptographic Systems*	**Course Assistant**

AutoConnect Exhibit 2021
Toyota v. AutoConnect PGR2025-00041 p. 1

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Publications

P. Martin, D. Russel, M. Ben Salem, S. Checkoway, A. Rubin, Sentinel: Secure Mode Profiling and Enforcement for Embedded Systems, Proc. ACM/IEEE International Conference on Internet-of-Things Design and Implementation, (IoTDI '18).

P. Martin, M. Rushanan, T. Tantillo, C. Lehmann and A. Rubin, Applications of Secure Location Sensing in Healthcare. In the proceedings of ACM Conference of Bioinformatics, Computational Biology, and Health Informatics (BCB '16).

J. Carrigan, P. Martin, M. Rushanan, KBID: Kerberos Bracelet Identification. In the Proceedings of Financial Cryptography and Data Security (FC '16).

P. Martin, M. Rushanan, S. Checkoway, M. Green, A. Rubin. Classifying Network Protocol Implementation Versions: An OpenSSL Case Study. Technical Report 13-01, Johns Hopkins University (December 2013).

P. Martin, A. Rubin, and R. Bhatti, *Enforcing Minimum Necessary Access in Healthcare Through Integrated Audit and Access Control.* In ACM Conference on Bioinformatics, Computational Biology, and Biomedical Informatics Health Informatics Symposium (BCB-HIS), (September 2013)

Program Committees

IEEE Symposium on Security and Privacy (Winter 2024)
IEEE Symposium on Security and Privacy (Summer 2024)

Patents

System and Method for automatically extracting information from binary files for use in Database Queries	**US 10,762,214 B1**
System and method for network traffic profiling and visualization	**US 9,667,521 B2**
System and method for network traffic profiling and visualization (Pending)	**US 15/606,717**
System and method for network traffic profiling and visualization (Pending)	**WO 2015113036A1**
Healthcare privacy breach prevention through integrated audit and access control	**US 8,984,583 B2**
Healthcare privacy breach prevention through integrated audit and access control	**US 9,438,632 B2**

Current Research

Use of multimodal large language models for diagnosis of disease progression.
Use of large language models for certain types of technical research and analysis.
Automated binary version extraction for NVD cross-reference based on fuzzy matching.
Automated analysis of vulnerabilities in containers and virtual appliances.
Large-scale comparison of nature and kind of firmware vulnerabilities across and within product classes.

Expert Witness Engagements

Jonathan Day and Michelle Dobek v. **Advanced Micro Devices, Inc**.

Case:	Case # 4:22-cv-00312-CRB
Description:	Litigation related to computer fTPM and TEE design characteristics.
Services:	Technical analysis and expert reports on security and performance characteristics of trusted execution environments and the design of NVRAM interfaces through SPI. Drafting of expert reports.
Expert Testimony at Deposition:	Washington, DC (February 7, 2025)

AutoConnect Exhibit 2021
Toyota v. AutoConnect PGR2025-00041 p. 2

The Nielsen Company v. Hyphametrics, Inc.

Case:	Case # 23-136-GBW-CJB
Description:	Analysis related to audience measurement and identification systems and machine learning systems.
Services:	Source code review, expert report drafting, validity analysis.
Expert Testimony at Deposition:	Potomac, MD (February 5, 2025)

State of New Jersey v. **Paul Caneiro**

Case:	Indictment # 19-02-283; PG # 18-4915
Description:	Analysis related to reliability of specific types of computerized DNA analysis in criminal proceedings.
Services:	Source code review, expert report drafting.
Expert Testimony at Hearing:	Feehold, NJ (December 6, 2024)

Amazon.com, Inc. v. B.S.D. Crown, Ltd.,

Case:	IPR2025-00057
Description:	Analysis related to emulation and virtualization technology.
Services:	Invalidity analysis. IPR drafting.

