



PERSONAL INFORMATION Francesco Spegni

| Nationality Italiana

PROFESSIONAL SECTOR IT – Research and Development

PROFESSIONAL EXPERIENCES

01/01/2020 - Today

Personale Tecnico Amministrativo / Università Politecnica delle Marche

Type: Professional Assignment

Activities:

- Development of tools for automating construction and management processes
- Read information from IFC files
- Semantic annotations of price-lists to extract knowledge and automatize processes
- Track the state transitions of construction processes by means of smart contracts on the Quorum blockchain
- Development of mixed reality applications and 3D modeling in order to assess the performance and costs of renovation projects in residential constructions
- Voice controlled web applications

Technologies:

- BPMN
- IFC
- Solidity
- Quorum
- Javascript
- Google Action Console / DialogFlow
- Git / Gitlab
- Python
- Hololens
- Unity 3D
- VSCode

01/05/2019 – 31/03/2020

Executive project manager of the project POR-FESR 2014-2020 / Comune di Mondolfo (PU)

Type: Professional Assignment

Activities:

- Executive project manager for the regional project POR/FESR 2014/2020 (Comune di Mondolfo and 12 other municipalities in the province of Pesaro-Urbino)
- Coordinating the training activities of employee of the municipalities
- Testing hardware and software funded by the project
- Writing testing reports

Technologies:

- CKAN – System GOOD-PA used by Regione Marche for open-data
- PagoPA – System Mpay used by Regione Marche for electronic payment
- Marche DIGIP – Document storage system of Regione Marche

01/01/2019 – 31/03/2020

Software quality and testing / ATLC, Ancona

Type: Professional Assignment

Activities:

- Writing automated test suites for network routers in virtual environment
- Implementing processes for measuring and monitoring the quality of software

Technologies:

- Python
- Robot Framework
- Docker / docker-compose
- Git / GitLab
- Buildbot
- Eclipse

- 01/09/2019 – 31/01/2022 **Adjunct Professor / DII, UNIVPM, Ancona**
Type: Professional Assignment
Courses:
 - Advanced Java Programming a.a. 2019 – 2020
- 10/07/2019 – 10/08/2019 **Cyber-security assessment for network routers / DII, UNIVPM, Ancona**
Type: Professional Assignment
Activities:
 - Search for vulnerabilities and cyber-risk assessment in network routers**Technologies:**
 - Python
 - PRISM Model Checker
- 01/03/2016 – 31/12/2019 **Teaching Assistant / DII, UNIVPM, Ancona**
Type: Professional Assignment
Courses:
 - Databases a.a. 2018 – 2019
 - Web Technologies a.a. 2018 – 2019
 - Algorithms and Data Structures a.a. 2018 – 2019
 - Algorithms and Data Structures a.a. 2017 – 2018
 - Algorithms and Data Structures a.a. 2016 - 2017
- 01/02/2016 – 31/01/2019 **PostDoc Fellowship**
DII, Università Politecnica delle Marche, Ancona
Research Project Title:
“Safe Round-Trip Software Engineering”.
Partner:
Alpen-Adria-Universitaet, Klagenfurt (prof. Martin Pinzger).
Topics:
 - Static analysis of multi-threaded Java software
 - Automatic detecting and fixing timestamp-related bugs in Java programs
 - Formal verification of correctness of real-time Java software
 - Continuous Integration / Continuous Delivery
 - Methodologies for cyber-risk assessment
 - National Framework for Cyber-security
 - *Design and analysis of algorithms for smart-contracts on blockchain***Technologies:**
 - Python
 - Java
 - Nose (unit testing for python)
 - Z3
 - Uppaal (model checker for timed automata)
 - XML
 - GIT
- 01/11/2013 – 31/10/2015 **PostDoc Fellowship**
DII, Università Politecnica delle Marche, Ancona
Research Project Title:
“Model Checking Verification for Timed and Parameterized Software Systems”
Partner:
Technische Universitaet Wien (prof. Helmut Veith)
Topics:
 - Formal verification of correctness of distributed algorithms via model checking
 - Design and implementation of tools and theories for applying formal methods to distributed algorithms**Technologies:**
 - Python
 - Uppaal (model checker for timed automata)
 - Yices
 - NuSMV

