

Curriculum Vitæ



Personal information

Surname(s) / First name(s)
Address(es)
Telephone(s)
Email(s)
Nationality(-ies)
Date of birth
Gender

Torchiano Marco

Work: C.so Duca degli Abruzzi 24, 10129, Torino, Italia
+39 011 090 7088
marco.torchiano@polito.it
Italian
May 6, 1971
Male

Current position

Posizione
From
University
Department
Settore Concorsuale
Settore Scientifico Disciplinare

Full Professor
16/12/2022
Politecnico di TORINO
Computer and Control Engineering
since 28/10/2011 09/H1 - SISTEMI DI ELABORAZIONE DELLE INFORMAZIONI
Since 01/10/2002 ING-INF/05 - Sistemi di Elaborazione delle Informazioni

Professional experience

From
Position
Employer
From
Position
Employer
From
Position
Employer
From
Position
Employer
From
Position
Employer

01/01/2012
Associate Professor
Politecnico di Torino, Italy
01/01/2004
Assistant Professor (tenured)
Politecnico di Torino, Italy
01/10/2002
Fixed Term Assistant Professor (non tenure)
Politecnico di Torino, Italy
15/05/2001
Post-doc Research Fellow
Norges Teknisk-Naturvitenskapelige Universitet - NTNU, Trondheim, Norway
15/04/2000
Research assistant
Politecnico di Torino, Italy

Education

Ph.D.
Professional Engineer
Master

2000, January, Ph.D. in Computer and Control Engineering XII Ciclo (Advisor Prof. Giorgio Bruno) from Politecnico di Torino. Thesis: *"Object Oriented Modeling and Design of Distributed Software Systems"*.
1996, November: passed the PE exam
1996, May, five year M.Sc. in Computer Engineering from Politecnico di Torino, final mark 110/110. Tesi: *"Operational Modeling of Object-Oriented Architectures"*

High School

1990, July: Scientific Liceum degree from Liceo Scientifico Statale in Nizza Monferato (AT), final mark 60/60.

Mother tongue(s)

Italian

Other languages

*Self-assessment
European level^(*)*

English

French

Understanding		Speaking				Writing			
Listening		Reading		Spoken interaction		Spoken production			
C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user
A2	Basic user	A2	Basic user	A2	Basic user	A1	Basic user	A1	Basic user

^(*) Common European Framework of Reference (CEF) level

Academic Management

All the roles refer to Politecnico di Torino

Period	13/5/2020 – present
Role	Member Teaching and Language Lab (TLLAB) Board
Period	1/3/2019 – present
Role	Education Quality Manager for Dept. of Control and Computer Engineering
Period	4/4/2018 – present
Role	Member of the IT Strategy Committee
Period	4/12/2008 – present
Role	Membro of the Education Board of the PhD in Computer and Control Engineering
Period	1/9/2013 – 30/08/2016 and 1/9/2016 – 30/08/2019
Role	Member of Universty Education Joint Committee
Period	1/10/2012 – 30/09/2015
Role	Education QA Delegate for the College of Computer, Mechatronics and Movie Engineering
Period	4/12/2008 – 30/04/2020
Role	Member of Ph.D. in Control and Computer Engineering Faculty Committee of Politecnico di Torino
Period	18/12/2009 – 20/07/2012
Role	Member of the Preliminary Committee of Academic Senate of Politecnico di Torino: Education Portfolio Strategy Committee
Period	01/10/2009 – 20/07/2012
Role	Elected Member of Academic Senate of Politecnico di Torino
Period	07/07/2010 – 07/09/2011
Role	Member of the Preliminary Committee of Academic Senate of Politecnico di Torino: Internal Organization Restructuring Committee
Period	31/10/2007 – 30/09/2009
Role	Member of the Preliminary Committee of Academic Senate of Politecnico di Torino: Education Portfolio Strategy Committee
Period	30/10/2007 – 30/09/2009
Role	Elected Member of Academic Senate of Politecnico di Torino

Membership

Senior Member
Faculty Fellow

IEEE¹, awarded on April 28, 2015.
Nexa Center for Internet and Society, <http://nexa.polito.it>

¹This professional recognition is granted to less than 9% of IEEE membership

Delegate Delegate at UNINFO² for the Software Engineering area, for Politecnico di Torino since June 2016

Awards

Best paper award with M. Mecati, F. E. Cannavò and A. Vetrò for the paper "Identifying risks in datasets for automated decision-making" [159] at EGOV 2020

Best paper award with R.Coppola and M.Morisio for the paper "Scripted UI Testing of Android Apps: A Study on Diffusion, Evolution and Fragility" [132], 13th Int. Conf. on Predictive Models and Fata Analytics in Software Engineering, PROMISE 2017.

Best paper award with M.Ceccato, P.Tonella, A.Basile, B.Coppens, B.De Sutter, and P.Falcarin for the paper "How Professional Hackers Understand Protected Code while Performing Attack Tasks" [130], 25th Int. Conf. on Program Comprehension, ICPC 2017.

Best paper award with F.Tomassetti, F.Ricca, A.Tiso, G.Reggio, for the paper "Benefits from Modelling and MDD Adoption: Expectations and Achievements" [102], Experiences and Empirical Studies in Software Modelling (EESMod), Workshop at MODELS 2012.

Research award Young researcher award, Politecnico di Torino, 2008

Best paper award with Juan P. Carvallo, Xavier Franch, and Carme Quer, for the paper "Characterization of a Taxonomy for Business Applications and the Relationships among them" [26] presented at Third International Conference on COTS Based Software Systems (ICCBBS), Redondo Beach (CA), February 1- 4, 2004.

Visiting Abroad

Visiting Professor Polytechnique Montreal, 15 July-31 August 2016

Teaching Abroad

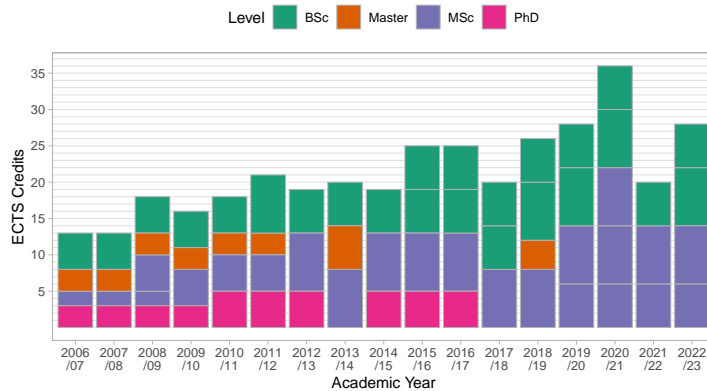
A.y. 2013/14
Course Software Engineering, Tongji University, Shanghai, China
Course Advanced Programming, Tongji University, Shanghai, China

²UNINFO is the ICT section of UNI, the Italian standardization body

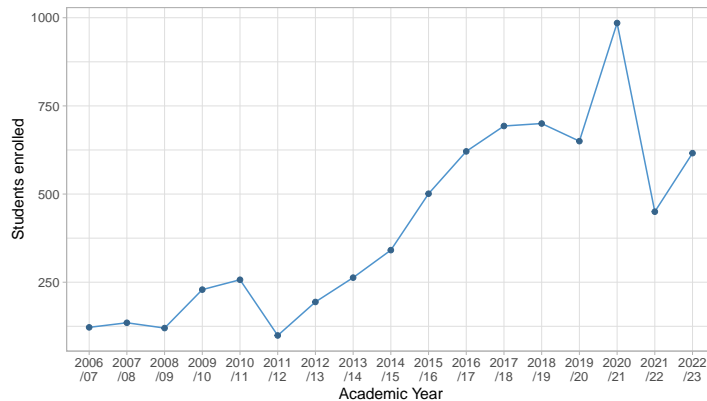
Teaching Activity

Summary

Since a.y. 2006/07 he has been responsible for 65 editions of 17 distinct courses at BSc., MSc., Master, and PhD levels, with increasing weights in terms of ECTS credits up to a maximum of 36 credits in a.y. 2020/21. Average satisfaction for the teacher from student questionnaire: 93%. The weight in CFU credit of the courses is shown in the following diagram divided by academic level.



The total number of students enrolled every year in the courses has increased up to a maximum of 985 students in a.y. 2020/21. With an average 107 enrolled students per course edition.



Before a.y. 2006/07 he has been teaching assistant in several courses, including Software Engineering, Object-Oriented Programming, Distributed Systems Development, Formal Languages.

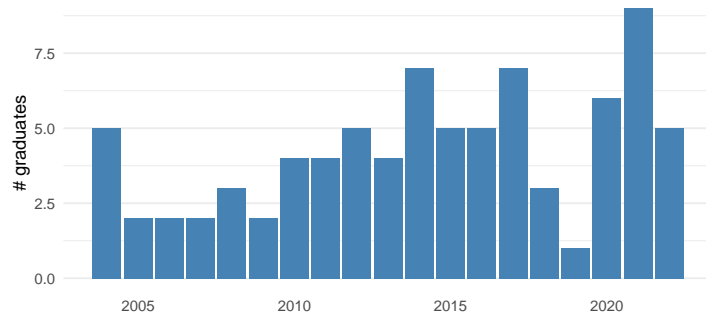
A.y.	2022/23
Course	Software Engineering II, MSc: Computer Engineering, 6 CFU
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management, 8 CFU
Course	Programmazione a Oggetti, BSc: Computer Engineering, 8 CFU
Course	Visualizzazione dell'Informazione Quantitativa, BSc: Computer Engineering, 6 CFU
A.y.	2021/22
Course	Software Engineering II, MSc: Computer Engineering, 6 CFU
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management, 8 CFU
Course	Visualizzazione dell'Informazione Quantitativa, BSc: Computer Engineering, 6 CFU
A.y.	2020/21
Course	Software Engineering II, MSc: Computer Engineering, 6 CFU
Course	Sistemi Informativi Aziendali (A-K), MSc: Engineering and Management, 8 CFU
Course	Sistemi Informativi Aziendali (L-Z), MSc: Engineering and Management, 8 CFU
Course	Programmazione a Oggetti, BSc: Computer Engineering, 8 CFU
Course	Visualizzazione dell'Informazione Quantitativa, BSc: Computer Engineering, 6 CFU
A.y.	2019/20
Course	Software Engineering II, MSc: Computer Engineering, 6 CFU
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management, 8 CFU
Course	Programmazione a Oggetti, BSc: Computer Engineering, 8 CFU