MediaTek Inc. v. Daedalus Prime LLC

Case:	IPR2025-00100
Description:	Analysis related to security processors embedded in microcprocessors.
Services:	Invalidity analysis. IPR drafting.

McKinney v. **Corsair Gaming, Inc**.

Case:	Case # 4:22-cv-00312-CRB
Description:	Litigation related to computer memory performance.
Services:	Technical analysis and expert reports on characteristics of computer memory and forensic analysis of computer systems.

LoganTree v. Fossil

Case:	Case # 21-cv-0385-JDW
Description:	Litigation related to fitness tracking wearables.
Services:	Technical analysis and expert reports on validity and infringement.
Expert Testimony at Deposition:	Monrovia, MD (August 11, 2023)

Nielsen v. TVSquared

Case:	Case # 6:22-cv-00244-ADA
Description:	Litigation related to network-based audience measurement.
Services:	Technical analysis and expert reports on patentable subject matter.

ISI v. **Intuitive Surgical, Inc.**

Case:	Case # 3:21-cv-03496-VC
Description:	Litigation related to cryptographic security protections.
Services:	Technical analysis and expert reports on security and technical aspects of surgical devices.
Expert Testimony at Deposition:	Monrovia, MD (March 16, 2023)

Healthcare Advanced Risk Technologies, Inc. and Inspirien Holdings Corp. v. **Terrence Mills, AI.io. Corp., Jane Nemcova and VEUU, Inc.**

Case:	Case # 2:22-cv-04192-JS-AYS
Description:	Litigation related to timeline of software development and

misappropriation of trade secrets.
Services: Source code and documentation review, source code copying analysis, expert report drafting.

Communication Technologies, Inc. v. Samsung Electronics America, Inc., and Samsung Electronics Co. Ltd.
Case: Case # 2:21-cv-444-JRG
Description: Litigation related to patents on secure erase processes.
Services: Source code review of algorithms related to secure erase processes, declaration on aspects of source code review process and representativeness of source code

Planck, LLC D/B/A Patch Media v. **Particle Media, Inc. D/B/A News Break, Et. Al.**
Case: Case # 20-cv-10959 (LGS)
Description: Litigation related to copyright.
Services: Review of web scraping facts, contracts and agreements and syndicated web feed technology, declaration on web scraping and syndicated web feed technology

WSOU Investments, LLC D/B/A Brazos Licensing and Development v. Cisco, Inc.
Case: Case # 6:21-cv-00128-ADA
Description: Litigation related to patents to patents on wireless network handoff, network management and authentication technologies.
Services: Source code review of accused products, declaration on aspects of source code review process.

United States **v. Laffon Ellis**
Case: Case # 2:19-cr-00369-DWA
Description: Analysis related to reliability of specific types of computerized DNA analysis in criminal proceedings.
Services: Source code review, expert report drafting.
Expert Testimony at Hearing: Monrovia, MD (December 20, 2021)

Sysmex Corporation and Sysmex America, Inc. v. **Beckman Coulter, Inc.**
Case: CA # 19-1642-RGA-CJB
Description: Litigation related to hematology analysis machine patents.
Services: Source code review. Expert report drafting.
Expert Testimony at Deposition: Monrovia, MD (November 22, 2021)

CERTAIN ROUTERS, ACCESS POINTS, CONTOLLERS, NETWORKS MANAGEMENT DEVICES, OTHER NETWORKING PRODUCTS, AND HARWARE AND SOFTWARE COMPONENTS THEREOF
Case: ITC Investigation No. 337-TA-1227
Description: ITC Investigation related to patents on wireless network handoff, network management and QoS technologies.
Services: Source code review, validity and prior art analysis, expert report drafting.
Expert Testimony at Deposition: Monrovia, MD (June 9-10, 2021)
Expert Testimony at Trial: Washington, DC (July 28, 2021)

Micro Focus, Inc. v. Insurance Services Organization
Case: DE Civil Action # 15-252-RGA
Description: Litigation related to unlicensed use of runtime environments, libraries and software compilers.
Services: Source code review. Binary reverse engineering and analysis, affidavit drafting, expert report drafting.
Expert Testimony at Deposition: Wilmington, DE (Feb 2, 2021)

loanDepot.com, LLC v. Sigma Infosolutions, Inc.

