

Emilio COPPA

PERSONAL DETAILS

PLACE AND DATE OF BIRTH: Rome, Italy | 20 March 1988 – Age 30
WEBSITE: ecoppa.github.io
EMAIL: coppa@diag.uniroma1.it | ercoppa@gmail.com (personal)

EMPLOYMENT

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| Jan 2016 – Present | POSTDOCTORAL RESEARCHER Sapienza University of Rome Research Center of Cyber Intelligence and Information Security (CIS Sapienza) Supervisor: Prof. Camil DEMETRESCU (demetres@dis.uniroma1.it) |
| Sept 2017 – Present | ADJUNCT PROFESSOR Sapienza University of Rome Computer System Architecture 1 (Sistemi di Calcolo 1) Undergraduate course, 6 credits, Bachelor program in Computer Engineering |
| 2017 – 2018 | LECTURER AND ORGANIZER Sapienza University of Rome CyberChallenge.IT Training program in cybersecurity for high-school and undergraduate students |
| 2017 – 2018 | COACH OF THE ITALIAN NATIONAL CYBERSECURITY TEAM. Fall 2017: 3rd place at the European CyberSecurity Challenge 2017 (ECSC17) Fall 2018: 6th place at the European CyberSecurity Challenge 2018 (ECSC18) ECSC is organized by the European Union Agency for Network and Information Security (ENISA) The team is officially recognized by the “Nucleo di Sicurezza Cibernetica (NSC)” and supported by the “Ministero dello Sviluppo Economico (MISE)” |
| 2016 – 2018 | LECTURER Sapienza University of Rome Big Data Systems Master Universitario di II livello in Data Intelligence e Strategie Decisionali |

EDUCATION

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| Nov 2012 – Dec 2015 | PH.D. IN COMPUTER SCIENCE , Sapienza University of Rome Dissertation title: Input-sensitive Performance Analysis of Software Systems Advisor: Prof. Irene FINOCCHI (finocchi@di.uniroma1.it) |
| Apr 2015 – Jul 2015 | VISITOR AT TU DARMSTADT. Prof. Patrick EUGSTER (peugster@cs.purdue.edu) |
| Nov 2010 – Oct 2012 | M.Sc. IN ENGINEERING IN COMPUTER SCIENCE , Sapienza University of Rome Taught in English Final grade: 110/110 summa cum laude GPA: 29.6/30 Dissertation title: Input-Sensitive Profiling Advisor: Prof. Camil DEMETRESCU (demetres@dis.uniroma1.it) |
| Oct 2007 – Oct 2010 | B.Sc. IN ENGINEERING IN COMPUTER SCIENCE , Sapienza University of Rome Final grade: 110/110 GPA: 26.7/30 Dissertation title: Adaptive Allocators Advisor: Prof. Camil DEMETRESCU (demetres@dis.uniroma1.it) |

RESEARCH INTERESTS

Program analysis, symbolic execution, malware analysis, reverse engineering, software security, programming languages, performance profiling, distributed computing platforms.