- 16/10/2013 – 16/12/2013 **Web developer**
Slowd srl, Modena
Type: Term contract
Technologies:
 - Python
 - Django
 - Postgresql
 - Nginx
- 21/01/2013 – 30/11/2013 **Teacher / Computer Science**
Istituto di Istruzione Superiore Podesti – Calzecchi Onesti, Ancona
Type: Term contract
- 27/05/2013 – 31/07/2013 **Research & Development, Software**
E-C NET srl, Verona
Type: Term contract
Technologies:
 - PHP
 - Eclipse
 - MySQL
 - SVN
- 01/04/2012 – 31/03/2013 **PostDoc Fellowship**
DII, Università Politecnica delle Marche, Ancona
Research Project Title:
 “Definizione di metodologie ed algoritmi di reverse engineering e di verifica di software legacy” /
 “Definition of methodologies and algorithms for reverse engineering and verifying legacy software”
Partner:
 Computer VAR ITT, Verona (dott. Salvatore Campana)
Topics:
 - Design and implement an interpreter for workflows with real-time constraints
 - Continuous monitoring of ADSL and LAN wireless/wired networks
 - Formal methods based methodologies for reverse engineering
 - Computer Aided design and implementation of web-applications**Technologies:**
 - PHP
 - Java
 - Protocol SNMP
 - Linux
 - Bash
 - MySQL
- 01/02/2012 – Today **Web developer, data-analyst**
Consorzio Solidarietà, Senigallia
Type: Professional Assignment
Projects:
 - OpenAppalti: <http://www.openappalti.it>
 - Management of contracts and suppliers for public and private Procuring Entities (Stazioni Appaltanti)
 - Data aggregation and analysis on public contracts, design and implementation of dashboards for the citizens
 - OpenMunicipio: <http://www.openmunicipio.it>
 - Data collection and visualizazion collected during the political activity in the italian municipalities, for the citizens and data-journalists**Technologies:**
 - Python / Django
 - Apache SOLR
 - Javascript / XML
 - GIT
 - Docker / docker-compose
 - Linux / Bash / PostgreSQL

25/01/2008 – 31/12/2008

Web development

BINT srl, Verona

Type: Term contract

Technologies:

- PHP
- Java
- Eclipse
- MySQL
- SVN

29/01/2007 – 01/11/2007

Web development

Regione Marche, Ancona

Type: Term contract

Technologies:

- ASP.NET
- C# / C++
- GDB
- Web services
- Visual Studio

01/10/2003 – 31/12/2003

Internship, High-Performance Computing

CINECA, Casalecchio di Reno (BO)

Type: internship

Technologies:

- Linux / Bewoulf
- Unix / AIX
- C++
- MPI Programming
- Socket Programming

POSTGRADUATE EDUCATION

01/03/2019 – 31/05/2019

Microsoft Learning Paths – Cloud Computing

Microsoft Corporation & Università Politecnica delle Marche

Topics:

- Introduction to Azure
- Managing Azure Containers
- Managing Resources and Infrastructures in Azure
- Protecting Data in the Cloud
- Data Storage in Azure
- Advanced Interactive Learning on Data Science Virtual Machine
- Microsoft Azure AI strategy and solutions
- Classification and Editing of Images through the Artificial Vision Service
- Text Analysis API
- Manage IoT Devices

04/09/2011 – 10/09/2011

Laser 2011 Summer School on Software Engineering

ETH, Swiss Federal Institute of Technology, Zurich

Topics:

- Model Checking and the Curse of Dimensionality
- Abstract interpretation based tool construction for software verification
- Software Model Checking via Systematic Testing
- Using and building an automatic program verifier
- Verification As a Matter of Course
- Advanced Theorem Proving Techniques in PVS with Applications
- The Coq Proof Assistant
- Proving and disproving in first-order logic

- 04/08/2009 – 16/08/2009 **International Summer School on “Logics and Languages for Reliability and Security”**
TUM, Technical University of Munich
Topics:
 - Program Analysis and Verification by Abstract Interpretation
 - Newtonian Program Analysis
 - Principles and Applications of Refinement Types
 - 3-Valued Abstraction-Refinement
 - Modal Fixed Point Logics
 - Effective Analysis of Infinite-state Stochastic Processes and Games
 - Multi-valued Logics and their Applications
 - Mechanized Semantics, with Applications to program Proof and Compiler Verification
 - Using Security Policies to write Secure Software
 - Two Applications of Theorem Proving: Hotel Key Cards and Social Choice Theory
 - Model Checking Higher-Order Computation
 - Language-based Control for Information Flow and Release
- 01/01/2009 – 28/02/2012 **Ph.D. in Computer Engineering (Dottorato di ricerca in Ingegneria Informatica, Gestionale e Automazione)**
Scuola di Dottorato di Ricerca in Scienze dell’Ingegneria, Università Politecnica delle Marche
Topics:
 - Model checking parameterized systems
 - Model checking probabilistic systems
 - Model checking real-time systems
 - Modal logics
 - Rewriting logic
 - Finite State Automata
 - Infinite State Systems
- 18/08/2008 - 22/08/2008 **3S Biology Summer School**
Center for Integrative Biology, Università degli Studi di Trento
- 01/08/2004 – 21/03/2007 **Master Degree in Computer Science (Laurea Specialistica in Informatica), *cum laude***
Università di Bologna
Topics:
 - Definition of interpreters for functional programming languages
 - Distributed algorithms
 - Socket programming
 - Web programming
 - Natural Language Processing
- 01/08/2004 – 30/06/2005 **Visiting student**
University of Illinois at Urbana-Champaign (USA)
Topics:
 - Design and implementation of peer-to-peer distributed systems
 - Software development processes (RUP, XP, ...)
 - Formal verification
 - Rewriting logic
 - Distributed Agent Systems
 - Semantics of Programming Languages
- 01/10/2001 – 07/07/2004 **Bachelor Degree in Computer Science (Laurea in Informatica), *cum laude***
Università di Bologna
Topics:
 - Interpreters for programming languages
 - Design and implementation of web applications and services
 - Distributed Programming

PERSONAL COMPETENCES

Mother Language Italian
Other Languages English (advanced), French (elementary)

RESEARCH ACTIVITIES

Organizational Activities

- Security in High-Performance Computing, 18 July 2019, Dublin (SHPCS) / Workshop chair
- Security in High-Performance Computing, 19 July 2018, Orleans (SHPCS) / Workshop chair

Presentations at International Conferences

- *“High-Performance Computing for Formal Security Assessment”*
International Conference on High-Performance Computing and Simulation 2019, Dublin, 18 July 2019
- *“Verification-as-a-Service for Parameter Assessment”*
International Conference on High-Performance Computing and Simulation 2019, Dublin, 16 July 2019
- *“Towards Model Checking Security of Real Time Java Software”*
International Workshop on Security and High Performance Computing Systems 2018, Orleans, 19 July 2018
- *“On the Existence of Cutoffs for Model Checking Disjunctive Timed Networks”*
Italian Conference on Theoretical Computer Science 2017, Naples, Italy, 27 September 2017
- *“A Probabilistic Small Model Theorem to Assess Confidentiality of Dispersed Cloud Storage.”*
Italian Conference on Theoretical Computer Science 2017, Naples, Italy, 27 September 2017
- *“A Probabilistic Small Model Theorem to Assess Confidentiality of Dispersed Cloud Storage.”*
International Conference on Quantitative Evaluation of Systems 2017, Berlin, Germany, 5 September 2017
- *“Parameterized Model Checking of Rendezvous Systems”*
Workshop on Parameterized Verification, co-located with Concur 2014, Rome, Italy, 6 September 2014
- *“Parameterized Model-Checking for Timed-Systems with Conjunctive Guards”*
Working Conference on Verified Software: Theories, Tools, and Experiments, Vienna, Austria, 17-18 July 2014
- *“Dynamic Networks of Timed Automata for Collaborative Systems: a Network Monitoring Case Study”*
International Conference on Collaborative Technologies and Systems, Chicago, USA, May 2010
- *“XAL: A Web Oriented Programming Language Based on Timed-Automata”*
International Conference on Web Intelligence, Sydney, Australia, Dicembre 2008