Case:	AAA Case # 01-18-0001-5821
Description:	Litigation related to software development practices.
Services:	Source code analysis, experimentation, report drafting.
Expert Testimony at Deposition:	Baltimore, MD (December 17, 2019)

Cypress Lake Software, Inc. v. Samsung Electronics America and Dell, Inc.

Case:	Case # 6:18-cv-00030-RWS
Description:	Litigation related to infringement of UX patents.
Services:	Source code analysis, report drafting.
Expert Testimony at Deposition:	Baltimore, MD (July 9, 2019)

Apple, Inc. Device Performance Litigation

Case:	CA Civil Action # 18-md-02827-EJD
Description:	Litigation related to business practices.
Services:	Technical analysis and expert reports on security and technical aspects of mobile phone forensics.

Italian Antitrust Authority v. **Apple, Inc.**

Case:	PS/11309
Description:	Litigation related to business practices.
Services:	Technical analysis and expert reports on security and technical aspects of software update processes.

Carl Zeiss AG and ASML Netherlands B.V. v. Nikon

Case:	Case # 2:17-cv-07083-RGK (MRWx)
Description:	Litigation related to patents on image detection algorithms.
Services:	Source code review of algorithms related to image processing and detection algorithms, declaration on aspects of source code review process.

Decision Resources, LLC v. **Brigham Hyde, Precision Health Intelligence, LLC and Orr Inbar**

Case:	MA Civil Action # 17-2834J
Description:	Litigation related to timeline of software development and misappropriation of trade secrets.
Services:	Source code and documentation review, development timeline analysis, affidavit drafting.

Litigation Support

Video Solutions v. Cisco, Inc

Case:	Case # 2:23-cv-222-JRG
Description:	Litigation related to videoconferencing and network performance optimization.
Services:	Infringement analysis. Source code review.

OmniTracs, LLC v. Motive Technologies, Inc.

Case:	Case # 3:23-cv-05261-RFL
Description:	Litigation related to driver fleet management.
Services:	infringement analysis. Source code review.

Robocast v. **Netflix, Inc**

Case:	Case # 1:22-cv-00305-JLH-CJB
Description:	Litigation related to hypermedia and multimedia node structures.
Services:	Invalidity and noninfringement analysis and report drafting. Source code review.

Proxense, LLC. v. Google, LLC

Case:	Case # 6:23-cv-00320-ADA
Description:	Litigation related to patents on biometrics and payment processing.
Services:	Claim construction analysis and report drafting.

Epic Games, Inc. & Anor vs. **Apple Inc & Anor**

Case:	Case # NSD 1236 of 2020
Description:	Litigation related to security and competition.
Services:	Document review, interviews, report drafting.

Softex LLC v. Absolute Software Corporation, Dell Technologies Inc, and HP Inc**.**

Case:	Case # 1:22-cv-01309-DAE
Description:	Litigation related to computer anti-theft technology.
Services:	Claim construction analysis, source code review, report review, binary reverse engineering and product testing.

Mediapointe, Inc v. Microsoft Corporation

Case:	Case # 2:22-cv-01009-MCS-MRW
Description:	Litigation related to content delivery networks.
Services:	Claim construction analysis, source code review, validity analysis, infringement analysis, report drafting.

Mediapointe, Inc v. Akamai Corporation

Case:	Case # 2:22-cv-06233-MCS-AFM
Description:	Litigation related to content delivery networks.
Services:	Claim construction analysis, source code review, validity analysis, infringement analysis, report drafting.

