

ALLEGATO B

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Matteo Camilli

CURRICULUM VITAE

INFORMAZIONI PERSONALI (PRIVE DI INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	CAMILLI
NOME	MATTEO
DATA DI NASCITA	19/12/1986

Data

22/02/2019

Luogo

Milano

Matteo Camilli

Ph.D. in Computer Science

Current Occupation

2015–present **Postdoctoral research fellow**, *Department of Computer Science*, Università degli Studi di Milano, Milan (Italy).

I'm currently a postdoctoral research fellow at the Computer Science department of the University of Milan. My research activity focuses on formal methods and software engineering. I'm especially interested in: model-based testing techniques; uncertainty quantification in software development; and methods/tools for specifying and verifying self-adaptive (time-dependent) distributed systems.

Subject area: Computer Science, Mathematics, Engineering.

OrcID: <http://orcid.org/0000-0003-2491-5267>.

Short Bio

I'm currently a postdoctoral research fellow at the Computer Science department of the University of Milan (Italy), where I teach software engineering, and I work in the software engineering research group. During my Ph.D. program, I have been selected to participate at the ACM Student Research Competition and Doctoral Symposium of different editions of the ICSE conference. I received my PhD degree in Computer Science from the University of Milan in 2014. My dissertation focused on the combination of advanced abstraction techniques and big data approaches to tackle the state explosion problem in formal verification. My current research activity focuses on Software Engineering, formal methods, formal Verification, model-based testing. I'm especially interested in methods and tools to improve dependability of adaptable and evolvable time-dependent applications.

Ongoing research (keywords)

Formal methods, Formal Verification, Software engineering, Models@runtime, Model-based testing, Self-adaptation, Uncertainty quantification, Petri nets, Markov models.

Numbers Game*

According to Scopus:

- Total citations: 71
- Average citations per publication: 4,4
- 5-Years journal articles: 3
- H-index: 6

* <https://dl.acm.org/citation.cfm?id=1297815>.

Education

- 2012–2014 **Ph.D. in Computer Science**, *Department of Computer Science*, Università degli Studi di Milano, Milan (Italy).
Thesis title: *Coping with the State Explosion Problem in Formal Methods: Advanced Abstraction Techniques and Big Data Approaches*.
- 2009–2011 **Computer Science M.Sc.**, *Università degli Studi di Milano*, Milan (Italy), *Master of Science*.
I got my M.Sc. degree in Computer Science on July 12th, 2011 at the University of Milan, with a final grade of 110/110 cum laude. The thesis is entitled “Parallel and distributed approaches to Real-Time system analysis.” (Italian version: “Confronto tra architetture per la realizzazione distribuita di tecniche di analisi per reti di Petri.”)
Major achievements:
 - Understand and improve analysis methods, design methods and development methods of complex/innovative IT systems.
 - Take leadership roles in management/development of IT projects within companies or research institutes.
 - Understand and use mathematical and physical means to support IT applications.
- 2005–2008 **Computer Science B.Sc.**, *Università degli Studi di Milano*, Milan (Italy), *Bachelor of Science*.
I got my B.Sc. degree in Computer Science on December 16th, 2008 at the University of Milan, with a final grade of 110/110 cum laude. The thesis is entitled “Estensione, progettazione e realizzazione di una tecnica di analisi di sistemi Real-time.” (“Design and implementation of a reachability analysis technique for Real-Time systems.”)
Major achievements:
 - Fundamentals of different computer science fields.
 - Design and development of IT systems.
 - Networks management.
 - Understand and use mathematical techniques and tools.

Phd thesis

- title *Coping with the State Explosion Problem in Formal Methods: Advanced Abstraction Techniques and Big Data Approaches*.
- supervisors Carlo Bellettini, Mattia Monga, Lorenzo Capra
- description The thesis focuses on two complementary approaches to deal with the state explosion problem for dynamic, concurrent and real-time systems. On the one hand we explore advanced state space methods for real-time systems modeled with Time Basic Petri nets. On the other hand, we introduces distributed approaches which exploits techniques typically used by the big data community to enable verification of very complex systems using big data approaches and cloud computing facilities.

Experience

- 2015–present **Postdoctoral research fellow**, *Università degli Studi di Milano*, Milano (Italy).
Formal methods in Software Engineering: modeling and analysis of adaptable and evolvable complex systems.
- 2014–2015 **Research grant holder**, *Università degli Studi di Bergamo*, Bergamo (Italy).
Software Engineering, formal methods, formal Verification, self-adaptive systems, real-time systems, parallel and distributed Systems.