PUBLICATIONS

- 2019 Pietro Borrello, **Emilio Coppa**, Daniele Cono D'Elia, and Camil Demetrescu. **The ROP Needle: Hiding Trigger-based Injection Vectors via Code Reuse**. Accepted at 34th ACM/SIGAPP Symposium On Applied Computing - Security Track (**SAC 2019 SEC**), 2019.
- 2018 Marco Angelini, Graziano Blasilli, Pietro Borrello, **Emilio Coppa**, Daniele Cono D'Elia, Serena Ferracci, Simone Lenti, Giuseppe Santucci. **ROPMate: Visually Assisting the Creation of ROP-based Exploits**. IEEE Symposium on Visualization for Cyber Security (**VizSec 2018**), 2018. **Best paper Award**.
- 2018 Roberto Baldoni, **Emilio Coppa**, Daniele Cono D'Elia, Camil Demetrescu, Irene Finocchi. **A Survey of Symbolic Execution Techniques**. ACM Computing Surveys (ACM CSUR), 51(3), 2018.
- 2017 **Emilio Coppa**, Daniele Cono D'Elia, Camil Demetrescu. **Rethinking Pointer Reasoning in Symbolic Execution**. Accepted at the 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE 2017).
- 2017 Roberto Baldoni, **Emilio Coppa**, Daniele Cono D'Elia, Camil Demetrescu. **Assisting Malware Analysis with Symbolic Execution: a Case Study**. 2017 International Symposium on Cyber Security Cryptography and Machine Learning (**CSCML 2017**).
- 2015 **Emilio Coppa** and Irene Finocchi. **On data skewness, stragglers, and MapReduce progress indicators**. 2015 ACM Symposium on Cloud Computing (**SoCC'15**), pp 139-152, 2015.
- 2015 **Emilio Coppa**. **An interactive visualization framework for performance analysis**. Journal **EAI Endorsed Transactions on Future Internet**, 15(7): e5, 2015.
- 2014 **Emilio Coppa**, Camil Demetrescu, and Irene Finocchi. **Input-Sensitive Profiling**. IEEE Transactional on Software Engineering (**IEEE TSE'14**), 40(12), pp 1185-1205, 2014.
- 2014 **Emilio Coppa**. **An interactive visualization framework for performance analysis**. 8th International Conference on Performance Evaluation Methodologies and Tools (**VALUETOOLS'14**), pp 159-164, 2014.
- 2014 **Emilio Coppa**, Camil Demetrescu, Irene Finocchi, and Romolo Marotta. **Estimating the Empirical Cost Function of Routines with Dynamic Workloads**. 12th IEEE/ACM International Symposium on Code Generation and Optimization (**CGO'14**), pp 230-239, 2014.
- 2012 **Emilio Coppa**, Camil Demetrescu, and Irene Finocchi. **Input-Sensitive Profiling**. 33rd ACM SIGPLAN conference on Programming Language Design and Implementation (**PLDI'12**), pp 89-98, 2012.

HONORS AND AWARDS

- 2017 **PH.D. STARTING GRANT**
Grant from Sapienza University of Rome (Finanziamento per Avvio alla Ricerca 2017 - Tipologia B, 2000€).
- 2016 **PH.D. STARTING GRANT**
Grant from Sapienza University of Rome (Finanziamento per Avvio alla Ricerca 2016 - Tipologia B, 2000€).
- 2015 **PH.D. STARTING GRANT**
Grant from Sapienza University of Rome (Finanziamento per Avvio alla Ricerca 2015 - Tipologia A, 1000€).
- 2015 **SCHOLARSHIP AWARD BY ACM TO ATTEND SoCC 2015**
Grant to attend the 2015 ACM Symposium on Cloud Computing as a student co-author of an accepted paper.
- 2014 **SCHOLARSHIP AWARD BY ACM/IEEE TO ATTEND CGO 2014**
Grant to attend the 12th IEEE/ACM International Symposium on Code Generation and Optimization as a student co-author of an accepted paper.
- 2013 **EXCELLENT GRADUATE STUDENT AWARD**
Award from the Alumni Noi Sapienza Association, accorded to students with outstanding performances in academic activities.
- 2013 **SCHOLARSHIP AWARD BY ACM TO ATTEND POPL 2013**
Grant to attend the ACM SIGPLAN Programming Languages Mentoring Workshop and POPL 2013.
- 2012 **SCHOLARSHIP AWARD BY SAPIENZA UNIVERSITY OF ROME**
Grant awarded to students enrolled in the Excellence Path Program in order to support their research activities.
- 2012 **ACM SIGPLAN PAC AWARD TO ATTEND PLDI 2012**
Grant by the SIGPLAN Professional Activities Committee (PAC) to attend PLDI 2012 as a student co-author of an accepted paper.
- 2011 – 2012 **ENROLLED IN THE EXCELLENCE PATH PROGRAM OF THE M.Sc. IN ENGINEERING IN COMPUTE SCIENCE**
Research program for students with outstanding academic performance at Sapienza University of Rome.
- 2011 **SCHOLARSHIP AWARD BY SAPIENZA UNIVERSITY OF ROME TO ATTEND ADS 2011**
Grant to attend the 5th Bertinoro Workshop on Algorithms and Data Structures, awarded to students with outstanding academic performance.