Invitations for Peer-Reviewing of Scientific Papers

- Journals
 - Future Generation Computing Systems (FGCS), Elsevier
 - Concurrency and Computation: Practice and Experience (CCPE), Wiley
 - Journal of Civil Engineering and Management (JCEM), Vilnius Tech
- Conferences
 - International Conference on Quantitative Evaluation of Systems (QEST) 2018
 - International Conference on High-Performance Computing and Simulation (HPCS) 2018, 2019
 - International Workshop on Communication Security (WCS) 2017
 - International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS) 2015

Publications

- “Blockchain Based Choreographies: the Construction Industry Case Study”
L. Spalazzi, **F. Spegni**, A. Corneli, B. Naticchia
Journal: *Concurrency and Computation: Practice and Experience*, December 2021
DOI: [10.1002/cpe.6740](https://doi.org/10.1002/cpe.6740)
- “Process-based simulation models using BPMN for construction management at runtime”
F. Spegni, A. Carbonari, M. Vaccarini
Conference: CIB W78 2021
- “Combining Blockchain and BPMN Choreographies for Construction Management”
A. Corneli, B. Naticchia, **F. Spegni**, L. Spalazzi
Conference: ISARC 2021
- “Verifying Temporal Specifications of Java Programs”
F. Spegni, L. Spalazzi, G. Liva, M. Pinzger, A. Bollin
Journal: *Software Quality Journal*, Springer, 2020
- “Parameterized Model Checking of Networks of Timed Automata with Boolean Guards”
L. Spalazzi, **F. Spegni**
Journal: *Theoretical Computer Science*, Elsevier, 2020
- “High-Performance Computing for Formal Security Assessment”
L. Spalazzi, **F. Spegni**,
Conference: HPCS 2019, Dublin, July 2019 (in attesa di pubblicazione dei proceedings)
- “Verification-as-a-Service for Parameter Assessment”
L. Spalazzi, **F. Spegni**,
Conference: HPCS 2019, Dublin, July 2019 (in attesa di pubblicazione dei proceedings)
- “Modeling time in Java programs for automatic error detection”
G. Liva, M.T. Khan, **F. Spegni**, L. Spalazzi, A. Bollin, M. Pinzger
Conference: Formalise 2018, Goteborg, June 2018
DOI: [10.1145/3193992.3193997](https://doi.org/10.1145/3193992.3193997)
- “Towards Model Checking Security of Real Time Java Software”
L. Spalazzi, **F. Spegni**, G. Liva, M. Pinzger
Conference: HPCS 2018, Orleans, July 2018
DOI: [10.1109/HPCS.2018.00106](https://doi.org/10.1109/HPCS.2018.00106)
- “On the Existence of Cutoffs for Model Checking Disjunctive Timed Networks”
L. Spalazzi, **F. Spegni**
Conference: ITCTS 2017, Napoli, September 2017
- “A Probabilistic Small Model Theorem to Assess Confidentiality of Dispersed Cloud Storage.”
M. Baldi, E. Bartocci, F. Chiaraluca, A. Cucchiarelli, L. Senigagliesi, L. Spalazzi, **F. Spegni**
Conference: QUEST 2017, Berlin, September 2017
DOI: [10.1007/978-3-319-66335-7_8](https://doi.org/10.1007/978-3-319-66335-7_8)
- “Security in Heterogeneous Distributed Storage Systems: a Practically Achievable Information-Theoretic Approach”
M. Baldi, A. Cucchiarelli, L. Senigagliesi, L. Spalazzi, **F. Spegni**
Conference: ISCC 2017, Crete, July 2017
DOI: [10.1109/ISCC.2017.8024659](https://doi.org/10.1109/ISCC.2017.8024659)
- “Parameterized Model Checking of Rendezvous Systems”
B. Aminof, T. Kotek, S. Rubin, **F. Spegni**, H. Veith
Journal: *Distributed Computing*, Springer, Vol. 31, Issue 3, June 2018 (first online since June 2017)
DOI: [10.1007/s00446-017-0302-6](https://doi.org/10.1007/s00446-017-0302-6)
- “Accuracy of Message Counting Abstraction in Fault-Tolerant Distributed Algorithms.”
I. Konnov, J. Widder, L. Spalazzi, **F. Spegni**
Conference: VMCAI 2017, Paris, January 2017
DOI: [10.1007/978-3-319-52234-0_19](https://doi.org/10.1007/978-3-319-52234-0_19)
- “Parametric and probabilistic model checking of confidentiality in data dispersal algorithms.”
M. Baldi, A. Cucchiarelli, L. Senigagliesi, L. Spalazzi, **F. Spegni**
Conference: HPCS 2016, Innsbruck, September 2016
DOI: [10.1109/HPCSim.2016.7568373](https://doi.org/10.1109/HPCSim.2016.7568373)
- “Liveness of parameterized timed networks.”
B. Aminof, S. Rubin, **F. Spegni**, F. Zuleger
Conference: ICALP 2015, Kyoto, July 2015
DOI: [10.1007/978-3-662-47666-6_30](https://doi.org/10.1007/978-3-662-47666-6_30)