Research and Development, *Collaboration with Bialetti Industrie S.p.A*, Brescia (Italy), on the Smart break project: <http://www.smartbreakproject.it>. Requirements and use case analysis. Definition of the interactions between roles and components to achieve goals.

2012–2014 **Phd student**, *Università degli Studi di Milano*, Milan (Italy).

The research activity focused on the connection between formal methods in software engineering and big data approaches. In particular, we developed distributed formal verification techniques leveraging high performance data processing software for extracting knowledge from the unprecedented amount of data coming from complex systems. We deployed our softwares on cloud based computing facilities to exploit the opportunity for verification techniques and tools to undergo a deep technological transition and use new available architectures.

2012–2013 **Research grant holder**, *Università degli Studi di Milano*, Milan (Italy).

Distributed analysis of internet traffic for protocol and structure independent botnet detection.

2011–2013 **Co-funder, technical director, developer**, *Failuresoftware*, Milan (Italy).

Failuresoftware is a team of creative and technology nerds building simple and sometimes useful mobile applications for the world.

Projects:

- BikeMi:
 - BikeMi is Milan's new Bike Sharing easy, practical and ecological service.
- Photodump:
 - Photodump is a social network where users can collect and share bad photos.

2010–2011 **Research and development**, *Università degli Studi di Milano*, Milan (Italy).

Design, Development and Comparison between different parallel and distributed computational model for Real-time systems analysis techniques.

2008–2009 **Research and development**, *Università degli Studi di Milano*, Milan (Italy).

Design and Development of a Real-time systems analysis technique expressed by means of Time- Basic Petri nets.

Participation in Research Projects

2015 **Regional project – Simply**, *Supported by the Lombardy Region, Italy*, Design and development of a distributed service-based web-application for managing citizens' desk services.

2014 **Regional project – SmartBreak**, *Supported by the Lombardy Region, Italy*, Requirements analysis, use cases definition, and design of AI-powered home automation systems.

2014 **PRIN project – GenData 2020**, *Supported by the Italian Ministry of Research*, Modeling and Verification of real-time self-adaptive systems.

2012 **PRIN project – Botnet self-protection**, *Supported by the Italian Ministry of Research*, Distributed analysis of internet traffic for protocol and structure independent botnet detection.

Languages

Italian **Mother tongue**

English **Listening: B2*, Reading C1*,
Spoken interaction: B2*, Spoken production: B2*,
Writing: C1***

*<http://europass.cedefop.europa.eu/en/resources/european-language-levels-cefr>

Selected computer/programming skills

Programming	Java, Java Reflection, RMI, AspectJ, C, C++, Python, PHP, Smalltalk	Databases	SQL language, MySQL, PostgreSQL, Oracle
Web	html, xml, Javascript	VCS	Git, SVN
Cloud Computing	E2C: Amazon Elastic Compute Cloud infrastructure	Mobile	Google Android, Apple IOS
Unix	Shell scripting		

Teaching

2018-2019 **Teacher**, *Software Engineering (Ingegneria del software)*, Dipartimento di Scienze e Innovazione Tecnologica (DiSIT), Università degli Studi del Piemonte Orientale, Vercelli (Italy).

Tutor, *Computer Systems and Networks Security (Sicurezza dei Sistemi e delle Reti Informatiche)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

2017-2018 **Teacher**, *Software Engineering (Ingegneria del software)*, Dipartimento di Scienze e Innovazione Tecnologica (DiSIT), Università degli Studi del Piemonte Orientale, Vercelli (Italy).

Lab. teacher, *Software Engineering (Ingegneria del software)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

Tutor, *Computer Systems and Networks Security (Sicurezza dei Sistemi e delle Reti Informatiche)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

2016-2017 **Teacher**, *Software Engineering (Ingegneria del software)*, Dipartimento di Scienze e Innovazione Tecnologica (DiSIT), Università degli Studi del Piemonte Orientale, Vercelli (Italy).

Lab. teacher, *Software Engineering (Ingegneria del software)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

Tutor, *Computer Systems and Networks Security (Sicurezza dei Sistemi e delle Reti Informatiche)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

2015-2016 **Lab. teacher**, *Software Engineering (Ingegneria del software)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

Lab. teacher, *Operating Systems (Sistemi Operativi)*, Dipartimento di Ingegneria gestionale, dell'informazione e della produzione (DIGIP), Università degli Studi di Bergamo, Bergamo (Italy).

Tutor, *Computer Systems and Networks Security (Sicurezza dei Sistemi e delle Reti Informatiche)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

2014-2015 **Lab. teacher**, *Software design (Progettazione del software)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

2013-2014 **Lab. teacher**, *Software design (Progettazione del software)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

2012-2013 **Lab. teacher**, *Software design (Progettazione del software)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

2011-2012 **Teaching assistant**, *Software design (Progettazione del software)*, Dipartimento di Informatica, Università degli Studi di Milano, Milan (Italy).