PROGRAM COMMITTEES AND CONFERENCE ORGANIZATION

- 2018 [SPLASH OOPSLA 2018](#) - Conference on Object-Oriented Programming, Systems, Languages & Applications
Member of the Artifact Evaluation Committee.
- 2017 [SPLASH OOPSLA 2017](#) - Conference on Object-Oriented Programming, Systems, Languages & Applications.
Member of the Artifact Evaluation Committee.
- 2016 [ECOOP 2016](#) - European Conference on Object-Oriented Programming.
Publicity Chair.
- 2015 [ECOOP 2015](#) - European Conference on Object-Oriented Programming.
Member of the Artifact Evaluation Committee.
- 2014 [ECOOP 2014](#) - European Conference on Object-Oriented Programming.
Member of the Artifact Evaluation Committee.

REVIEWING ACTIVITY

- 2018 [JSS 2018](#) - Journal of Systems & Software (reviewer).
- 2018 [OOPSLA 2018](#) - Conference on Object-Oriented Programming Systems, Languages, and Applications (subreviewer).
- 2017 [IET Software 2017](#) (reviewer).
- 2017 [OOPSLA 2017](#) - Conference on Object-Oriented Programming Systems, Languages, and Applications (subreviewer).
- 2015 [JEA](#) - ACM Journal of Experimental Algorithmics (reviewer).
- 2015 [ECOOP 2015](#) - European Conference on Object-Oriented Programming (subreviewer).
- 2014 [ALENEX 2015](#) - Algorithm Engineering and Experimentation (reviewer).
- 2014 [ECOOP 2014](#) - European Conference on Object-Oriented Programming (subreviewer).
- 2013 [ALENEX 2014](#) - Algorithm Engineering and Experimentation (reviewer).
- 2012 [ALENEX 2013](#) - Algorithm Engineering and Experimentation (reviewer).

TEACHING ACTIVITY AND SEMINARS

- Apr 2018 Invited talk at the 2nd International Workshop on Usages of Symbolic Execution (USE 2018). Västerås, Sweden.
- 2017-2018 Adjunct Professor. Computer System Architecture 1 (Sistemi di Calcolo 1)
Sapienza University of Rome.
- 2018 Lecturer. CyberChallenge.IT
Sapienza University of Rome.
- 2017-2018 Lecturer. Big Data Systems.
Master Universitario di II livello in Data Intelligence e Strategie Decisionali.
Dipartimento di Statistica, Sapienza University of Rome.
- 2017 Lecturer. CyberChallenge.IT
Sapienza University of Rome.
- 2016-2017 Teaching assistant. Sistemi di Calcolo I.
Ingegneria Informatica, Sapienza University of Rome.
- 2016-2017 Lecturer. Big Data Systems.
Master Universitario di II livello in Data Intelligence e Strategie Decisionali.
Dipartimento di Statistica, Sapienza University of Rome.
- 2015-2016 Teaching assistant. Fondamenti di Informatica II.
Ingegneria Informatica, Sapienza University of Rome.
- 2015-2016 Lecturer. Big Data Systems.
Master Universitario di II livello in Data Intelligence e Strategie Decisionali.
Dipartimento di Statistica, Sapienza University of Rome.
- Aug 2015 *On data skewness, stragglers, and MapReduce progress indicators*
Presentation at SoCC 2015, Hawaii, USA.
- Apr 2015 *Performance analysis at scale*
Invited talk at TU Darmstadt, Germany.
- Dec 2014 *An interactive visualization framework for performance analysis*
Presentation at VALUETOOLS 2014.
- Jan 2014 *Estimating the Empirical Cost Function of Routines with Dynamic Workloads*
Presentation at CGO 2014.
- Apr 2013 *From asymptotics to performance profiling (and back)*
Invited talk, Department of Informatics, University of Bergen, Norway.
- Jan 2013 *One Minute Madness presentation* at the SIGPLAN Programming Languages Mentoring Workshop (PLMW 2013).
- Jun 2012 *Input Sensitive Profiling*
Presentation at PLDI 2012.