- *“Parameterized Model Checking of Rendezvous Systems.”*
 B. Aminof, T. Kotek, S. Rubin, **F. Spegni**, H. Veith
Conference: Concur 2014, Rome, September 2014
 DOI: [10.1007/978-3-662-44584-6_9](https://doi.org/10.1007/978-3-662-44584-6_9)
- *“Parameterized Model-Checking for Timed-Systems with Conjunctive Guards”*
 L. Spalazzi, **F. Spegni**
Conference: VSTTE 2014, Vienna, July 2014
 DOI: [10.1007/978-3-319-12154-3_15](https://doi.org/10.1007/978-3-319-12154-3_15)
- *“Model Checking Grid Security”*
 F. Pagliarecci, L. Spalazzi, **F. Spegni**
 Journal: Future Generation Computer System, Elsevier, Vol. 29, Issue 3, March 2013 (first online since December 2011)
 DOI: [10.1016/j.future.2011.11.010](https://doi.org/10.1016/j.future.2011.11.010)
- *“Dynamic Networks of Timed Automata for Collaborative Systems: a Network Monitoring Case Study”*
 S. Campana, L. Spalazzi, **F. Spegni**
Conference: Collaborative Technologies and Systems 2010, Chicago, May 2010
 DOI: [10.1109/CTS.2010.5478517](https://doi.org/10.1109/CTS.2010.5478517)
- *“XAL: A Web Oriented Programming Language Based on Timed-Automata”*
 S. Campana, L. Spalazzi, **F. Spegni**
Conference: Web-Intelligence 2008, Sydney, December 2008
 DOI: [10.1109/WIIAT.2008.207](https://doi.org/10.1109/WIIAT.2008.207)

Dati personali

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali". Autorizzo la pubblicazione di questo CV su siti web, ove fosse necessario.