Roberto **Verdecchia**

Postdoctoral Research Associate in Software Engineering
Member of the Netherlands Research School for Information and Kwnoledge Systems

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Summary

Postdoctoral Research Associate in Software Engineering at the Vrije Universiteit Amsterdam (VU).
Member of the Netherlands Research School for Information and Kwnoledge Systems (SIKS).

Fascinated by utilizing quantitative and qualitative empirical research methods to improve software development and system evolution, with particular interest in the fields of technical debt, software testing, software sustainability, and software education.

Education

Vrije Universiteit Amsterdam (VU) & Gran Sasso Science Institute (GSSI)
Amsterdam, The Netherlands & L'Aquila, Italy

Double Ph.D. in Software Engineering — *Nov. 2016 - Sept. 2021*

- Dissertation title: "Architectural Technical Debt: Identification and Management" (Assessment: *Excellent*)
- Promotors: Patricia Lago, Rocco de Nicola
- Co-Promotors: Ivano Malavolta, Catia Trubiani

Vrije Universiteit Amsterdam (VU)
Amsterdam, The Netherlands

M.Sc. in Computer Science: Software Engineering curriculum — *2014 - 2016*

- Thesis title: "Static and Dynamic Analysis of Software Energy Efficiency in Industry" (*Cum Laude* distinction)
- Supervisors: Patricia Lago, Giuseppe Procaccianti

University of Florence - School of Engineering (UniFi)
Florence, Italy

B.Eng. in Computer Engineering — *2011 - 2014*

- Thesis title: "Algorithm for Weather-based Naval Routing as an N-stage Decisional Process"
- Supervisor: Fabio Schoen

Qualifications

Italian Ministry of Education, University and Research
Italy

Italian National Scientific Qualification (ASN) — *Oct. 2022 - Oct. 2032*

- Italian National Scientific Qualification (ASN) for Associate Professor in Information Processing Systems (ING-INF05-SC09/H1-"Sistemi di Elaborazione dell' Informazione", seconda fascia)

Work Experience

Vrije Universiteit Amsterdam
Amsterdam, The Netherlands

Postdoctoral Research Associate — *2020 - Present*

- Research Associate in Software Engineering, focusing on Technical Debt, Software Testing, Software Sustainability, and Software Education
- Responsibilities: Conduct activities following personal research vision, and support group-level research agenda. Supervise and conduct research projects, both intra- and inter-research groups. Collaborate with industrial parties (e.g., set up a research lab at ABN AMRO).

ABN AMRO
Amsterdam

Research Lab Coordinator — *April 2021 - present*

- Coordinating, supervising, and conducting research projects in collaboration with teams of students and practitioners. Fostering research excellence, cooperation, and communication. Focusing on developing novel techniques for the assessment and optimization of the software sustainability of a portfolio comprising 600+ software products.

KPMG
Amsterdam, The Netherlands

Graduate Research Intern — *Apr. 2016 - Oct. 2016*

- Graduate research intern focusing on the analysis of a software portfolio
- Responsibilities: Architecture reconstruction. Static and dynamic analysis of code bases. Server management. Performance testing. Automation scripting. Statistical data analysis.

OMALA
Amsterdam, The Netherlands

Software Engineering Intern — *Jun. 2015 - Aug. 2015*

- Software engineering intern focusing on the analysis of a large scale heterogeneous system of systems
- Responsibilities: Requirements engineering and architecture trade-off analysis for the Airport Garden City IT infrastructure project of the Lelystad Airport business park.

Teaching Experience

Vrije Universiteit Amsterdam
Amsterdam, The Netherlands

Teaching Coordinator and Assistant — *2015 - Present*

- Teaching assistant and/or coordinator for a total of 18 editions of 7 BSc and MSc Computer Science courses. Primary responsibilities covered holding lectures, supervising research and course projects, coordinating teaching assistants, tutoring teams of students, conducting seminars and exercise sessions, designing and correcting exams/deliverables, supervising exam/deliverables correction, managing e-learning platforms, attending weekly meetings with other instructors to align course content, material, and grading criteria.
- Courses: *Service Oriented Design* (MSc. 2015, 2017, 2021, 2022), instructor: Patricia Lago. *Literature Study and Seminar* (MSc. 2018-2022), instructor: Patricia Lago. *Digitalization and Sustainability* (MSc. 2020-2022), instructor: Patricia Lago. *Software Architecture* (MSc. 2015, 2018, 2019), instructor: Remco De Boer. *Software Testing* (MSc. 2016, 2017), instructor: Natalia Silvis-Cividjian. *Software Modeling* (BSc. 2016), instructor: Patricia Lago. *Service Science* (BSc. 2015), instructor: Jaap Gordijn.