Course	Visualizzazione dell'Informazione Quantitative, BSc: Computer Engineering, 6 CFU
A.y.	2018/19
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management, 8 CFU
Course	Programmazione a Oggetti, BSc: Computer Engineering, 8 CFU
Course	Visualizzazione dell'Informazione Quantitative, BSc: Computer Engineering, 6 CFU
Course	Informatica di base e programmazione, Master Univ. Di I Livello In Hierarchical Open Manufacturing Per Industria 4.0, 4 CFU
A.y.	2017/18
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management
Course	Programmazione a Oggetti, BSc: Computer Engineering
Course	Visualizzazione dell'Informazione Quantitative, BSc: Computer Engineering
A.y.	2015/16
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management
Course	Object Oriented Programming, BSc: Computer Engineering (english)
Course	Visualizzazione dell'Informazione Quantitative, BSc: Computer Engineering
Course	Empirical Methods in Software Engineering, PhD: Control and Computer Engineering
A.y.	2014/15
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management
Course	Object Oriented Programming, BSc: Computer Engineering (english)
Course	Empirical Methods in Software Engineering, PhD: Control and Computer Engineering
A.y.	2013/14
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management
Course	Object Oriented Programming, BSc: Computer Engineering (inglese)
Course	Programmazione, Master: Ingegneria dei Dati
Course	Empirical Methods in Software Engineering, PhD: Control and Computer Engineering
A.y.	2012/13
Course	Sistemi Informativi Aziendali, MSc: Engineering and Management
Course	Object Oriented Programming, BSc: Computer Engineering
A.y.	2011/12
Course	Databases, BSc: Electronic and Computer Engineering
Course	Programmazione ad Oggetti, BSc: Ingegneria del Cinema e dei mezzi di comunicazione
Course	Information systems for E-business, Master: E-Business and ICT for Management
Course	Empirical Methods in Software Engineering, PhD: Control and Computer Engineering
A.y.	2010/11
Course	Databases, BSc: Electronic and Computer Engineering
Course	Ingegneria del Software, BSc: Ingegneria dell'organizzazione d'impresa
Course	Information systems for e-business, Master: E-Business and ICT for Management
Course	Empirical Methods in Software Engineering, PhD: Control and Computer Engineering
A.y.	2009/10
Course	Basi di Dati, BSc: Ingegneria Elettronica
Course	Ingegneria del Software, BSc: Ingegneria dell'organizzazione d'impresa
Course	Information systems for e-business, Master: E-Business and ICT for Management
Course	Tecniche Avanzate di Sviluppo del Software, PhD: Control and Computer Engineering
A.y.	2008/09
Course	Basi di Dati, BSc: Ingegneria Elettronica
Course	Programmazione ad Oggetti, BSc: Ingegneria Elettronica

Course	Computer Sciences: BSc: Nanotecnologie per le ICT
Course	Information systems for e-business, Master: E-Business and ICT for Management
Course	Tecniche Avanzate di Sviluppo del Software, PhD: Control and Computer Engineering
A.y.	2007/08
Course	Basi di Dati, BSc: Ingegneria Elettronica
Course	Computer Sciences: BSc: Nanotecnologie per le ICT
Course	Information systems for e-business, Master: E-Business and ICT for Management
Course	Tecniche Avanzate di Sviluppo del Software, PhD: Control and Computer Engineering
A.y.	2006/07
Course	Basi di Dati, BSc: Ingegneria Elettronica
Course	Computer Sciences: BSc: Nanotecnologie per le ICT
Course	Information systems for e-business, Master: E-Business and ICT for Management
Course	Tecniche Avanzate di Sviluppo del Software, PhD: Control and Computer Engineering
A.y.	2005/06
Course	Complementi di Informatica, Master: Embedded Systems
Course	Tecniche Avanzate di Sviluppo del Software, PhD: Control and Computer Engineering
A.y.	2004/05
Course	Tecniche Avanzate di Sviluppo del Software, PhD: Control and Computer Engineering

Alumni

Co-Supervised Ph.D.	Tommaso Fulcini, 2021 –
Co-Supervised Ph.D.	Mariachiara Mecati, 2019 –
Supervised Ph.D.	Rifat, Rashid, 2014 – 2018
Supervised Ph.D.	Federico Tomassetti, 2010–2014
Co-Supervised Ph.D.	Antonio Vetro', 2009–2013
Co-Supervised Ph.D.	Evgenia Egorova, 2006–2010
Supervised M.Sc.	Since 2004, supervised 85 Master students, distributed along the years as follows



Invited Talks

Invited talk	“Data quality: standards and application to open-data”, Brunel University, (UK) 21 February, 2018
Invited talk	“Power Trace Analysis”, Polytechnique Montreal, (Canada) 30 August, 2016

Invited talk	“Relevance, Benefits, and Barriers of Software Modelling and Model Driven Techniques” Chalmers University, (Sweden) February 23, 2016
Invited talk	“Relevance, Benefits, and Problems of Software Modelling and Model Driven Techniques” Norwegian University of Science and Technology (NTNU), (Norway) April 9, 2015
Invited talk	“Visualization of research results: fundamentals and main issues” Technical University of Munich (TUM), (Germany) December 4, 2014
Invited talk	“Software Engineering Surveys – Taking a Snapshot of Software Development” University of Western Ontario, (Canada) July 31, 2014
Invited talk	“Relevance, Benefits, and Problems of Software Modelling and Model Driven Techniques” Universitat Politècnica de Catalunya (UPC), (Spain) April 19, 2013
Seminar	“Conducting Systematic Literature Reviews in Software Engineering”, KU Leuven, (Belgium), 17-19 April, 2012
Invited talk	“On the Effectiveness of Screen Mockups in Enhancing Use Cases” Università di Genova, (Italy) February 23, 2010

Scientific activity

Principal Investigator	METAMORPHOS (2007-2009) - MEthods and Tools for migrAting software systeMs towards web and service Oriented aRchitectures: exPerimental evaluation, usability, and techNology transfer - National Grant PRIN 2006, Manager of the Politecnico di Torino research unit. Local unit grant: 63 K€
Project management	WISE Wireless Internet Software Engineering - EC IST-FP5 (2001-2004), Work Package Leader
Project management	ESERNET Empirical Software Engineering Research Network: EC IST-FP5 (2001-2003), Deputy Member of the Executive Management Board
Project participation	ASPIRE (2013-2016) - EC IST-FP7
Project participation	MECHEXP (2012-2014) - Regional Innovation Groups
Project participation	MoMa (2009-2012) - Intelligent HUB for Mobile Mash-up over IP, POR FESR 2007/2013
Project participation	CAL-XBS (2009-2011) - Common Application Layer - Extended Banking System, POR FESR 2007/2013
Project participation	WISE (2001-2004) - Wireless Internet Software Engineering, EC IST-FP5
Project participation	ESERNET (2001-2003) - Empirical Software Engineering Research Network, EC IST-FP5
Project participation	INCO (2001-2003) - Incremental and Component Based Development, Norwegian Research Council
Project participation	ECUA (2000-2002) - European COTS Working Group, EC IST-FP5

Technology Transfer

Scientific Advisor	Synapta s.r.l. since November 2016 to present
Consulting	December 2019 - March 2020: Support for technical presentation of information systems, Aditus s.r.l.
Training	November 2017: Distribute application development and REST technology, CONSOB
Consulting	June 2015 - June 2016: Testing and IT Management, Gruppo Torinese Trasporti (GTT)

Training	February 2015: Introduction to Agile Software Development Practices, Fiat-Chrysler Automotive (FCA)
Research	September 2014 - July 2015: Model-Driven System Architectures, Magneti Marelli (MM)
Research	July 2013 - June 2014: Static Code Analysis Assessment and Improvement, Reale Mutua Assicurazioni (RMA)
Research	January 2010 - June 2010: Analysis, synthesis, and training on standard processes and techniques for testing and defect management of application software, Dylog S.p.A.
Training	December 2009: Standard processes and techniques for testing and defect management, Dylog S.p.A.

Software

OSS	' <i>effsize</i> ' package for the R Statistical Package. The package contains functions to compute effect sizes both based on means difference (Cohen's <i>d</i> and Hedges <i>g</i>), dominance matrices (Cliff's Delta) and stochastic superiority (Vargha and Delaney <i>A</i>). The package was released on July 2013, and received over 77 000 downloads during year 2020.
OSS	' <i>ImPerm</i> ' package for the R Statistical Package. (Maintainer since 2016) The package contains the functions to linear model permutation testing, a non-parametric alternative to ANOVA. The package received over 17 000 downloads during year 2020.

Professional Activities

Technical Committee	Member of the Technical Committee UNINFO CT504 - Software Engineering, that represents Italy in ISO/IEC JTC1/SC 7 - Software and System Engineering
Editorial board	Empirical Software Engineering Journal, since June 2021
Editorial board	IEEE Software, since April 2015
Chair	22nd International Conference on Product-Focused Software Process Improvement (PROFES), 2021 - Program Co-Chair
Chair	21st International Conference on Product-Focused Software Process Improvement (PROFES), 2020 - Program Co-Chair
Chair	24th International Conference on Evaluation and Assessment in Software Engineering (EASE), 2020 - Vision and Emerging Results Program Co-Chair
Chair	11th ACM / IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM) ³ , 2017 - Short Papers Program Co-Chair
Chair	8th ACM / IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM) ⁴ , 2014 - Program Co-Chair
Chair	EmpiRE(Wksp on Empirical Requirements Engineering), 2011 - Organizing Committee Member
Chair	Int. Wksp. on Empirical Studies in Reverse Engineering (WESRE), 2006 - Chair
Chair	Int. Wksp. on COTS Terminology and Categories 2004 - Co-Chair

³ESEM is a tier A international conference according to the CORE classification (<http://core.edu.au>)

⁴ESEM is a tier A international conference according to the CORE classification (<http://core.edu.au>)

Program committee	ESEM(Int. Sym. on Empirical Software Engineering and Measurement), 2010, 2012-2014, 2016-2022: PC Member
Program committee	ICSE(Int. Conference on Software Engineering) - New Ideas and Emerging Results track: PC Member, 2021
Program committee	EASE(Int. Conf. on Empirical Assessment in Software Engineering) ⁵ , 2012 through 2017: PC Member
Program committee	PROFES(Int. Conf. on Product-Focused Software Development and Process Improvement)2013 through 2018: PC Member
Program committee	XP(Int. Conf. on Agile Software Development), 2010-2014: PC Member
Program committee	CESI(Int. Wksp. on Conducting Empirical Studies in the Industry), 2013-15: PC Member
Program committee	EmpiRE(Wksp on Empirical Requirements Engineering), 2011-2015: Chair(2011), PC Member
Program committee	GREENS(Int. Workshop on Green and Sustainable Software), 2015-2016: PC Member
Program committee	ICSR(Int. Conf. on Software Reuse) ⁶ , 2004, 2013, 2016: PC Member
Program committee	CBSE(Int. Sym. on Component Based Software Engineering) ⁷ 2009-2011: PC Member
Program committee	Eclipse-IT(Italian Workshop on Eclipse Technologies)2008,2011-2012: PC Member
Program committee	EESSMod(Int. Whsp. on Experiences and Empirical Studies in Software Modelling)2011-2012: PC Member
Program committee	ICPC(Int. Conf. on Program Comprehension)2011-2012: PC Member
Program committee	WSE(Int. Sym. on Web Site Evolution)2008-2009: PC Member
Program committee	ICCBSS(Int.Conf. on COTS Based Software Systems)2003-2008: PC Member
Program committee	CASCON(Int.Conf. Centre for Advanced Studies Research)2005-2008: PC Member
Program committee	MPEC(Int. Wksp. on Models and Processes for the Evaluation of COTS)2004-2005: PC Member
Reviewer	IEEE Software, IEEE Computer, IEEE Transactions on Software Engineering, Information and Software Technology (Elsevier), Journal of System and Software (Elsevier), Empirical Software Engineering Journal (Springer), Software Quality Journal (Springer), IET Software, IEEE Transactions on Education, Int. Journal of Software Engineering and Knowledge Engineering, The Computer Journal, Journal of Web Engineering
Other activities	Reviewer for National PRIN Programme, 2007