ADDITIONAL TRAINING

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| Jul 2014 | ECOOP Summer School 2014. Uppsala University, Sweden. Lecturers: Joe G. Politz, Shriram Krishnamurthi, Anil Madhavapeddy, Richard Mortier, Laurence Tratt, Tomas Kalibera, and Cristina V. Lopes. |
| Jul 2014 | UPMARK Multicore Computing Summer School 2014. Uppsala University, Sweden. Lecturers: Cormac Flanagan, Stephen Freund, Viktor Klang, Simon M. Smith, and Viktor Vafeiadis. |
| Sep 2013 - Nov 2013 | C++ For C Programmers, Coursera. Prof. Ira Pohl, University of California, Santa Cruz. |
| Aug 2013 | MADALGO PhD Summer School 2013, Summer school on Data Structures. Aarhus University, Denmark. Lecturers: Valerie King, Ian Munro, Rasmus Pagh, and the Turing Award recipient Robert E. Tarjan. |
| Nov 2012 | Advanced course on GPU computing Cineca/Caspar Research Center, Rome. |

MAIN SOFTWARE PROJECTS

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| 2011–2014 | APROF: ASYMPTOTIC PROFILER A Valgrind tool for performance profiling designed to help developers discover hidden asymptotic inefficiencies in the code. Chief developer. Project website: code.google.com/p/aprof/ . |
| 2010–2011 | BSA++: AN ADAPTIVE SEGREGATED FIT MEMORY ALLOCATOR The allocator is now integrated in the DC dataflow constraint programming framework available at code.google.com/p/dc-lib and described in the paper “Reactive imperative programming with dataflow constraints” by C. Demetrescu, I. Finocchi, and A. Ribichini, OOPSLA 2011. |
| 2008 | GEMINI PROJECT: DETECTING P2P FILTERS ON AN ADSL CONNECTION An Ubuntu-based live distro for revealing if an ISP is throttling BitTorrent traffic on an ADSL connection. The approach used for detecting anti-p2p filters was partly described in a detailed article on the Electronic Frontier Foundation (EFF) official site. |
| 2006–2008 | Contributor to LINUX@P2PFORUM.IT An online collection of how-to and tutorials designed for helping inexperienced GNU/Linux italian users. |

COMPUTER SKILLS

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| Algorithms | Advanced knowledge of algorithms and data structures and their mathematical analysis. |
| Programming | Advanced knowledge of C, Java, x86. Good experience with C++, Python, and PHP. |
| Operating systems | Very good experience with GNU/Linux (especially Gentoo-based and Debian-based) and Microsoft Windows. |
| Other | Apache Hadoop (hadoop.apache.org/). Apache Spark (spark.apache.org/). Apache Flink (flink.apache.org/). Intel PIN (software.intel.com/en-us/articles/pintool/). Valgrind (valgrind.org/). angr (angr.io/). |

LANGUAGES

ENGLISH: Fluent
ITALIAN: Mothertongue

OTHER INFORMATION

I like to spend my spare time watching some of the most famous American and British television series. Ever since my childhood I always practiced a lot of sports (like soccer and basket) and currently I get fit with daily activity at gym. In the past years, I have collaborated with some Italian online communities, especially helping and creating useful resources for new GNU/Linux users.