Vrije Universiteit Amsterdam
Amsterdam, The Netherlands

Thesis Supervisor — *2018 - Present*

- Supervisor of 25 BSc and MSc theses, including the Vrije Universiteit Amsterdam Best Thesis Award 2021.
- Responsibilities: Identification of thesis topic, design of appropriate research methods to be used, daily supervision of theses execution, coordination of weekly theses meeting, resolution of research impediments, final theses assessment, rework and publication of theses as scientific papers.

Lorentz Center
Leiden, The Netherlands

PhD School Moderator — *2021*

- Moderator at the *International Software Architecture PhD School (iSAPS)*, Lorentz Center, Leiden, the Netherlands. 2021.

Vrije Universiteit Amsterdam
Amsterdam, The Netherlands

PhD School Lecturer — *2020*

- Lecturer at the PhD school *Software and Sustainability: Towards an Ethical Digital Society*, Vrije Universiteit Amsterdam, Amsterdam, the Netherlands, 2020.

Honors & Awards

2022	**Best Reviewer Award**, European Conference on Software Architecture (ECSA)	*Prague, Czech Republic*
2022	**Distinguished Reviewer Award**, ACM/IEEE International Conference on Mobile Software Engineering and System (MobileSOFT)	*Pittsburgh, U.S.A.*
2021	**Best Paper Award**, Journal of Systems And Software (JSS) Paper: *Building and evaluating a theory of architectural technical debt in software-intensive systems*	*Online*
2021	**Facebook Research Award**, Facebook research. Grant: 94.500$ USD Project: *Testing non-testable programs using association rules*	*London, United Kingdom*
2021	**Best Research Presentation Award**, International Conference on Technical Debt (TechDebt) Paper: *Characterizing Technical Debt and Antipatterns in AI-Based Systems: A Systematic Mapping Study*	*Madrid, Spain*
2019	**ACM-SIGSOFT Distinguished Paper Award**, IEEE-ACM International Conference on Software Engineering (ICSE) Paper: *Scalable Approaches for Test Suite Reduction*	*Montreal, Canada*
2019	**Facebook Testing and Verification Award**, Facebook Testing and Verification Symposium 2019 Grant: 50.000$ USD Project: *Static Prediction of Test Flakiness*	*London, United Kingdom*
2019	**Best Paper Award**, Hawaii International Conference on System Sciences (HICSS) Paper: *DecidArch: Playing Cards as Software Architects*	*Hawaii, U.S.A*
2019	**ISSIP-IBM-CBA Student Paper Award for Best Industry Studies Paper**, Hawaii International Conference on System Sciences (HICSS)	*Hawaii, U.S.A*
2018	**Best Early Career Researcher Award**, IEEE International Conference on Software Architecture (ICSA)	*Seattle, U.S.A*
2018	**Runner-up Best Paper Award**, International Conference on ICT for Sustainability (ICT4S)	*Toronto, Canada*
2018	**Bronze Medal - ACM Student Research Competition**, 5th International Conference on Mobile Software Engineering and System (MobileSoft)	*Seattle, U.S.A*

Funded Projects

ABN AMRO

Grant: 250.000€

- Role: Responsible of research execution and supervision.
- Topic: The project aims at devising, via a combination of in-vivo and in-vitro experimentation, innovative methods to measure, track, document, and improve the sustainability of industrial software-intensive systems.

Facebook Research (now Meta Research)

Grant: 94.500$

- Role: Co-Principal Investigator (Co-PI). Co-PIs: Breno Miranda (UFPE, Brazil), Antonia Bertolino (ISTI-CNR, Italy), Emilio Cruciani (PLUS, Salzburg).
- Project: The project aims at developing ARMED, an approach leveraging efficient association rules mining algorithms to identify plausible and suspicious behaviours in large-scale software-intensive systems when oracles are inherently unknowable.

Facebook Research (now Meta Research)

Grant: 47.250$

- Role: Co-Principal Investigator (Co-PI). Co-PIs: Breno Miranda (UFPE, Brazil), Antonia Bertolino (ISTI-CNR, Italy), Emilio Cruciani (PLUS, Salzburg).
- Project: The project aims at developing a fully automated approach to swiftly identify test flakiness via well-known static analysis techniques, to immediately return potentially flaky tests to their creators before the tests are released in a repository.