Collaborations

Internazionale	Prof. Daniel Mendes, Blekinge Institute of Technology (BTH), Sweden, on research methods.
International	Soccer-lab group, Montreal, Canada, lead by Prof. Giulio Antoniol, on Software Energy consumption.
International	University of East London, Paolo Falcarin, on source code obfuscation
National	Università di Genova, Filippo Ricca, on UML diagram comprehension, Test-Driven Development, source code obfuscation, and requirement notation comprehension
National	Fondazione Bruno Kessler (ex IRST), Paolo Tonella on UML diagram comprehension, Test-Driven Development, source code obfuscation
National	Università della Basilicata, Giuseppe Scanniello, on requirement notation comprehension

⁵EASE is a tier A international conference according to the CORE classification (<http://core.edu.au>)

⁶ICSR is a tier A international conference according to the CORE classification (<http://core.edu.au>)

⁷CBSE is a tier A international conference according to the CORE classification (<http://core.edu.au>)

International	Software Engineering group at IDI - NTNU, Trondheim, Norway, lead by Prof. Reidar Conradi and Prof. Letizia Jaccheri, on Off-The-Shelf software development methods.
International	Hakan Erdogmus, Carnegie-Mellon University. (previously Kalemun Research Inc. and CNR-CNRC, Ottawa, Canada) on Test-Driven Development
International	GESSI group at UPC Barcelona, Spagna, led by Prof. Xavier Franch on the topics concerning Off-The-Shelf Components based development.
National	Università di Salerno, Prof. Andrea de Lucia, on software systems migration
National	Università di Bari, Prof. Filippo Lanubile, on software systems migration
National	Università del Sannio, Prof. Massimiliano Di Penta, on UML diagram comprehension, Test-Driven Development, source code obfuscation, and software systems migration
National	Università di Bergamo, Davide Brugali, object oriented development education

Research

Software development in modern settings cannot be limited to just writing code. The complexity of software applications requires, among other, abstract software models, agile processes, testing, component-based approaches, and data quality.

Within the broader area of Software Engineering I conducted research on:

- Model-Driven Software Engineering including both Model-Driven Development (MDD) and Software Modeling Notations;
- Development methods based on Off-The-Shelf (OTS) software components;
- Agile software development practices, particularly on test-driven techniques;
- Testing of mobile applications UI;
- Data quality;
- Code obfuscation;
- Green software;
- Software project management.

When facing the research topics of software engineering, three main research approaches can be identified: theoretical, engineering, and empirical.

The theoretical approach aims at developing new computational models, languages, and notations. The engineering one has the goal of developing tools and techniques to solve practical problems by means of existing technology and available knowledge. Eventually the empirical approach attempts to assess, as objectively as possible, the tools, techniques, and methods used to develop software; it is based on the scientific method of hypothesis formulation and their verification and confutation.

As far as I am concerned, during the initial year of my research activity I adopted an engineering approach, then I progressively embraced an empirical approach.

Such activity gave rise to 150 publications on international journals, conferences, and books.

Topic

Model-Driven Engineering

The possibility of developing software starting from an abstract model has been a promising path for several years. Currently the Model Driven Architecture (MDA) from OMG represents the reference standard. Before such standardization several different approaches and paradigms were investigated. One approach was investigated during my PhD studies.

The focus of the initial research has been on the development of an operational modeling environment based on colored Petri Nets [6, 2, 1, 11, 5, 4]. The modeling tools has been applied to business process modeling, simulation, and web application generation [9, 24, 10, 15].

The development of business models showed the need for using instance models in addition to the most common class models. We developed a proposal for the construction and management of such instance models and we developed the relative supporting tools [23, 20, 8].

The emergence of technologies supporting the definition and management of Domain Specific Languages (DSL) enables the automated code generation for complex software frameworks. We conducted an industrial case study and reported the lessons learned [83, 108].

The increasing industrial interests in MDD techniques prompted us to conduct a industrial survey on the state-of-the-practice of MDD development [112, 101, 102, 96]. As a parallel research thread we conducted a few studies to assess the effect of UML models on maintainability [89, 145].

Topic

Software Modeling Notations

Since its introduction in 1996, the Unified Modeling Language (UML) gained wide adoption also thanks to the standardization by OMG. The main diagram used in UML is the class diagram, though special cases demand for the adoption of other kinds of diagrams, namely instance diagrams. An initial experiment with later follow-ups show how such object models significantly improve the comprehension of software systems [88, 31].

Several extension to UML have been proposed for modeling web applications, e.g. the Web Application Extension (WAE) is a widely known notation. We conducted a family of experiments aimed at assessing the effect of such notations on the software comprehension. One surprising effect is an inverse interaction with experience: the most expert maintainers benefit less from the availability of such models. In practice the complexity of the notation (and the relative cognitive burden) seem to limit the capability of retrieving useful information that an expert can most easily and quickly find directly in the source code [80, 53, 54, 51].

Topic

Development with Components Off-The-Shelf

The need for cost reduction in software development brought, since the beginning of the '90s, to a rush in the adopt not Off-The-Shelf (OTS) components, led by the US DoD.

As with several other "hypes", the related literature was extremely varied. This motivated us to work first on the identification of the actual meaning of OTS; it immediately appeared the methods and problems were specific so distinct sub-categories of OTS [27, 18]. Later on we classified the OTS components with the goal of selection [17, 21]. Such and activity requires to explicitly take into account the OTS-based systems architecture in the early development phases [29].

In the selection process the attributes used to describe the OTS play a major role, therefore we focused on how they can be used for different assessment task and for building taxonomies of components [37, 26, 25, 22].

The limited industrial adoption of the academic methods, prompted us to study closed the industrial state-of-the-practice concerning OTS based development. An initial study based on a few interviews with companies led us to the identification of some thesis on OTS based development[33]. That study was the starting point for a larger European-wide investigation [49, 48, 41, 39, 40]. The final result of this activity consists in a risk mitigation model for OTS-bases software projects [61]. In addition we took a snapshot of how the European software industry typically conducts such projects and we identified some open questions [71, 38].

Topic	<p>Test-Driven Development and Agile Development</p> <p>Test-Driven Development (TDD) is a development practice – first introduced in eXtreme Programming (XP) – that shifts the focus from the pure implementation of production code to the definition of automated tests. Instead of first writing the code and then writing the relative tests, TDD prescribes of first writing the automated test code and then proceed with the implementation of the code that satisfies the tests. Originally conceived at the unit level – using the JUnit framework – it has been applied also at system and acceptance level – e.g. using the FIT tool –.</p> <p>We conducted one of the first controlled experiments to assess the quality and productivity achievable by means of TDD. The experiment revealed an indirect effect of applying TDD on the quality of the produced code independently from the skill of the developers and other possible factors [36].</p> <p>TDD advocates say that “tests speak”, that is they also play the role of documentation that is very detailed and always up-to-date, as such they ease the maintenance of the production code. We designed and conducted a series of experiments to assess this feature; in particular we used FIT: an environment to write executable acceptance tests. This investigation showed that the presence of acceptance tests improves the comprehension and maintenance of code, without any additional effort; such effect is visible for different levels of skill and experience of the maintainers [73, 65, 62, 63, 64, 56, 59].</p> <p>In agile methods, a widely used technique is Use Cases. UC are a mainly textual notation, which can be extended – in later stages of development – with user interface mockups. We conducted a series of experiments to evaluate the contribution that screen mockups provide to the comprehension of requirements [82, 81, 115, 152, 151, 153].</p>
Topic	<p>Mobile UI Testing</p> <p>Two very relevant features of mobile UIs (even more than web UIs) are the wide variety of devices they are expected to (smoothly) run on and the quick pace of (possibly minor and cosmetic) updates they undergo. They are the main causes of the <i>fragility</i> of automated UI test suites: they break with a minor UI update or when running on a different devices. We analyzed and characterized the phenomenon of UI test fragility for Android apps [125, 132, 131, 141, 151].</p> <p>A possible solution to mitigate the fragility of UI tests is represented by the concurrent use of structural and visual tests [142, 147, 158, 161, 162, 163].</p>
Topic	<p>Data Quality</p> <p>We investigated the issue of data quality assessment focusing on open-data. A research line was dedicated to define and apply a quality measurement framework to Open Government Data (OGD) and to investigate the link between data quality and different categories of data management processes [113, 128].</p> <p>A second line of research, within this topic, focused on the data quality of semantic knowledge bases. In particular we defined a high-scalable schema agnostic approach to quality assessment and as main novelty we focused on evolution in time of the knowledge bases [126, 134, 138, 143, 155].</p> <p>A more recent thread focuses on the relationship between data quality (in particular balance) and the fairness of the Automated Decision Making (ADM) systems based on such data. We observed a link between the imbalance of the data and the risk of ADM bias [159, 165, 166].</p>
Topic	<p>Code Obfuscation</p> <p>This research activity is the result of a large collaboration involving several replicated studies across different research organizations. The initial series of articles [60, 67, 114] represent the first empirical study to evaluate the effectiveness of source code obfuscation techniques with hackers.</p> <p>A follow-up series of studies, conducted in the context of the EU project ASPIRE, aimed at providing empirical evidence about effectiveness of obfuscation techniques [129, 130, 149, 160]. This work obtained the best paper award at the ICPC 2017 conference [130].</p>

Topic **Green Software**
While hardware is directly responsible for energy consumption, it is software that drives that consumption: the more computations are required the higher the consumption.
We conducted several investigations aimed at understanding which features in a software application cause most energy consumption. [104, 122, 105, 121].
In addition we worked on the definition of frameworks to monitor and collect energy consumption [79, 139].
We summarized our (partial) experience in an overview article [120] and provided a set of guidelines and tool [148, 157].

Topic **Software Project Management**
An important branch of software engineering focuses on the management of software projects, which exhibit peculiar trends not found in other kinds of projects.
We conducted an investigation on the success factors of software projects, in particular we identified a divergence between the recommendations available in the literature the the beliefs present in the industry [78, 69, 70].
The fundamental role of the human factor and the criticality of the maintenance phase in the software life-cycle indicate that team members turn-over is an important factor affecting project fragility. The *Truck Factor* is simple and intuitive indicator of project fragility. We studied the fragility of several different open source project using the truck-factor indicator [95, 90].
An critical maintenance activity consists in the migration of software application towards new platforms. Such activity has been investigated in the METAMORPHOS project. We conducted a large scale industrial survey to identify the state-of-the-practice in software migration projects [77, 93, 84, 68, 66].