Lauri Valjakka v. **Netflix, Inc**

Case:	Case # 4:22-cv-01490-JST
Description:	Litigation related to content delivery networks.
Services:	Claim construction analysis, invalidity analysis, noninfringement analysis, report review.

Fanduel, Inc v. Winview, Inc

Case:	IPR 2022-01306, IPR-01307
Description:	Litigation related to patents on probability systems.
Services:	Document review, invalidity analysis, report review.

Proxense, LLC. v. Samsung Electronics America, Inc., and Samsung Electronics

Case:	Case # 6:21-cv-00210-ADA
Description:	Litigation related to patents on biometrics and payment processing.
Services:	Source code review, documentation review, product testing, validity analysis, infringement analysis, report drafting.

Global Eticket Exchange Ltd. vs. **TicketMaster LLC**

Case:	Case # 6:21-cv-00399-ADA
Description:	Litigation related to patents on electronic ticketing.
Services:	Source code review, documentation review, product testing, invalidity analysis, non-infringement analysis, report drafting.

US Dominion, Inc. vs. Fox News Network

Case:	Case # N21C-03-257-EMD
Description:	Litigation related to defamation and voting machine security.
Services:	Source code review, documentation review, product testing,

report drafting.

Centripetal Networks, Inc. vs. **Keysight Technologies, Inc.**

Case:	Case # 2:22-cv-0002-AWA-DEM
Description:	Litigation related to patents on network monitoring devices and security gateways.
Services:	Source code review, documentation review, product testing, noninfringement analysis, infringement analysis.

Milliman, Inc and Vigilytics LLC, vs. Gradient A.I. Corp.

Case:	Case # 1:21-cv-10865-NMG
Description:	Litigation related to breach of contract and source code copying.
Services:	Source code review, documentation review.

WSOU Investments, LLC D/B/A Brazos Licensing and Development v. Microsoft Corporation

Case:	Case # 1:18- 6:20-cv-00464-ADA, 6:20-cv-00460-ADA, 6:20-cv-00457-ADA,
Description:	Litigation related to patents on telephony management systems and skill-based matchmaking.
Services:	Source code review, documentation review, validity analysis, infringement analysis, report drafting.

10Tales Inc. v. TikTok PTE. Ltd.

Case:	Case # 1:18-cv-826-WCB
Description:	Litigation related to patents on user-adapted video streams.
Services:	Claim construction analysis.

Carriere v. **Symantec Corporation**

Case:	Case # 500-06-000894-176
Description:	Class action litigation related to product security.
Services:	Source code review, documentation review, report drafting.

IOENGINE, LLC v. Ingenico, Inc.

Case:	Case # 1:18-cv-826-WCB
Description:	Litigation related to patents on payment processing systems.
Services:	Source code review, documentation review, validity analysis, infringement analysis, report drafting.

IOENGINE, LLC v. PayPal Holdings, Inc.

Case:	Case # 1:18-cv-452-WCB
Description:	Litigation related to patents on payment processing systems.
Services:	Source code review, documentation review, validity analysis, infringement analysis, report drafting.

AGIS Software Development LLC v. **Uber Technologies**

Case:	Case # 2:21-cv-00026-JRG-RSP
Description:	Litigation related to patents on map overlays and messaging systems.
Services:	Source code review.

Finjan v. **Palo Alto Networks**

Case:	Case # 4:14-CV-04908-PJH
Description:	Litigation related to patents on malware scanning gateways.
Services:	Invalidity analysis, Claim construction analysis, source code review.

Huawei Technologies Co. v. **Verizon Communications Inc.**

Case:	Case # 6:20-CV-00090

Description: Litigation related to patents on malware scanning gateways with cloud components.
Services: Source code review, non-infringement analysis.

Epic Games, Inc. vs. **Apple, Inc.**
Case: Case # 4:20-cv-05640-YGR-TSH
Description: Litigation related to security and competition.
Services: Document review, interviews, report drafting.