Honors and Awards

2015 **Amazon.com, Inc. AWS Research grant**, *AWS Cloud Credits to perform proof of concept/benchmark tests evaluating the efficacy of moving formal verification activities to the cloud in order to tackle the state explosion problem.*

2014 **ICSE 2014 Doctoral Symposium**, *selected to participate at the Doctoral Symposium of ICSE (International Conference on Software Engineering) 2014 conference with the research paper "Formal verification problems in a big data world: Towards a mighty synergy".*

2014 **ACM SIGSOFT CAPS**, *Travel grant recipient.*

2012 **ACM Student Research Competition at ICSE 2012**, *selected to participate at the main competition at the ICSE (International Conference on Software Engineering) 2012 conference with the research abstract "Petri Nets State Space Analysis in the Cloud".*

2012 **ACM SIGSOFT CAPS**, *Travel grant recipient.*

Participation as speaker

2018 **ISSRE 2018**, *The 29th IEEE International Symposium on Software Reliability Engineering. October 15-18, 2018. Memphis, TN, USA.*

2018 **SYNASC 2018**, *20th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC). September 20 - 23 2018, Timisoara, Romania, Logic and Programming track.*

2018 **FAACS 2018**, *2nd International Workshop on Formal Approaches for Advanced Computing Systems @ ECSA 2018. Madrid, Spain. 24 September, 2018.*

2018 **WODES 2018**, *14th International Workshop on Discrete Event Systems. May 30 - June 1, 2018. Sorrento Coast, Italy.*

2017 **FAACS 2017**, *1st International Workshop on Formal Approaches for Advanced Computing Systems @ MSE 2017. Trento, Italy. September 4th, 2017.*

2017 **MSE 2017**, *2nd International Workshop on Microservices: Science and Engineering @ MSE 2017. Trento, Italy. September 4th, 2017.*

- 2017 **SEFM 2017**, *15th International Conference on Software Engineering and Formal Methods*. September 4 - 8 2017. Trento, Italy.
- 2017 **NFM 2017**, *9th NASA Formal Methods International Symposium*. Moffett Field, CA, USA May 16 - 18, 2017.
- 2016 **SYNASC 2016**, *18th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*. Timisoara, Romania, 24 - 27 September 2016, Logic and Programming track.
- 2015 **ISSRE 2015**, *26th IEEE International Symposium on Software Reliability Engineering (ISSRE)*. November 2 - 5, 2015, Gaithersburg, MD, USA, Formal methods track.
- 2014 **SYNASC 2014**, *16th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*. September 22 - 25 2014, Timisoara, Romania, Distributed computing track.
- 2014 **ICSE 2014**, *36th International Conference on Software Engineering (ICSE)*. Hyderabad, India. May 31 - June 7, 2014, Doctoral symposium.
- 2013 **RP 2013**, *7th International workshop on Reachability Problems (RP)*. 25 - 27 September 2013. Uppsala, Sweden.
- 2012 **SYNASC 2012**, *14th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*. September 26 - 29 2012, Timisoara Romania, Distributed computing track.
- 2012 **ICSE 2012**, *34th International Conference on Software Engineering (ICSE)*. June 2 - 9, 2012. Zurich, Switzerland, ACM Student research competition.

Program/Organizing committee member

- 2019 **FAACS 2019**, *3rd International Workshop on Formal Approaches for Advanced Computing Systems*, In Organizing Committee.
- 2018 **MSE 2019**, *4th International Workshop on Microservices: Science and Engineering*, In PC.
- 2019 **CLOSER 2019**, *9th International Conference on Cloud Computing and Services Science*, In PC.
- 2018 **FAACS 2018**, *2nd International Workshop on Formal Approaches for Advanced Computing Systems*. Co-located with the 12th European Conference on Software Architecture (ECSA 2018), In PC.
- 2018 **MSE 2018**, *3rd International Workshop on Microservices: Science and Engineering*. Co-located with STAF (Software Technologies: Applications and Foundations) 2018, In PC.
- 2017 **FAACS 2017**, *1st International Workshop on Formal Approaches for Advanced Computing Systems*. Co-located with the 15th Int. conference on Software Engineering and Formal Methods (SEFM 2017), In PC.
- 2017 **MSE 2017**, *2nd International Workshop on Microservices: Science and Engineering*. Co-located with the 15th Int. conference on Software Engineering and Formal Methods (SEFM 2017), In PC.

Reviewer for international journals

IEEE SMC, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*.