Other topics
Kotlin language: [150, 156]
Software Polyglotism: [103, 109, 118, 117]
Defect density: defining benchmarks[100, 116, 107, 99] and comparing desktop vs. web applications [94, 75].
Static analysis [98, 97, 87];
Wireless services development [44, 43, 47].
Software Implemented Hardware Fault-Tolerance [16, 12, 7].
Software engineering education: [74, 146]

Appendix

Publication List

Last update: December 21, 2022

Publication list

- [1] R. Agarwal, G. Bruno, M. Torchiano.
Static, dynamic and run-time modeling of compound classes.
ACM SIGPLAN NOTICES, 31(11): pp. 49–55, ACM, New York, NY, USA. 1996.
doi: 10.1145/240964.240975.
- [2] R. Agarwal, G. Bruno, M. Torchiano.
Developing operational models using O3ML.
COMPUTER SCIENCE AND INFORMATICS, 27: pp. 1–11. 1997.
- [3] G. Bruno, C. Reyneri, M. Torchiano.
Enterprise integration: operational models of business processes and workflow systems.
In *Proc. ICEIMT'97 Int. Conf. on Enterprise Integration and Modeling Techniques.* 1997.
- [4] R. Agarwal, G. Bruno, M. Torchiano.
Modeling complex systems: Class models and instance models.
In *Proc. 2nd Int. Conf. on Information Technology (CIT'99)*, pp. 1–6. 1999.
- [5] R. Agarwal, G. Bruno, M. Torchiano.
Object-oriented architectural support for developing complex systems.
In *Proc. IEEE 23rd Annual Int. Computer Software and Applications Conf. (COMPSAC'99)*, pp. 259–264. IEEE, Los Alamitos, CA, United States. 1999.
doi: 10.1109/COMPSAC.1999.812713.
- [6] G. Bruno, M. Torchiano.
Making cimosa operational: the experience with the primeobjects tool.
COMPUTERS IN INDUSTRY, 40(2): pp. 279–291, Elsevier Science Publishers B.V., Amsterdam. 1999.
doi: 10.1016/S0166-3615(99)00031-7.
- [7] M. Rebaudengo, M. Sonza Reorda, M. Torchiano, M. Violante.
Soft-error detection through software fault-tolerance techniques.
In *Proc. IEEE Int. Symposium on Defect and Fault Tolerance in VLSI Systems (DFT'99)*, pp. 210–218. Albuquerque, NM, USA, IEEE, USA. 1999.
doi: 10.1109/DFTVS.1999.802887.
- [8] R. Agarwal, G. Bruno, M. Torchiano.
Enterprise modeling using class models and instance models.
In *Proc. IEEE 7th Asia-Pacific Software Engineering Conference (APSEC 2000)*, pp. 336–343. IEEE Computer Society, USA. January 2000.
doi: 10.1109/APSEC.2000.896717.
- [9] R. Agarwal, G. Bruno, M. Torchiano.
An operational approach to the design of workflow systems.
INFORMATION AND SOFTWARE TECHNOLOGY, 42(8): pp. 547–555, Elsevier Sci B.V., Amsterdam. 2000.
doi: 10.1016/S0950-5849(00)00096-3.
- [10] G. Bruno, M. Torchiano.
Process enabled information systems.
In *Proc. 2nd Int. Conf. on Enterprise Information Systems (ICEIS 2000)*, pp. 32–37. 2000.
- [11] G. Bruno, M. Torchiano, R. Agarwal.
Instance modeling – beyond object-oriented modeling.
In *Proc. 3rd Int. Conference on Information Technology (CIT 2000)*, pp. 196–201. 2000.
- [12] M. Rebaudengo, M. Sonza Reorda, M. Torchiano, M. Violante.
An experimental evaluation of the effectiveness of automatic rule-based transformations for safety-critical applications.
In *IEEE International Symposium on Defect and Fault Tolerance in VLSI Systems*, pp. 257–265. IEEE, Los Alamitos (CA) USA. 2000.
doi: 10.1109/DFTVS.2000.887164.
- [13] G. Bruno, M. Torchiano.
Developing instance model based applications.
In *Proc. 8th IEEE International Conference and Workshop on the Engineering of Computer Based Systems*, pp. 214–221. IEEE Computer Society. 2001.
doi: 10.1109/ECBS.2001.922425.
- [14] G. Bruno, M. Torchiano.
Object model for model based applications.
In S. B. P. J. A., ed., *Proc. 3rd Int. Conf. on Enterprise Information Systems (ICEIS2001)*, pp. 104–109. ICEIS Press. 2001.
ISBN 9729805024.

- [15] G. Bruno, M. Torchiano.
Process enabled information systems.
In *Enterprise Information Systems II*, pp. 30–35. Kluwer Academic Publishers, Dordrecht, Netherlands. 2001.
ISBN 978-94-017-1427-3.
- [16] M. Rebaudengo, M. Sonza Reorda, M. Torchiano, M. Violante.
A source-to-source compiler for generating dependable software.
In *Proc. First IEEE International Workshop on Source Code Analysis and Manipulation, SCAM*, pp. 33–42. IEEE, Los Alamitos (CA) USA. 2001.
doi: 10.1109/SCAM.2001.972664.
- [17] L. Jaccheri, M. Torchiano.
Classifying COTS products.
In *Software Quality - ECSQ 2002*, pp. 246–255. Number 2349 in LNCS, Springer Verlag, Germany. 2002.
doi: 10.1007/3-540-47984-8_28.
- [18] M. Morisio, M. Torchiano.
Definition and classification of COTS: a proposal.
In *COTS-Based Software Systems, ICCBSS 2002*, pp. 165–175. Springer Verlag, Germany. 2002.
doi: 10.1007/3-540-45588-4_16.
- [19] M. Torchiano.
Documenting pattern use in java programs.
In *Proc. IEEE International Conference on Software Maintenance (ICSM 2002)*, pp. 230–233. IEEE Computer Society, USA. 2002.
doi: 10.1109/ICSM.2002.1167770.
- [20] M. Torchiano, G. Bruno.
Domain-specific instance models in UML.
In *CAISE 2002: Advanced Information Systems Engineering, LNCS*, volume 2348, pp. 774–777. Springer Verlag, Germany. 2002.
doi: 10.1007/3-540-47961-9_65.
- [21] M. Torchiano, L. Jaccheri, C. F. Sorensen, A. I. Wang.
COTS products characterization.
In *Proc. Int. Conference on Software Engineering and Knowledge Engineering (SEKE'02)*, pp. 335–338. ACM, New York, NY, USA. 2002.
doi: 10.1145/568760.568819.
- [22] A. Bianchi, D. Caivano, R. Conradi, L. Jaccheri, M. Torchiano, G. Visaggio.
COTS products characterization: Proposal and empirical assessment.
In *Empirical Methods and Studies in Software Engineering, LNCS*, volume 2765, pp. 233–255. Springer Verlag, Germany. 2003.
doi: 10.1007/978-3-540-45143-3_13.
- [23] M. Torchiano, G. Bruno.
Enterprise modeling by means of UML instance models.
SOFTWARE ENGINEERING NOTES, 28(2): pp. 12–12, ACM, New York, NY, USA. 2003.
doi: 10.1145/638750.638784.
- [24] M. Torchiano, G. Bruno, R. Agarwal.
MODRIS: A tool for model-driven development of information systems.
In *Proc. 6th Int. Conf. on Information Technology (CIT'03)*, pp. 1–10. 2003.
- [25] M. Torchiano, L. Jaccheri.
Assessment of reusable COTS attributes.
In *Proc. 2nd International Conference on COTS Based Software Systems (ICCBBS), LNCS*, volume 2580, pp. 219–228. Springer Verlag, Germany. 2003.
doi: 10.1007/3-540-36465-X_21.
- [26] J. P. Carvallo, X. Franch, C. Quer, M. Torchiano.
Characterization of a taxonomy for business applications and the relationships among them.
In *Proc. Third International Conference on COTS Based Software Systems (ICCBBS), LNCS*, volume 2959, pp. 221–231. Springer Verlag, Germany. 2004.
doi: 10.1007/978-3-540-24645-9_38.
- [27] B. Clark, M. Torchiano.
COTS terminology and categories: Can we reach a consensus?
In *Proc. Third International Conference, ICCBSS 2004, LNCS*, volume 2959, pp. 4–5. Springer Verlag, Germany. 2004.
doi: 10.1007/978-3-540-24645-9_4.

- [28] P. Falcarin, M. Torchiano.
Automatic scenario model extraction with aop.
In *Workshop on AOP*. 2004.
- [29] L. Jaccheri, M. Torchiano.
Integrating architecture and familiarization in cbd processes.
In *Proc. Int. Worksh. on Models and Processes for the Evaluation of COTS Components (MPEC)*, pp. 53–56. 2004.
- [30] M. Morisio, M. Torchiano, G. Argentieri.
Assessing quantitatively a programming course.
In *Proc. 10th International Symposium on Software Metrics, 2004*, pp. 326–336. IEEE, Los Alamitos (CA) USA. 2004.
doi: 10.1109/METRIC.2004.1357918.
- [31] M. Torchiano.
Empirical assessment of UML static object diagrams.
In *Proc. 12th IEEE International Workshops on Program Comprehension, IWPC 2004*, pp. 226–230. IEEE, Los Alamitos, CA, United States. 2004.
doi: 10.1109/WPC.2004.1311064.
- [32] M. Torchiano.
Empirical investigation of a non-intrusive approach to study comprehension cognitive models.
In *Proc. 8th IEEE European Conference on Software Maintenance and Reengineering (CSMR)*, pp. 184–192. IEEE Computer Society, USA. 2004.
doi: 10.1109/CSMR.2004.1281419.
- [33] M. Torchiano, M. Maurizio.
Overlooked aspects of COTS-based development.
IEEE SOFTWARE, 21(2): pp. 88–93, IEEE, Los Alamitos (CA) USA. 2004.
doi: 10.1109/MS.2004.1270770.
- [34] D. Brugali, M. Torchiano.
Software Development - Case Studies in Java.
Pearson Education Limited, Harlow, UK. 2005.
ISBN 9780321117830.
- [35] R. Conradi, J. Li, O. P. N. Slyngstad, V. B. Kampenes, C. Bunse, M. Morisio, M. Torchiano.
Reflections on conducting an international survey of software engineering.
In *4th IEEE International Symposium on Empirical Software Engineering (ISESE 2005)*, pp. 214–223. IEEE Computer Society, USA. 2005.
doi: 10.1109/ISESE.2005.1541830.
- [36] H. Erdogmus, M. Maurizio, M. Torchiano.
On the effectiveness of the test first approach to programming.
IEEE TRANSACTIONS ON SOFTWARE ENGINEERING, 31(3): pp. 226–237, IEEE Computer Society, USA. 2005.
doi: 10.1109/TSE.2005.37.
- [37] X. Franch, M. Torchiano.
Towards a reference framework for COTS-based development: a proposal.
SOFTWARE ENGINEERING NOTES, 30(4): pp. 1–4, ACM, New York, NY, USA. 2005.
doi: 10.1145/1082983.1082952.
- [38] J. Li, R. Conradi, O. P. N. Slyngstad, C. Bunse, U. Khan, M. Morisio, M. Torchiano.
Barriers to disseminating off-the-shelf based development theories to it industry.
SOFTWARE ENGINEERING NOTES, 30(4): pp. 1–4, ACM, New York, NY, USA. 2005.
doi: 10.1145/1082983.1082953.
- [39] J. Li, R. Conradi, O. P. N. Slyngstad, C. Bunse, U. Khan, M. Torchiano, M. Morisio.
Validation of new theses on off-the-shelf component based development.
In *Proc. 11th IEEE International Software Metrics Symposium (METRICS'05)*, pp. 26–35. IEEE Computer Society. 2005.
doi: 10.1109/METRICS.2005.53.
- [40] J. Li, R. Conradi, O. P. N. Slyngstad, C. Bunse, M. Torchiano, M. Morisio.
An empirical study on off-the-shelf component usage in industrial projects.
In *Proc. 6th International Conference on Product Focused Software Process Improvement, PROFES 2005, LNCS*, volume 3547, pp. 54–68. Springer Verlag, Germany. 2005.
doi: 10.1007/11497455_7.
- [41] J. Li, R. Conradi, O. P. N. Slyngstad, M. Torchiano, M. Morisio, C. Bunse.
Preliminary results from a state-of-the-practice survey on risk management in off-the-shelf component-based development.