Philips North America LLC ; Koninklujke Philips N.V. vs. **Summit Imaging Inc.**
Case: Case # 2:19-cv-01745-JLR
Description: Litigation related to third-party repair services.
Services: Source code review, document review, report drafting.

California Physicians Service, Inc D/B/A Blue Shield of California vs. Healthplan Services Inc,
Case: Case # 3:18-cv-3730
Description: Litigation related to software development practices and breech of contract.
Services: Document review, source code review, report drafting.

Finjan v. **Qualys**
Case: Case # 4:18-cv-07229-YGR
Description: Litigation related to patents on vulnerability assessment products.
Services: Invalidity analysis, Non-infringement analysis, source code review, report drafting.

Finjan v. **Sonicwall**
Case: Case # 5:17-cv-04467-BLF-HRL
Description: Litigation related to patents on malware scanning gateways.
Services: Invalidity analysis, Non-infringement analysis, source code review, report drafting.

TecSec Inc. v. Cisco and Oracle
Case: Case # 1:10-cv-115 LO-TCB
Description: Litigation related to patents on hardware accelerated cryptographic processors.
Services: Infringement analysis, validity analysis, source code review, report drafting.

Blackberry Limited v. Facebook, Inc.
Case: Case # 2:18-cv-01844-KSx
Description: Litigation related to patents on agent-based network monitoring, configuration and security systems.
Services: Infringement analysis, validity analysis, source code review, report drafting.

Uniloc, Inc. v. **Big Fish Games, Inc.**
Case: Case # 2:16-cv-00741-JRG
Description: Litigation related to patents on hardware cryptographic chips.
Services: Non-infringement analysis, report drafting, source code review.

SPEX Technologies, Inc. v. **Toshiba America Electronic Components, Inc., et al.**
Case: Case # 8:16-cv-01800-JVS
Description: Litigation related to patents on hardware cryptographic chips.
Services: Non-infringement analysis, report drafting.

Symantec Corporation v. Zscaler, Inc**.**
Case: Case # 3:17-cv-04414-JST,

Description: Litigation related to patents on security gateways, URL filtering and categorization
Services: Infringement analysis, assignor estoppel, document review.

Koninklijke Philips v. **Microsoft Inc.**
Case: Case # 4:18-cv-01885-HSG,
Description: Litigation related to patents on secure cryptographic protocols
Services: Non-infringement analysis, validity analysis, claim construction analysis, document review, source code review.

Netfuel, Inc. v. Cisco Systems, Inc.
Case: Case # 5:18-cv-2352-EJD
Description: Litigation related to patents on agent-based network monitoring, configuration and security systems.
Services: Infringement analysis, claim construction analysis, source code review, report drafting.

Byrd et al. v. Aaron's, Inc., et al.
Case: PA Civil Action # 1:11-cv-00101-SJM-SPB
Description: Class action litigation related to privacy.
Services: Attend depositions, source code review, report drafting.

Finjan v. **Juniper Networks**
Case: Case # 3:17-cv-05659-WHA
Description: Litigation related to patents on malware scanning gateways.
Services: Invalidity analysis, non-infringement analysis, source code review.

Grace et al. v. **Apple Inc.**
Case: Case # 5:17-cv-00551-LHK (NC)
Description: Litigation related to device performance and service outages.
Services: Mobile forensics and device analysis, report drafting, source code review, document review, technical analysis and argument construction.

Rimini Street, Inc. v. Oracle International Corporation, et al.
Case: Case # 2:14-cv-01699 LRH-CWH
Description: Litigation related to false claims on security.
Services: Large-scale testing of IPS techniques for including custom test infrastructure and implementation of techniques to block exploitation of vulnerabilities, technical analysis of vulnerabilities.

Finjan v. **Symantec Corporation**
Case: Case # 14-cv-02998-HSG
Description: Litigation related to patents on malware scanning gateways, endpoint protection and firewalls.
Services: Build and/or test software for Windows, invalidity argument strategy, non-infringement argument strategy, report preparation, source code reviews.

