






Nilo Redini

AFFILIATION	Ph.D. student in computer security at the University of California, Santa Barbara	
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EDUCATION	University of California, Santa Barbara, USA Ph.D. in Computer Science Advisors: Giovanni Vigna, and Christopher Kruegel Expected Graduation Date: June 2020	2014 - Current
	Università di Pisa, Italy M.Sc. in Computer Engineering Grade: 110 Cum Laude / 110 Thesis: Access control in distributed file systems: design and realization on Pepys fs	2010 - 2013
	Università di Pisa, Italy B.Sc. in Computer Engineering Grade: 103 / 110	2005 - 2010
RESEARCH PROJECTS	<ul style="list-style-type: none">• angr Python framework for analyzing binaries• BootStomp Vulnerability detection tool for bootloaders of embedded devices• SASI Abstract domain for sound and precise value set analyses• Autofacts Framework to test and evaluate static analysis tools• LoopMC Android malware detection tool based on loops	
EXPERIENCE	University of Pennsylvania, PA Visiting Researcher Advisor: Mayur Naik Activity: Research and improve the state-of-the-art of code debloating techniques based on static analyses.	Apr 2019 - Jun 2019
	University Of California, Santa Barbara, CA Visiting Researcher Advisors: Giovanni Vigna, and Christopher Kruegel Activity: Design an abstract domain to precisely estimate the set of values that the variables of a program might assume.	Sep 2013 - Feb 2014
	Università di Pisa, Italy Research Scholarship Advisor: Luciano Lenzini Activity: Design an Android tool to precisely estimate the bandwidth of wireless links. We integrated this tool in Portolan, a crowdsourcing research project to discover the topology and the structure of the Internet.	Mar 2013 - Aug 2013
	Alcatel-Lucent Bell-Labs, Ireland Internship Advisor: Tommaso Cucinotta Activity: Design a new access control model for distributed file-systems, which we integrated in the Osprey operative system.	Jul 2012 - Nov 2012
HACKING	<ul style="list-style-type: none">• Member of the Shellphish hacking team, and iCTF organizer• Qualified for several CTF finals, such as DEFCON, ruCTF, and TCTF• BootStomp presented at Nullcon and CCC• CVE-2018-11560, CVE-2018-12640, CVE-2017-14948, CVE-2019-17532	
SKILLS	<ul style="list-style-type: none">• Advanced knowledge in static and dynamic program analysis techniques and theory• Reverse engineering and exploitation	

- Main programming languages: C/C++, Python, Ruby, Java, and Javascript
- Network architectures and protocols (e.g., TCP, OSPF, BGP, and ARP)
- Linux Kernel

PUBLICATIONS

- [9] **Nilo Redini**, Aravind Machiry, Ruoyu Wang, Chad Spensky, Andrea Continella, Yan Shoshitaishvili, Christopher Kruegel, Giovanni Vigna, “*KARONTE: Detecting Insecure Multi-binary Interactions in Embedded Firmware*”. To appear in Proceedings of the IEEE Symposium on Security & Privacy (S&P), May, 2020.
- [8] Aravind Machiry, **Nilo Redini**, Eric Camellini, Christopher Kruegel, Giovanni Vigna, “*SPIDER: Enabling Fast Patch Propagation in Related Software Repositories*”. To appear in Proceedings of the IEEE Symposium on Security & Privacy (S&P), May, 2020.
- [7] Eric Gustafson, Marius Muench, Chad Spensky, **Nilo Redini**, Aravind Machiry, Yanick Fratantonio, Davide Balzarotti, Aurelien Francillon, Yung Ryn Choe, Christopher Kruegel, Giovanni Vigna, “*Toward the Analysis of Embedded Firmware through Automated Re-hosting*”. Symposium on Research in Attacks, Intrusion, and Defenses (RAID), Beijing, Sep, 2019.
- [6] **Nilo Redini**, Ruoyu Wang, Aravind Machiry, Yan Shoshitaishvili, Giovanni Vigna, Christopher Kruegel, “*Bintrimmer: Towards Static Binary Debloating Through Abstract Interpretation*”. In Proceedings of the Conference on Detection of Intrusions and Malware and Vulnerability Assessment (DIMVA), Aug, 2019.
- [5] Aravind Machiry, **Nilo Redini**, Eric Gustafson, Hojjat Aghakhani, Christopher Kruegel, Giovanni Vigna, “*Towards Automatically Generating a Sound and Complete Dataset for Evaluating Static Analysis Tools*”. Workshop on Binary Analysis Research (BAR), San Diego, Feb, 2019.
- [4] Aravind Machiry, **Nilo Redini**, Eric Gustafson, Yanick Fratantonio, Yung Ryn Choe, Christopher Kruegel, Giovanni Vigna, “*Using Loops For Malware Classification Resilient to Feature-unaware Perturbations*”. Proceedings of the 34th Annual Computer Security Applications Conference (ACSAC), San Juan, Dec, 2018.
- [3] **Nilo Redini**, Aravind Machiry, Dipanjan Das, Yanick Fratantonio, Antonio Bianchi, Eric Gustafson, Yan Shoshitaishvili, Christopher Kruegel, Giovanni Vigna, “*BootStomp: On the Security of Bootloaders in Mobile Devices*”. 26th USENIX Security Symposium (USENIX), Vancouver, Aug, 2017.
- [2] Francesco Disperati, Dario Grassini, Enrico Gregori, Alessandro Improta, Luciano Lenzini, Davide Pellegrino, **Nilo Redini**, “*SmartProbe: a Bottleneck Capacity Estimation Tool for Smartphones*”. IEEE International Conference on Green Computing and Communications and IEEE Internet of Things and IEEE Cyber, Physical and Social Computing (GreenCom-iThings-CPSCOM), Beijing, 2013.
- [1] Tommaso Cucinotta, Gianluca Dini, **Nilo Redini**, “*Access Control for the Pepsys Internet-wide File-System*”. In Proceedings of the 7th International Workshop on Plan 9 (IWP9 2012), Dublin, Nov, 2012.

ACTIVITIES / LEADERSHIP

- Teaching assistant for Christopher Kruegel’s course on compilers at UCSB 2016
- Reviewer for Computers & Security journal 2018
- Reviewer for Engineering Reports journal 2019
- Reviewer for IET Information Security journal 2016
- Active member of the charitable organization Operazione Mato Grosso (OMG) 2002 - 2005

AWARDS

- First place in CSAW Embedded Security Challenge (ESC) 2019
- Winner of research scholarship at Università di Pisa 2013
- Winner of the “Erasmus Placement” for a paid internship in a company of the European Union 2012

REFERENCES

Giovanni Vigna

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Tommaso Cucinotta

Professor at Scuola Superiore Sant’Anna
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Christopher Kruegel

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Luciano Lenzini

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