- In *Proc. 4th International Conference on COTS-Based Software Systems, ICCBSS 2005*, pp. 278–288. Springer, 2005.
doi: 10.1007/978-3-540-30587-3_37.
- [42] M. Torchiano, F. Ricca, P. Tonella.
A comparative study on the re-documentation of existing software: Code annotations vs. drawing editors.
In *Proc 4th IEEE International Symposium on Empirical Software Engineering (ISESE)*, pp. 1–10. IEEE Computer Society, USA. 2005.
doi: 10.1109/ISESE.2005.1541836.
- [43] F. Bella, F. Forchino, J. Kalaoja, J. Munch, A. Ocampo, M. Negro Ponzi, M. Torchiano.
Pilot projects.
In M. Morisio, M. Torchiano, eds., *Developing Services for the Wireless Internet*, pp. 131–156. Springer Verlag, Germany. 2006.
ISBN 978-1-84628-589-9.
doi: 10.1007/978-1-84628-589-9.
- [44] F. Bella, T. Ihme, J. Kalaoja, P. Kallio, M. Negro Ponzi, A. Ocampo, A. Tikkala, M. Torchiano.
WISE experience pearls.
In M. Morisio, M. Torchiano, eds., *Developing Services for the Wireless Internet*, pp. 100–130. Springer Verlag, Germany. 2006.
ISBN 978-1-84628-589-9.
doi: 10.1007/978-1-84628-589-9.
- [45] P. Falcarin, M. Torchiano.
Automated reasoning on aspects interactions.
In *Proceedings of International Conference on Automated Software Engineering*, pp. 313–316. IEEE, LOS ALAMITOS. 2006.
doi: 10.1109/ASE.2006.19.
- [46] P. Falcarin, M. Torchiano.
A dynamic analysis tool for extracting UML 2 sequence diagrams.
In *Proceedings of International Conference on Software and Data Technologies (ICSOFT-06)*. INSTICC. 2006.
- [47] J. Kalaoja, T. Ihme, P. Lago, E. Niemela, M. Torchiano.
Software architecture of wireless services.
In M. Morisio, M. Torchiano, eds., *Developing Services for the Wireless Internet*, pp. 70–99. Springer. 2006.
ISBN 978-1-84628-031-3.
doi: 10.1007/978-1-84628-589-9.
- [48] J. Li, R. Conradi, O. P. N. Slyngstad, C. Bunse, M. Torchiano, M. Morisio.
An empirical study on decision making in off-the-shelf component-based development.
In *Proceedings of the 28th international conference on Software engineering, ICSE'06*, volume 2006, pp. 897–900. ACM, New York, NY, USA. 2006.
doi: 10.1145/1134285.1134446.
- [49] J. Li, M. Torchiano, R. Conradi, O. P. N. Slyngstad, C. Bunse.
A state-of-the-practice survey of off-the-shelf component-based development processes.
In *Reuse of Off-the-Shelf Components (ICSR 2006)*, LNCS, volume 4039, pp. 16–28. Springer Verlag, Germany. 2006.
doi: 10.1007/11763864_2.
- [50] M. Maurizio, M. Torchiano, eds.
Developing Services for the Wireless Internet.
Springer Verlag, Germany. 2006.
ISBN 978-1-84628-589-9.
doi: 10.1007/978-1-84628-589-9.
- [51] F. Ricca, M. Di Penta, M. Torchiano, P. Tonella, M. Ceccato.
An empirical study on the usefulness of conallen's stereotypes in web application comprehension.
In *Proceedings of the Eighth IEEE International Symposium on Web Site Evolution, WSE 2006*, pp. 58–68. IEEE, Los Alamitos (CA) USA. 2006.
doi: 10.1109/WSE.2006.3.
- [52] M. Torchiano.
Empirical studies in reverse engineering.
In *13th Working Conference on Reverse Engineering*, pp. 314–314. IEEE Computer Society, USA. 2006.
doi: 10.1109/WCRE.2006.25.
- [53] F. Ricca, M. Di Penta, M. Torchiano, P. Tonella, M. Ceccato.
How design notations affect the comprehension of web applications.

JOURNAL OF SOFTWARE MAINTENANCE AND EVOLUTION-RESEARCH AND PRACTICE, 19(5): pp. 339–359,
John Wiley & Sons, Ltd., UK. 2007.
doi: 10.1002/smr.357.

- [54] F. Ricca, M. Di Penta, M. Torchiano, P. Tonella, M. Ceccato.
The role of experience and ability in comprehension tasks supported by UML stereotypes.
In *Proc. 29th International Conference on Software Engineering, ICSE 2007*, pp. 375–384. IEEE, Los Alamitos (CA) USA. 2007.
doi: 10.1109/ICSE.2007.86.
- [55] F. Ricca, M. Torchiano, M. Ceccato, P. Tonella.
Talking tests: An empirical assessment of the role of fit acceptance tests in clarifying requirements.
In *International Workshop on Principles of Software Evolution (IWPSE)*, pp. 51–58. ACM, New York, NY, USA. 2007.
doi: 10.1145/1294948.1294962.
- [56] F. Ricca, M. Torchiano, M. Di Penta, M. Ceccato, P. Tonella.
Executable fit tables are useful in maintenance tasks?
In *Proc. Third International ERCIM Symposium on Software Evolution*, pp. 1–10. 2007.
- [57] P. Tonella, M. Torchiano, B. Du Bois, T. Systa.
Empirical studies in reverse engineering: State of the art and future trends.
EMPIRICAL SOFTWARE ENGINEERING, 12(5): pp. 551–571, Springer Verlag, Germany. 2007.
doi: 10.1007/s10664-007-9037-5.
- [58] M. Torchiano, F. Ricca, A. De Lucia.
Empirical studies in software maintenance and evolution.
In *Proc. IEEE International Conference on Software Maintenance, 2007 (ICSM 2007)*, pp. 491–494. IEEE, Los Alamitos (CA) USA. 2007.
doi: 10.1109/ICSM.2007.4362666.
- [59] M. Torchiano, F. Ricca, M. Di Penta.
"talking tests": a preliminary experimental study on fit user acceptance tests.
In *Proc. IEEE International Symposium on Empirical Software Engineering and Measurement*, pp. 464–466. IEEE, Los Alamitos (CA) USA. 2007.
doi: 10.1109/ESEM.2007.76.
- [60] M. Ceccato, M. Di Penta, J. Nagra, P. Falcarin, F. Ricca, M. Torchiano, P. Tonella.
Towards experimental evaluation of code obfuscation techniques.
In *Proc. 4th ACM Workshop on Quality of Protection, QoP'08*, pp. 39–46. ACM, New York, NY, USA. 2008.
doi: 10.1145/1456362.1456371.
- [61] J. Li, R. Conradi, O. P. N. Slyngstad, M. Torchiano, M. Morisio, C. Bunse.
A state-of-the-practice survey on risk management in development with off-the-shelf software components.
IEEE TRANSACTIONS ON SOFTWARE ENGINEERING, 34(2): pp. 271–286, IEEE, Los Alamitos (CA) USA. 2008.
doi: 10.1109/TSE.2008.14.
- [62] A. Marchetto, F. Ricca, M. Torchiano.
Comparing "traditional" and web specific fit tables in maintenance tasks: a preliminary empirical study.
In *Proc. IEEE European Conference on Software Maintenance and Reengineering CSMR*, pp. 284–288. IEEE, Los Alamitos (CA) USA. 2008.
doi: 10.1109/CSMR.2008.4493327.
- [63] F. Ricca, M. Di Penta, M. Torchiano.
Guidelines on the use of fit tables in software maintenance tasks: Lessons learned from 8 experiments.
In *Proc. IEEE International Conference on Software Maintenance, ICSM*, pp. 317–326. IEEE, Los Alamitos (CA) USA. 2008.
doi: 10.1109/ICSM.2008.4658080.
- [64] F. Ricca, M. Di Penta, M. Torchiano, P. Tonella, M. Ceccato, C. A. Visaggio.
Are fit tables really talking? a series of experiments to understand whether fit tables are useful during evolution tasks.
In *Proc. IEEE International Conference on Software Engineering*, pp. 361–370. IEEE, Los Alamitos, CA, United States. 2008.
doi: 10.1145/1368088.1368138.
- [65] F. Ricca, M. Torchiano, M. Di Penta, C. Mariano, P. Tonella.
The use of executable FIT tables to support maintenance and evolution tasks.
ELECTRONIC COMMUNICATIONS OF THE EASST, 8: pp. 1–12. 2008.
doi: 10.14279/tuj.eceasst.8.119.116.
- [66] M. Torchiano, M. Di Penta, F. Ricca, A. De Lucia, F. Lanubile.
Software migration projects in italian industry: Preliminary results from a state of the practice survey.