Strikeforce, Inc. v. **Entrust et al.**
Case: Case # 1:17-cv-00309
Description: Litigation related to patents on authentication technologies.
Services: Invalidity argument development, non-infringement argument development, report drafting.

Sony Corporation, Inc. v. Arris
Case: Inv. # 337-TA-1049

Description: Litigation related to patents on television streaming devices and/or services.
Services: Validity argument development, source code review of entire platform codebase including numerous embedded platforms, infringement argument development.

Kudelski SA, Nagra USA, Inc., Nagravision SA, and OpenTV, Inc. v. Comcast Corporation
Case: Case # 2:16-cv-1362-JRG, Inv. # 337-TA-1049
Description: Litigation related to patents on television streaming devices and/or services.
Services: Validity argument development, source code review of entire platform codebase including numerous embedded platforms, infringement argument development.

Amazon.com Inc., Hulu, LLC, and Netflix, Inc. v. Uniloc Luxembourg S.A.
Case: IPR 2017-00948
Description: Litigation related to patents on DRM protection for content distribution
Services: Prior art search, PGR Preparation, IPR preparation.

PhishMe v. **Wombat Technologies, Inc.**
Case: Case # 16-403-LPS-CJB
Description: Litigation related to patents on anti-phishing training technologies.
Services: Prior art search, PGR Preparation, IPR preparation.

Nader Asghari-Kamrani and Kamran Asghari-Kamrani v. **United States Automobile Association**
Case: Case # 2:15-cv-478
Description: Litigation related to patents on authentication technologies.
Services: Prior art search, invalidity argument strategy, non-infringement argument strategy, source code reviews

Vir2us v. **Invincea Inc. and Invincea Labs, LLC**
Case: Case # Case 2:15-cv-00162-HCM-LRL
Description: Litigation related to patents on virtualization and automated corruption repair.
Services: Prior art search, invalidity argument strategy, non-infringement argument strategy, source code reviews

Palo Alto Networks v. Finjan
Case: IPR 2016-00159, IPR 2016-00151, IPR 2015-01974, IPR 2015-02001, IPR 2015-01979
Description: Litigation related to patents on malware scanning gateways and firewalls,
Services: Prior art search, patent interpretation, IPR preparation support, claim chart review

TVIIM v. **McAfee**
Case: Case # 3:13-cv-04545-VC
Description: Litigation related to patents on vulnerability scanning
Services: Build and test software for SPARC/Linux/Windows, patch out license checks/crack software (with permission), obtain hard-to-find legacy software, prior art and non-infringement argument strategy support, source code reviews, prior art search

Al Cioffi et al. v. Google
Case: Case # 2:13-cv-103-JRG-RSP

Description: Litigation related to patents on browser sandboxing and process isolation.
Services: Code review/software testing to collect evidence of infringement, Infringement argument preparation support, claim chart review

Rovi Solutions & Veracode v. Appthority
Case: Case # 12-10487-DPW
Description: Litigation related to patents on static debugging tools
Services: Source code review refuting opposing expert testimony

Analysis, Design and Development Clients

Arai	ICU Medical
Baxter	Inexto
Bigfoot Medical	Intuitive Surgical
BT Group	Merlin
Cardiac Sciences	Orpheus
Dyadic	Security First Corporation
Fresenius	Texas Instruments
HLFIP Holdings	Thesys
Hospira	Vaxxin

Pre-Harbor Labs Security Design and Software Development Experience

2013 At *Applied Communication Sciences*
Role: Graduate Intern
Technologies: JavaScript, Python, Tcpdump, Wireshark

- Developed extensible real-time traffic visualization tool to chart and analyze high-volume tcpdump streams of lossy metropolitan-area mesh network traffic.