IEEE TSC, *IEEE Transactions on Services Computing*.

Elsevier SCP, *Science of Computer Programming*.

Wiley SPE, *Software: Practice and Experience*.

Journal Articles

2018, L. Capra, M. Camilli, *Towards Evolving Petri Nets: a Symmetric Nets-based Framework*, *IFAC-PapersOnLine - Elsevier*, Volume 51, Issue 7, 2018, Pages 480-485, ISSN 2405-8963, <https://doi.org/10.1016/j.ifacol.2018.06.343>.

2018, M. Camilli, A. Gargantini, and P. Scandurra. *Zone-based formal specification and timing analysis of real-time self-adaptive systems*. *Science of Computer Programming - Elsevier*, 159:28-57, 2018.

2016, C. Bellettini, M. Camilli, L. Capra, and M. Monga. *Distributed CTL model checking using MapReduce: Theory and practice*. *Concurrency and Computation: Practice and Experience - Wiley*, 28(11):3025-3041, August 2016.

International Conference/Workshop Papers

2018, M. Camilli, C. Bellettini, A. Gargantini and P. Scandurra, "Online Model-Based Testing under Uncertainty," *2018 IEEE 29th International Symposium on Software Reliability Engineering (ISSRE)*, Memphis, TN, USA, 2018, pp. 36-46. doi: 10.1109/ISSRE.2018.00015.

2018, M. Camilli, L. Capra. *A Symmetric Nets Emulator for Adaptive P/T Nets*. In *2018 20th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing*, To appear.

2018, M. Camilli, C. Bellettini, and L. Capra. *A high-level petri net-based formal model of distributed self-adaptive systems*. In *12th European Conference on Software Architecture: Companion Proceedings (ECSA '18)*, volume ACM, New York, NY, USA, September 24-28 2018.

2018, M. Camilli, C. Bellettini, and L. Capra. *Design-time to run-time verification of microservices based applications*. In Antonio Cerone and Marco Roveri, editors, *Software Engineering and Formal Methods*, pages 168-173, Cham, 2018. Springer International Publishing.

2018, M. Camilli, C. Bellettini, L. Capra, and M. Monga. *A formal framework for specifying and verifying microservices based process flows*. In Antonio Cerone and Marco Roveri, editors, *Software Engineering and Formal Methods*, pages 187-202, Cham, 2018. Springer International Publishing.

2017, M. Camilli, A. Gargantini, P. Scandurra, and C. Bellettini. *Towards inverse uncertainty quantification in software development (short paper)*. In Alessandro Cimatti and Marjan Sirjani, editors, *Software Engineering and Formal Methods*, pages 375-381, Cham, 2017. Springer International Publishing.

- 2017**, M. Camilli, A. Gargantini, P. Scandurra, and C. Bellettini. *Event-based runtime verification of temporal properties using time basic petri nets*. In Clark Barrett, Misty Davies, and Temesghen Kahsai, editors, *NASA Formal Methods*, pages 115-130, Cham, 2017. Springer International Publishing.
- 2016**, M. Camilli, C. Bellettini, L. Capra, and M. Monga. *Coverability analysis of time basic petri nets with non-urgent behavior*. In *2016 18th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*, pages 165-172, Sept 2016.
- 2015**, M. Camilli, A. Gargantini, and P. Scandurra. *Specifying and verifying real-time self-adaptive systems*. In *2015 IEEE 26th International Symposium on Software Reliability Engineering (ISSRE)*, pages 303-313, Nov 2015.
- 2014**, M. Camilli, C. Bellettini, L. Capra, and M. Monga. *Ctl model checking in the cloud using mapreduce*. In *2014 16th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing*, pages 333-340, Sept 2014.
- 2014**, M. Camilli. *Formal verification problems in a big data world: Towards a mighty synergy*. In *Companion Proceedings of the 36th International Conference on Software Engineering, ICSE Companion 2014*, pages 638-641, New York, NY, USA, 2014. ACM.
- 2013**, C. Bellettini, M. Camilli, L. Capra, and M. Monga. *Mardigras: Simplified building of reachability graphs on large clusters*. In Parosh Aziz Abdulla and Igor Potapov, editors, *Reachability Problems*, pages 83-95, Berlin, Heidelberg, 2013. Springer Berlin Heidelberg.
- 2012**, C. Bellettini, M. Camilli, L. Capra, and M. Monga. *Symbolic state space exploration of RT systems in the cloud*. In *2012 14th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing*, pages 295-302, Sept 2012.
- 2012**, M. Camilli. *Petri nets state space analysis in the cloud*. In *2012 34th International Conference on Software Engineering (ICSE)*, pages 1638-1640, June 2012.