- In *23rd IEEE/ACM International Conference on Automated Software Engineering - Workshops, 2008. ASE Workshops 2008.*, pp. 35–42. IEEE, Los Alamitos (CA) USA. 2008.
doi: 10.1109/ASEW.2008.4686319.
- [67] M. Ceccato, M. Di Penta, J. Nagre, P. Falcarin, F. Ricca, M. Torchiano, P. Tonella.
The effectiveness of source code obfuscation: an experimental assessment.
In *IEEE 17th International Conference on Program Comprehension (ICPC'09)*, pp. 178–187. IEEE, Los Alamitos (CA) USA. 2009.
doi: 10.1109/ICPC.2009.5090041.
- [68] A. De Lucia, M. Di Penta, F. Lanubile, M. Torchiano.
METAMORPHOS: Methods and tools for migrating software systems towards web and service oriented architectures: experimental evaluation, usability, and technology transfer.
In *13th European Conference on Software Maintenance and Reengineering (CSMR '09)*, pp. 301–304. IEEE, Los Alamitos (CA) USA. 2009.
doi: 10.1109/CSMR.2009.38.
- [69] E. Egorova, M. Torchiano, M. Morisio.
Evaluating the perceived effect of software engineering practices in the Italian industry.
In *Trustworthy Software Development Processes*, pp. 100–111. Springer Verlag, Germany. 2009.
doi: 10.1007/978-3-642-01680-6_11.
- [70] E. Egorova, M. Torchiano, M. Morisio.
Stakeholders perception of success: an empirical investigation.
In *Euromicro SEAA 2009*, pp. 210–216. IEEE, Los Alamitos (CA) USA. 2009.
doi: 10.1109/SEAA.2009.33.
- [71] J. Li, R. Conradi, C. Bunse, M. Torchiano, O. P. N. Slyngstad, M. Morisio.
Development with off-the-shelf components: 10 facts.
IEEE SOFTWARE, 26(2): pp. 80–87, IEEE, Los Alamitos (CA) USA. March-April 2009.
doi: 10.1109/MS.2009.33.
- [72] G. Macario, M. Torchiano, M. Violante.
An in-vehicle infotainment software architecture based on Google Android.
In *IEEE Symposium on Industrial Embedded Systems (SIES) 2009*, pp. 257–260. IEEE, Los Alamitos (CA) USA. 2009.
doi: 10.1109/SIES.2009.5196223.
- [73] F. Ricca, M. Torchiano, M. Di Penta, M. Ceccato, P. Tonella.
Using acceptance tests as a support for clarifying requirements: a series of experiments.
INFORMATION AND SOFTWARE TECHNOLOGY, 51(2): pp. 270–283, Elsevier Sci B.V., Amsterdam. 2009.
doi: 10.1016/j.infsof.2008.01.007.
- [74] M. Torchiano, M. Morisio.
A fully automatic approach to the assessment of programming assignments.
INTERNATIONAL JOURNAL OF ENGINEERING EDUCATION, 25(4): pp. 814–829, Dublin Institute of Technology Tempus Publications, UK. 2009.
- [75] M. Torchiano, F. Ricca, A. Marchetto.
Defect location in traditional vs. web applications - an empirical investigation.
In *Web Systems Evolution 2009*, pp. 1–10. IEEE, Los Alamitos (CA) USA. 2009.
doi: 10.1109/WSE.2009.5631245.
- [76] M. Torchiano, A. Sillitti.
TDD = too dumb developers? implications of test-driven development on maintainability and comprehension of software.
In *2009 IEEE 17th International Conference on Program Comprehension*, pp. 280–282. 2009.
doi: 10.1109/ICPC.2009.5090058.
- [77] A. De Lucia, M. Di Penta, F. Lanubile, M. Torchiano.
The project METAMORPHOS: an overview.
In *METAMORPHOS. Methods and Tools for migrating software systems towards web and service oriented architectures: experimental evaluation, usability, and technology transfer*, pp. 9–31. Rubbettino Editore. 2010.
- [78] E. Egorova, M. Torchiano, M. Morisio.
Actual vs. perceived effect of software engineering practices in the Italian industry.
THE JOURNAL OF SYSTEMS AND SOFTWARE, 83(10): pp. 1907–1916, Elsevier Sci B.V., Amsterdam. 2010.
doi: 10.1016/j.jss.2010.05.077.
- [79] M. Morisio, M. Torchiano, A. Vetro'.
Energy profiler framework.
In *Proc. Second International Workshop on Software Research and Climate Change*. 2010.

- [80] F. Ricca, M. Di Penta, M. Torchiano, P. Tonella, M. Ceccato.
How developers' experience and ability influence web application comprehension tasks supported by UML stereotypes: a series of four experiments.
IEEE TRANSACTIONS ON SOFTWARE ENGINEERING, 36(1): pp. 96–118, IEEE, Los Alamitos (CA) USA. 2010.
doi: 10.1109/TSE.2009.69.
- [81] F. Ricca, G. Scanniello, M. Torchiano, G. Reggio, E. Astesiano.
On the effectiveness of screen mockups in requirements engineering: results from an internal replication.
In *Proc. ACM-IEEE International Symposium on Empirical Software Engineering and Measurement, ESEM*, pp. 1–10.
ACM, New York, NY, USA. 2010.
doi: 10.1145/1852786.1852809.
- [82] F. Ricca, G. Scanniello, M. Torchiano, G. Reggio, E. Astesiano.
On the effort of augmenting use cases with screen mockups: Results from a preliminary empirical study.
In *Proc. ACM-IEEE International Symposium on Empirical Software Engineering and Measurement, ESEM*, pp. 1–4.
ACM, New York, NY, USA. 2010.
doi: 10.1145/1852786.1852838.
- [83] F. Tomassetti, M. Torchiano, L. Bazzani.
Applying MDA to complex multi-tier enterprise architectures.
In *Proc. ACM-IEEE International Symposium on Empirical Software Engineering and Measurement, ESEM*, pp. 1–1.
ACM, New York, NY, USA. 2010.
doi: 10.1145/1852786.1852863.
- [84] M. Torchiano, M. Di Penta, F. Ricca, A. De Lucia, F. Lanubile.
Software migration projects in italian industry: a state of the practice survey.
In *METAMORPHOS. MEthods and Tools for migrAting software systeMs towards web and service Oriented aRchi-
tectures: exPerimental evaluation, usability, and techHnOlogy tranSfer*, chapter 2, pp. 33–53. Rubbettino Editore.
2010.
- [85] M. Torchiano, F. Ricca.
Impact analysis by means of unstructured knowledge in the context of bug repositories.
In *Proceedings of the 2010 ACM-IEEE International Symposium on Empirical Software Engineering and Measure-
ment*, pp. 47:1–47:4. ACM, New York, NY, USA. 2010.
doi: 10.1145/1852786.1852847.
- [86] M. Torchiano, F. Ricca, P. Tonella.
Empirical comparison of graphical and annotation-based re-documentation approaches.
IET SOFTWARE, 4(1): pp. 15–31, IET, UK. 2010.
doi: 10.1049/iet-sen.2009.0015.
- [87] A. Vetro', M. Torchiano, M. Morisio.
Assessing the precision of findbugs bymining java projects developed at a university.
In *Mining Software Repositories 2010*, pp. 110–113. IEEE, Los Alamitos (CA) USA. 2010.
doi: 10.1109/MSR.2010.5463283.
- [88] S. Giuseppe, F. Ricca, M. Torchiano.
On the effectiveness of the UML object diagrams: A replicated experiment.
In *EASE 2011: Evaluation and Assessment in Software Engineering*, pp. 76–85. IET, UK. 2011.
doi: 10.1049/ic.2011.0009.
- [89] F. Ricca, M. Leotta, G. Reggio, T. Alessandro, G. Giovanna, M. Torchiano.
Using UniMod for maintenance tasks: an experimental assessment in the context of model driven development.
In *Proc. Workshop on Modeling in Software Engineering (MiSE 2012)*, pp. 77–83. IEEE, Los Alamitos (CA) USA.
2011.
doi: 10.1109/MISE.2012.6226018.
- [90] F. Ricca, A. Marchetto, M. Torchiano.
On the difficulty of computing the truck factor.
In *Proc. 12th International Conference on Product-Focused Software Process Improvement, PROFES 2011, LNCS*,
volume 6759, pp. 337–351. Springer Verlag, Germany. 2011.
doi: 10.1007/978-3-642-21843-9_26.
- [91] F. Tomassetti, G. Rizzo, A. Vetro', L. Ardito, M. Torchiano, M. Morisio.
Linked data approach for selection process automation in systematic reviews.
In *Proc. 15th Annual Conference on Evaluation & Assessment in Software Engineering (EASE 2011)*, pp. 31–35. IET,
UK. 2011.
doi: 10.1049/ic.2011.0004.
- [92] F. Tomassetti, M. Torchiano.
PrEdE: a projectional editor for the eclipse modeling framework.

- In Proc. *The 6th Workshop of the Italian Eclipse Community*, pp. 278–289. 2011.
- [93] M. Torchiano, M. Di Penta, F. Ricca, A. De Lucia, L. Filippo.
Migration of information systems in the italian industry: a state of the practice survey.
INFORMATION AND SOFTWARE TECHNOLOGY, 53(1): pp. 71–86, Elsevier Sci B.V., Amsterdam. 2011.
doi: 10.1016/j.infsof.2010.08.002.
- [94] M. Torchiano, F. Ricca, M. Alessandro.
Are web applications more defect-prone than desktop applications?
INTERNATIONAL JOURNAL ON SOFTWARE TOOLS FOR TECHNOLOGY TRANSFER, 13(2): pp. 151–166,
Springer Verlag, Germany. 2011.
doi: 10.1007/s10009-010-0182-6.
- [95] M. Torchiano, F. Ricca, M. Alessandro.
Is my project's truck factor low? theoretical and empirical considerations about the truck factor threshold.
In Proc. *2nd International Workshop on Emerging Trends in Software Metrics (WETSoM'11)*, pp. 12–18. ACM, New
York, NY, USA. 2011.
doi: 10.1145/1985374.1985379.
- [96] M. Torchiano, F. Tomassetti, F. Ricca, A. Tiso, G. Reggio.
Preliminary findings from a survey on the MD state of the practice.
In *Proceedings of the 2011 International Symposium on Empirical Software Engineering and Measurement (ESEM
'11)*, pp. 372–375. IEEE, Los Alamitos (CA) USA. 2011.
doi: 10.1109/ESEM.2011.51.
- [97] A. Vetro', M. Morisio, M. Torchiano.
An empirical validation of findbugs issues related to defects.
In Proc. *15th Annual Conference on Evaluation & Assessment in Software Engineering (EASE 2011), IET Seminar
Digests*, volume 2011-1, pp. 144–153. IET, UK. 2011.
doi: 10.1049/ic.2011.0018.
- [98] A. Vetro', M. Torchiano, M. Morisio.
Quantitative assessment of the impact of automatic static analysis issues on time efficiency.
In *Informatica Quantitativa 2011*, pp. 1–8. 2011.
- [99] S. M. A. Shah, M. Morisio, M. Torchiano.
The impact of process maturity on defect density.
In Proc. *6th Int. Symposium on Empirical Software Engineering and Measurement*, pp. 315–318. IEEE, Los Alamitos
(CA) USA. 2012.
doi: 10.1145/2372251.2372308.
- [100] S. M. A. Shah, M. Morisio, M. Torchiano.
An overview of software defect density: A scoping study.
In Proc. *19th Asia Pacific Software Engineering Conference*, pp. 406–415. IEEE, Los Alamitos (CA) USA. 2012.
doi: 10.1109/APSEC.2012.93.
- [101] F. Tomassetti, T. Alessandro, F. Ricca, M. Torchiano, G. Reggio.
Maturity of software modelling and model driven engineering: a survey in the italian industry.
In *16th International Conference on Evaluation & Assessment in Software Engineering (EASE 2012)*, pp. 91–100.
IET, UK. 2012.
doi: 10.1049/ic.2012.0012.
- [102] M. Torchiano, F. Tomassetti, F. Ricca, T. Alessandro, G. Reggio.
Benefits from modelling and MDD adoption: expectations and achievements.
In *Proceedings of the Second Edition of the International Workshop on Experiences and Empirical Studies in Software
Modelling*, pp. 1–6. ACM, New York, NY, USA. 2012.
doi: 10.1145/2424563.2424565.
- [103] A. Vetro', F. Tomassetti, M. Torchiano, M. Morisio.
Language interaction and quality issues: An exploratory study.
In *Proceedings of the ACM-IEEE international symposium on Empirical software engineering and measurement
(ESEM '12)*, pp. 319–322. ACM, New York, NY, USA. 2012.
doi: 10.1145/2372251.2372309.
- [104] L. Ardito, G. Procaccianti, M. Torchiano, G. Migliore.
Profiling power consumption on mobile devices.
In Proc. *The Third International Conference on Smart Grids, Green Communications and IT Energy-aware Tech-
nologies (ENERGY 2013)*, volume Proceedings of The Third International Conference on Smart Grids, Green
Communications and IT Energy-aware Technologies, pp. 101–106. IARIA. 2013.
- [105] L. Ardito, M. Torchiano, M. Marengo, P. Falcarin.