2011 At *University of Michigan ICPSR*
Role: Penetration Tester
Technologies: Numerous Security Tools, Amazon EC2, VMware VSphere

- Conducted wide-scale penetration testing on virtualized cloud-based systems meant to be secure environments for researchers to store confidential results
- Created formal threat model document detailing potential security vulnerabilities from all possible attack vectors
- Wrote two reports detailing results from penetration test

2009-2011 At *Independent Security Evaluators*
Role: Security Intern
Technologies: C++, C#, Dalvik Bytecode, Gcov, GDB, Javascript, Peach Fuzzer, Python, RegEx, XML, Wireshark

- Created log parsing framework to analyze 20+ log file formats
- Assisted with malware testing, research and analysis
- Reverse engineered DRM schemes in Android and IOS applications
- Researched and prototyped secure cryptographic mail delivery system
- Developed web crawler to collect file sets for use in fuzzing
- Wrote code-coverage analysis tool for constructing minimum file set for fuzz testing
- Wrote fuzzing plugins using Peach Fuzzer framework and reverse engineered binary file specifications
- Wrote Internet Explorer and Chrome extensions for cryptographic proxy system

- Created and debugged network protocols for use in network protocol testing
- Wrote and debugged unit tests in C++ and Python for proprietary disk-encryption system

2008-2010 At *Johns Hopkins University DRCC*
Role: Student Programmer
Technologies: DOM, Java EE, JSP Perl, SAX, XSLT

- Drafted a report detailing security recommendations for an NSF funded data conservancy project
- Set up and deployed a Fedora digital repository with the Islandora frontend
- Ported IRStats statistics package to the DSpace information repository XMLUI
- Wrote batch importer that is now used to import more than 20 digitized books a week into DSPace repository

2008 At *Brandeis University Information Technology Services Hardware Repair Shop*
Role: Freelance Programming Consultant
Technologies: Java, Visual C++, VBScript

- Sole programmer on project to interface Request Tracker ticketing system with Brother PT- 9500PC Label Printer

Technical Skills

Languages	BASH, C, C++, C#, HTML, Java, JavaScript, Objective-C, Python, Perl, PHP, Regular Expressions, SQL, XML
Architectures	6502, 8051, 8080, ARM Cortex-M, ARMv7, ARMv8, AVR, m68k, MIPS, MSP430, PIC, SPARC, PowerPC, x86, x86-64, Z80
Operating Systems	Android, ChromeOS, FreeBSD, iOS, OpenBSD, Linux, macOS, Windows
DevOps and Development Tools	Ansible, Ant, BitBucket, Confluence, Docker, gdb, git, GitHub, GitLab, Gradle, Hadoop, jad, jd-gui, Jira, Maven, make, MySQL, PostgreSQL, subversion, Trello, Vagrant, valgrind
Security Tools	Aircrack-ng, apktool, binwalk, bulk-extractor, Burp suite, Charles Proxy, curl, dex2jar, ftk, hashcat, IDA Pro, Metasploit, mitmproxy, Nessus, nmap, OpenSSL, ophcrack, p0f, Scalpel, skipfish, snort, sslstrip, sslyze, Volatility, Web Scarab, wget, Wireshark
Cloud and Virtualization	AWS, Azure, Bhyve, KVM, LXD, QEMU, virt-manager, VMware, Xhyve

Honors, Societies and Awards

- Member Upsilon Pi Epsilon International Computer Science Honor Society
- Member Institute for Electrical and Electronics Engineers (#97507890)
- Member Association for Computing Machinery (#9700346)

At Johns Hopkins University

- Computer Science Department Outstanding Teaching Assistant Award (2014)
- Treasurer, Upsilon Pi Epsilon International Computer Science Honor Society (JHU Chapter)
- Computer Science Department Faculty Liaison Czar
- Student Representative to the Computer Science Undergraduate Curriculum Planning Curriculum Committee

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Certifications

- Certified Six Sigma Green Belt
- Certified Six Sigma Black Belt