- gLCB: An energy aware context broker.*
SUSTAINABLE COMPUTING, 3(1): pp. 18–26, Elsevier Sci B.V., Amsterdam. 2013.
doi: 10.1016/j.suscom.2012.10.005.
- [106] M. Leotta, F. Ricca, M. Torchiano, G. Reggio.
Empirical evaluation of UML-based model-driven techniques.
In *Proc. Seventh International Conference on Research Challenges in Information Science (RCIS)*, pp. 1–2. IEEE, Los Alamitos (CA) USA. 2013.
doi: 10.1109/RCIS.2013.6577735.
- [107] S. M. A. Shah, M. Morisio, M. Torchiano.
Software defect density variants: a proposal.
In *Proc. 4th International Workshop on Emerging Trends in Software Metrics (WeTSOM 2013)*, pp. 56–61. IEEE, Los Alamitos (CA) USA. 2013.
doi: 10.1109/WETSOM.2013.6619337.
- [108] F. Tomassetti, M. Torchiano, L. Bazzani.
MDD adoption in a small company: risk management and stakeholders' acceptance.
JOURNAL OF UNIVERSAL COMPUTER SCIENCE, 19(2): pp. 186–206, J.UCS Consortium. 2013.
doi: 10.3217/jucs-019-02-0186.
- [109] F. Tomassetti, M. Torchiano, A. Vetro.
Classification of language interactions.
In *Proc. ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM)*, pp. 287–290. IEEE, Los Alamitos (CA) USA. 2013.
doi: 10.1109/ESEM.2013.34.
- [110] F. Tomassetti, A. Vetro, M. Torchiano, M. Voelter, K. Bernd.
A model-based approach to language integration.
In *Proc. 5th Int. Workshop on Modeling in Software Engineering (MiSE 2013)*, volume Modeling in Software Engineering (MiSE), 2013 5th International Workshop on, pp. 76–81. IEEE, Los Alamitos (CA) USA. 2013.
doi: 10.1109/MiSE.2013.6595300.
- [111] M. Torchiano, F. Ricca.
Six reasons for rejecting an industrial survey paper.
In *Proc. 1st International Workshop on Conducting Empirical Studies in Industry (CESI)*, pp. 21–26. IEEE, Los Alamitos (CA) USA. 2013.
doi: 10.1109/CESI.2013.6618465.
- [112] M. Torchiano, F. Tomassetti, F. Ricca, A. Tiso, G. Reggio.
Relevance, benefits, and problems of software modelling and model driven techniques—a survey in the italian industry.
THE JOURNAL OF SYSTEMS AND SOFTWARE, 86(8): pp. 2110–2126, Elsevier Sci B.V., Amsterdam. 2013.
doi: 10.1016/j.jss.2013.03.084.
- [113] L. Canova, A. Vetro, M. Torchiano, R. Iemma, F. Morando.
Opencoesione and monithon - a transparency effort.
In *Uses of Open Data Within Government for Innovation and Efficiency: Report*. 2014.
- [114] M. Ceccato, M. Di Penta, P. Falcarin, F. Ricca, M. Torchiano, P. Tonella.
A family of experiments to assess the effectiveness and efficiency of source code obfuscation techniques.
EMPIRICAL SOFTWARE ENGINEERING, 19(4): pp. 1040–1074, Springer Verlag, Germany. 2014.
doi: 10.1007/s10664-013-9248-x.
- [115] S. Giuseppe, F. Ricca, M. Torchiano, G. Reggio, A. Egidio.
Assessing the effect of screen mockups on the comprehension of functional requirements.
ACM TRANSACTIONS ON SOFTWARE ENGINEERING AND METHODOLOGY, 24(1): pp. 1:1–1:38, ACM, New York, NY, USA. 2014.
doi: 10.1145/2629457.
- [116] S. M. A. Shah, M. Torchiano, A. Vetro, M. Morisio.
Exploratory testing as a source of testing technical debt.
IT PROFESSIONAL, 16(3): pp. 44–51, IEEE, Los Alamitos (CA) USA. 2014.
doi: 10.1109/MITP.2013.21.
- [117] F. Tomassetti, G. Rizzo, M. Torchiano.
Spotting automatically cross-language relations.
In *CSMR-WCRE 2014, IEEE Software Evolution Week, February 3-6, 2014, Antwerp, Belgium*, pp. 338–342. IEEE, Los Alamitos (CA) USA. 2014.
doi: 10.1109/CSMR-WCRE.2014.6747189.
- [118] F. Tomassetti, M. Torchiano.

- An empirical assessment of polyglot-ism in github.*
 In *Proceedings of the 18th International Conference on Evaluation and Assessment in Software Engineering*, pp. 17:1–17:4. ACM, New York, NY, USA, New York. 2014.
 doi: 10.1145/2601248.2601269.
- [119] A. Vetro', M. Morisio, M. Torchiano.
Assessing The Impact Of Automatic Static Analysis On Software Quality.
 Scholar's Press, Riga, Latvia. 2014.
 ISBN 978-3-639-70516-4.
- [120] L. Ardito, G. Procaccianti, M. Torchiano, A. Vetrò.
Understanding green software development: A conceptual framework.
 IT PROFESSIONAL, 17(1): pp. 44–50, IEEE, Los Alamitos (CA) USA. 2015.
 doi: 10.1109/MITP.2015.16.
- [121] M. Rashid, L. Ardito, M. Torchiano.
Energy consumption analysis of algorithms implementations.
 In *Proceedings of 9th International Symposium on Empirical Software Engineering and Measurement (ESEM 2015)*, pp. 1–4. IEEE, Los Alamitos (CA) USA. 2015.
 doi: 10.1109/ESEM.2015.7321198.
- [122] M. R. A. Rashid, L. Ardito, M. Torchiano.
Energy consumption analysis of image encoding and decoding algorithms.
 In *Proceedings of 4th International Workshop on Green and Sustainable Software (GREENS), 2015*, volume Green and Sustainable Software (GREENS), 2015 IEEE/ACM 4th International Workshop on, pp. 15–21. IEEE, Los Alamitos (CA) USA. 2015.
 doi: 10.1109/GREENS.2015.10.
- [123] A. Vetrò, W. Bohm, M. Torchiano.
On the benefits and barriers when adopting software modelling and model driven techniques - an external, differentiated replication.
 In *Proceedings of 2015 ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM)*, pp. 1–4. IEEE, Los Alamitos (CA) USA. 2015.
 doi: 10.1109/ESEM.2015.7321210.
- [124] J. C. Carver, J. Cabot, L. L. Minku, M. Torchiano.
Regression testing, spoken language, crash-inducing commits, UML, and legal policy.
 IEEE SOFTWARE, 33(2): pp. 26–28, IEEE, Los Alamitos (CA) USA. 2016.
 doi: 10.1109/MS.2016.37.
- [125] R. Coppola, E. Raffero, M. Torchiano.
Automated mobile UI test fragility: An exploratory assessment study on android.
 In *Proceedings of the 2Nd International Workshop on User Interface Test Automation*, pp. 11–20. ACM, New York, NY, USA. 2016.
 doi: 10.1145/2945404.2945406.
- [126] M. R. A. Rashid, M. Torchiano.
A systematic literature review of open data quality in practice.
 In *Open Data Research Symposium*. 2016.
- [127] I. Vagliano, C. Figueroa, O. R. Rocha, M. Torchiano, C. Faron-Zucker, M. Morisio.
ReDyAl: A dynamic recommendation algorithm based on linked data.
 In *Proceedings of the 3rd Workshop on New Trends in Content-Based Recommender Systems (CBRecSys 2016), CEUR-WS*, volume 1673, pp. 31–38. 2016.
- [128] A. Vetrò, L. Canova, M. Torchiano, C. Orozco Minotas, R. Iemma, F. Morando.
Open data quality measurement framework: Definition and application to open government data.
 GOVERNMENT INFORMATION QUARTERLY, 33(2): pp. 325–337, Elsevier Sci B.V., Amsterdam. 2016.
 doi: 10.1016/j.giq.2016.02.001.
- [129] A. Viticchie', L. Regano, M. Torchiano, C. Basile, M. Ceccato, P. Tonella, R. Tiella.
Assessment of source code obfuscation techniques.
 In *IEEE 16th international working conference on source code analysis and manipulation*, pp. 11–20. IEEE, Los Alamitos (CA) USA. 2016.
 doi: 10.1109/SCAM.2016.17.
- [130] M. Ceccato, P. Tonella, B. Cataldo, B. Coppens, B. De Sutter, P. Falcarin, M. Torchiano.
How professional hackers understand protected code while performing attack tasks.
 In *ICPC 2017: 25th International Conference on Program Comprehension*, pp. 154–164. IEEE, Los Alamitos (CA) USA. 2017.
 doi: 10.1109/ICPC.2017.2.

- [131] R. Coppola, M. Morisio, M. Torchiano.
Evolution and fragilities in scripted GUI testing of android applications.
In *INTUITEST 2017 Proceedings of the 3rd International Workshop on User Interface Test Automation*, volume Joint Research Workshop 11th Systems Testing and Validation (STV17) and 3rd International Workshop on User Interface Test Automation (INTUITEST 2017). Proceedings, pp. 83–104. Fraunhofer-Publica, Germany. 2017.
- [132] R. Coppola, M. Morisio, M. Torchiano.
Scripted UI testing of android apps: A study on diffusion, evolution and fragility.
In *Proceedings - 2017 ACM 13th International Conference on Predictive Models and Data Analytics in Software Engineering*, volume PROMISE Proceedings of the 13th International Conference on Predictive Models and Data Analytics in Software Engineering, pp. 22–32. ACM, New York, NY, USA. 2017.
doi: 10.1145/3127005.3127008.
- [133] C. Figueroa, I. Vagliano, O. R. Rocha, M. Torchiano, C. Faron-Zucker, J. C. Corrales, M. Morisio.
Allied: A framework for executing linked data-based recommendation algorithms.
INTERNATIONAL JOURNAL ON SEMANTIC WEB AND INFORMATION SYSTEMS, 13(4): pp. 134–154, IGI Global, USA. 2017.
doi: 10.4018/IJSWIS.2017100107.
- [134] M. R. A. Rashid, G. Rizzo, N. Mihindukulasooriya, M. Torchiano, O. Corcho.
KBQ - a tool for knowledge base quality assessment using evolution analysis.
In *Proceedings of Workshops and Tutorials of the 9th International Conference on Knowledge Capture (K-CAP2017)*, volume 2065, pp. 58–63. CEUR-WS.org, Aachen. 2017.
- [135] G. Rizzo, F. Tomassetti, A. Vetrò, L. Ardito, M. Torchiano, M. Morisio, R. Troncy.
Semantic enrichment for recommendation of primary studies in a systematic literature review.
DIGITAL SCHOLARSHIP IN THE HUMANITIES, 32(1): pp. 195–208, Oxford University Press, UK. 2017.
doi: 10.1093/llc/fqv031.
- [136] M. Torchiano, D. Méndez Fernández, G. Horta Travassos, R. Maiani de Mello.
Lessons learnt in conducting survey research.
In *Proceedings of 2017 IEEE/ACM 5th International Workshop on Conducting Empirical Studies in Industry (CESI)*, pp. 33–39. IEEE, Los Alamitos (CA) USA. 2017.
doi: 10.1109/CESI.2017.5.
- [137] M. Torchiano, G. Scanniello, F. Ricca, G. Reggio, M. Leotta.
Do UML object diagrams affect design comprehensibility? results from a family of four controlled experiments.
JOURNAL OF VISUAL LANGUAGES AND COMPUTING, 41: pp. 10–21, Elsevier Sci B.V., Amsterdam. 2017.
doi: 10.1016/j.jvlc.2017.06.002.
- [138] M. Torchiano, A. Vetro', F. Iuliano.
Preserving the benefits of open government data by measuring and improving their quality: An empirical study.
In *2017 IEEE 41st Annual Computer Software and Applications Conference (COMPSAC)*, pp. 144–153. IEEE, Los Alamitos (CA) USA. 2017.
doi: 10.1109/COMPSAC.2017.192.
- [139] L. Ardito, M. Torchiano.
Creating and evaluating a software power model for linux single board computers.
In *GREENS '18 Proceedings of the 6th International Workshop on Green and Sustainable Software*, pp. 1–8. IEEE, Los Alamitos (CA) USA. 2018.
doi: 10.1145/3194078.3194079.
- [140] J. C. Carver, E. Santana de Almeida, R. Capilla, L. Minku, M. Torchiano, A. Valdezate.
Empirical software engineering, predictive models, and product lines.
IEEE Software, 35(3): pp. 8–11. 2018.
doi: 10.1109/MS.2018.2141018.
- [141] R. Coppola, M. Morisio, M. Torchiano.
Maintenance of android widget-based GUI testing: A taxonomy of test case modification causes.
In *2018 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW)*, pp. 151–158. April 2018.
doi: 10.1109/ICSTW.2018.00044.
- [142] R. Coppola, M. Torchiano, L. Ardito, A. Emil.
Towards automated translation between generations of gui-based tests for mobile devices.
In *ISSTA '18 Companion Proceedings for the ISSTA/ECOOP 2018 Workshops*, pp. 46–53. ACM. 2018.
doi: 10.1145/3236454.3236488.
- [143] N. Mihindukulasooriya, M. R. A. Rashid, G. Rizzo, R. Garcia-Castro, O. Corcho, M. Torchiano.
Rdf shape induction using knowledge base profiling.
In *Proceedings of the 33rd ACM/SIGAPP Symposium On Applied Computing*, pp. 1–8. ACM. 2018.

doi: 10.1145/3167132.3167341.

- [144] M. R. A. Rashid, G. Rizzo, M. Torchiano, N. Mihindikulasooriya, O. Corcho. *Knowledge base evolution analysis: A case study in the tourism domain*. In *Current Trends in Web Engineering*, pp. 268–278. Springer. 2018. ISBN 978-3-030-03055-1. doi: 10.1007/978-3-030-03056-8_26.
- [145] F. Ricca, M. Torchiano, M. Leotta, A. Tiso, G. Guerrini, G. Reggio. *On the impact of state-based model-driven development on maintainability: A family of experiments using UniMod*. EMPIRICAL SOFTWARE ENGINEERING, 23(3): pp. 1743–1790, Springer Verlag, Germany. 2018. doi: 10.1007/s10664-017-9563-8.
- [146] M. Torchiano, G. Bruno. *Integrating software engineering key practices into an oop massive in-classroom course: an experience report*. In *Proc. 2nd International Workshop on Software Engineering Education for Millennials*, pp. 64–71. ACM. 2018. ISBN 978-1-4503-5750-0. doi: 10.1145/3194779.3194786.
- [147] L. Ardito, R. Coppola, M. Morisio, M. Torchiano. *Espresso vs. eyeautomate: An experiment for the comparison of two generations of android gui testing*. In *ACM International Conference Proceeding Series*, volume EASE '19 Proceedings of the Evaluation and Assessment on Software Engineering Pages 13-22, pp. 13–22. Association for Computing Machinery. 2019. ISBN 9781450371452. doi: 10.1145/3319008.3319022.
- [148] L. Ardito, R. Coppola, M. Morisio, M. Torchiano. *Methodological guidelines for measuring energy consumption of software applications*. SCIENTIFIC PROGRAMMING, 2019: pp. 1–16, Hindawi. 2019. ISSN 1058-9244. doi: 10.1155/2019/5284645.
- [149] M. Ceccato, P. Tonella, C. Basile, P. Falcarin, M. Torchiano, B. Coppens, B. De Sutter. *Understanding the behaviour of hackers while performing attack tasks in a professional setting and in a public challenge*. EMPIRICAL SOFTWARE ENGINEERING, 24(1): pp. 240–286, Springer. 2019. ISSN 1382-3256. doi: 10.1007/s10664-018-9625-6.
- [150] R. Coppola, L. Ardito, M. Torchiano. *Characterizing the transition to kotlin of android apps: a study on f-droid, play store, and github*. In *Proceedings of the 3rd ACM SIGSOFT International Workshop on App Market Analytics*, pp. 8–14. ACM. 2019. ISBN 978-1-4503-6858-2. doi: 10.1145/3340496.3342759.
- [151] R. Coppola, L. Ardito, M. Torchiano. *Fragility of layout-based and visual gui test scripts: An assessment study on a hybrid mobile application*. In *Proceedings of the 10th ACM SIGSOFT International Workshop on Automating TEST Case Design, Selection, and Evaluation*, pp. 28–34. ACM. 2019. ISBN 978-1-4503-6850-6. doi: 10.1145/3340433.3342824.
- [152] R. Coppola, M. Morisio, M. Torchiano. *Mobile gui testing fragility: A study on open-source android applications*. IEEE TRANSACTIONS ON RELIABILITY, 68(1): p. 34, IEEE. 2019. ISSN 0018-9529. doi: 10.1109/TR.2018.2869227.
- [153] R. Coppola, M. Morisio, M. Torchiano, L. Ardito. *Scripted gui testing of android open-source apps: Evolution of test code and fragility causes*. EMPIRICAL SOFTWARE ENGINEERING, 24(5): pp. 3205–3248, Springer. 2019. ISSN 1382-3256. doi: 10.1007/s10664-019-09722-9.
- [154] M. Rashid, G. Rizzo, M. Torchiano, N. Mihindikulasooriya, O. Corcho, R. García-Castro. *Completeness and consistency analysis for evolving knowledge bases*. JOURNAL OF WEB SEMANTICS, 54: pp. 48–71, Elsevier. 2019. ISSN 1570-8268. doi: 10.1016/j.websem.2018.11.004.

- [155] M. R. A. Rashid, M. Torchiano, G. Rizzo, N. Mihindikulasooriya, O. Corcho.
A quality assessment approach for evolving knowledge bases.
SEMANTIC WEB, 10(2): pp. 349–383, IOS Press. 2019.
ISSN 2210-4968.
doi: 10.3233/SW-180324.
- [156] L. Ardito, R. Coppola, G. Malnati, M. Torchiano.
Effectiveness of kotlin vs. java in android app development tasks.
INFORMATION AND SOFTWARE TECHNOLOGY, 127: p. 16, Elsevier. 2020.
ISSN 0950-5849.
doi: 10.1016/j.infsof.2020.106374.
- [157] L. Ardito, M. Torchiano, R. Coppola, G. Antoniol.
Powtran: an r package for power trace analysis.
SOFTWAREX, 12: pp. 1–9, Elsevier. 2020.
ISSN 2352-7110.
doi: 10.1016/j.softx.2020.100512.
- [158] R. Coppola, L. Ardito, M. Torchiano, M. Morisio.
Mobile testing: New challenges and perceived difficulties from developers of the italian industry.
IT PROFESSIONAL, 22(5): pp. 32–39, IEEE. 2020.
ISSN 1520-9202.
doi: 10.1109/MITP.2019.2942810.
- [159] M. Mecati, F. E. Cannavò, A. Vetrò, M. Torchiano.
Identifying risks in datasets for automated decision-making.
In *Electronic Government*, volume 12219, pp. 332–344. Springer. 2020.
ISBN 978-3-030-57598-4.
doi: 10.1007/978-3-030-57599-1_25.
- [160] A. Viticchie, L. Regano, C. Basile, M. Torchiano, M. Ceccato, P. Tonella.
Empirical assessment of the effort needed to attack programs protected with client/server code splitting.
EMPIRICAL SOFTWARE ENGINEERING, 25(1): pp. 1–48, Springer. 2020.
ISSN 1382-3256.
doi: 10.1007/s10664-019-09738-1.
- [161] L. Ardito, A. Bottino, R. Coppola, F. Lamberti, F. Manigrasso, L. Morra, M. Torchiano.
Feature matching-based approaches to improve the robustness of android visual gui testing.
ACM TRANSACTIONS ON SOFTWARE ENGINEERING AND METHODOLOGY, 31(2): pp. 1–32, ACM. 2021.
ISSN 1049-331X.
doi: 10.1145/3477427.
- [162] R. Coppola, L. Ardito, M. Torchiano.
Automated translation of android context-dependent gestures to visual gui test instructions.
In *Proceedings of the 12th International Workshop on Automating TEST Case Design, Selection, and Evaluation*, pp. 17–24. ACM. 2021.
doi: 10.1145/3472672.3473954.
- [163] R. Coppola, L. Ardito, M. Torchiano, E. Alégroth.
Translation from layout-based to visual android test scripts: an empirical evaluation.
THE JOURNAL OF SYSTEMS AND SOFTWARE, 171: pp. 1–26, Elsevier. 2021.
ISSN 0164-1212.
doi: 10.1016/j.jss.2020.110845.
- [164] N. A. Ernst, J. C. Carver, D. Mendez, M. Torchiano.
Understanding peer review of software engineering papers.
EMPIRICAL SOFTWARE ENGINEERING, 26: pp. 1–29, Springer. 2021.
ISSN 1382-3256.
doi: 10.1007/s10664-021-10005-5.
- [165] M. Mecati, A. Vetro, M. Torchiano.
Detecting discrimination risk in automated decision-making systems with balance measures on input data.
In *2021 IEEE International Conference on Big Data (Big Data)*, pp. 4287–4296. IEEE. 2021.
ISBN 978-1-6654-3902-2.
doi: 10.1109/BigData52589.2021.9671443.
- [166] A. Vetro, M. Torchiano, M. Mecati.
A data quality approach to the identification of discrimination risk in automated decision making systems.
GOVERNMENT INFORMATION QUARTERLY, 38(4): p. 17, Elsevier. 2021.
ISSN 0740-624X.

doi: 10.1016/j.giq.2021.101619.

- [167] T. Fulcini, G. Garaccione, R. Coppola, L. Ardito, M. Torchiano.
Guidelines for gui testing maintenance: A linter for test smell detection.
In *A-TEST 2022: 13th Workshop on Automating Test Case Design, Selection and Evaluation*, p. 8. ACM. 2022.
- [168] G. Garaccione, T. Fulcini, M. Torchiano.
Gerry: A gamified browser tool for gui testing.
In *Proceedings of the 1st International Workshop on Gamification of Software Development, Verification, and Validation*. ACM. 2022.
- [169] S. Leonardi, M. Torchiano.
Educational chatbot to support question answering on slack.
In *Methodologies and Intelligent Systems for Technology Enhanced Learning, 12th International Conference*. Springer. 2022.
- [170] M. Mecati, A. Vetro', M. Torchiano.
Detecting risk of biased output with balance measures.
ACM JOURNAL OF DATA AND INFORMATION QUALITY, p. 7, Association for Computing Machinery. 2022.
ISSN 1936-1955.
doi: 10.1145/3530787.