Netherlands Enterprise Agency

Grant: 28.586€

- Role: Co-Principal Investigator (Co-PI). Co-PI: Patricia Lago (Vrije Universiteit Amsterdam).
- Topic: The aim of the project consisted in developing a landscape of solutions for the sustainable evolution of present and future digital infrastructures.

Amsterdam Sustainability Institute

Grant: 10.000$

- Role: Co-Principal Investigator (Co-PI). Co-PIs: Henri L.F. de Groot (Vrije Universitet Amsterdam), Patricia Lago (Vrije Universitet Amsterdam).
- The project aims at uncovering tactics for sustainable clouds, by combining technical software engineering solutions for distributed clouds (from computer science) and novel business- and behavioural models for the built environment (from environmental economics).

Public Speaking

Conducted more than 30 invited talks and presentations at various venues. Activities consisted of presenting complex research concepts and results to audiences of different nature. Presentation targeted either specialized academic / industrial attendees, or the generic public. Selected presentation venues: Google Journal Club, International Conference on Software Engineering, KPMG Global Headquarters, International Conference on Software Architecture, University of British Columbia, University of Zurich.

Invited Talks

- “Building and evaluating a theory of architectural technical debt in software-intensive systems”, Journal of Systems and Software Happy Hour, (JSS). Virtual. 2021.
- “What to consider when talking about ATD?”, International Conference on Software Architecture, (ICSA). Virtual. 2021.
- “Tackling Architectural Technical Debt”, Universität Zurich (UZH). Virtual. 2021.
- “Lower Energy Acceleration Programme (LEAP) Technology Roadmap”, Groene Peper. Virtual. 2021.
- “Scalable Approaches for Test Suite Reduction”. Google Journal Club . Virtual. 2019.
- “Code Analysis Techniques for Architectural Technical Debt Identification”, Software Improvement Group (SIG): Global Headquarters. Amsterdam, The Netherlands. 2019.
- “Building a Grounded Theory on Architectural Technical Debt”. TaskTop Technologies: Global Headquarters. Vancouver, Canada. 2019.
- “Architectural Technical Debt: Personal Research Agenda”, University of British Columbia (UBC). Vancouver, Canada. 2019.
- “FAST Approaches to Scalable Similarity-based Test Case Prioritization”, Gran Sasso Science Institute, (GSSI). L’Aquila, Italy. 2018.
- “Static and Dynamic Analysis of Software Energy Efficiency”, KPMG: Global Headquarters. Amstelveen, The Netherlands. 2017.

Presentations

- “Asking about Technical Debt: Characteristics and Automatic Identification of Technical Debt Questions on Stack Overflow”, International Symposium on Empirical Software Engineering and Measurement (ESEM). Helsinki. Finland. 2022.
- “Data-Centric Green AI: An Exploratory Empirical Study”, International Conference on ICT for Sustainability (ICT4S). Plovdiv, Bulgaria. 2022.
- “Green IT and Green Software”, International Conference on ICT for Sustainability (ICT4S). Plovdiv, Bulgaria. 2022.
- Characterizing Technical Debt and Antipatterns in AI-Based Systems: A Systematic Mapping Study. International Conference on Technical Debt (TechDebt). Virtual. 2021. 🏆 Best presentation Award.
- “ATDx: A tool for Providing a Data-driven Overview of Architectural Technical Debt in Software-intensive Systems”, European Conference on Software Architecture (ECSA). Virtual. 2021.
- “Summary: Building and evaluating a theory of architectural technical debt in software-intensive systems ”, European Conference on Software Architecture (ECSA). Virtual. 2021.
- “JTeC: A Large Collection of Java Test Classes for Test Code Analysis and Processing”. International Conference on Mining Software Repositories (MSR). 2020. Virtual

Presentations (continued)

- "Architectural Technical Debt: A Grounded Theory", European Conference on Software Architecture (ECSA). Virtual. 2020.
- "ATDx: Building an Architectural Technical Debt Index", 15th International Conference on Evaluation of Novel Approaches to Software Engineering (ENASE). Virtual. 2020.
- "Architectural Technical Debt: Taming the Beast", 6th Dutch National Symposium on Software Engineering (SEN). Amsterdam, The Netherlands. 2020.
- "Scalable Approaches for Test Suite Reduction", 41th International Conference on Software Engineering (ICSE). Montreal, Canada. 2019.
- "Guidelines for Architecting Android Apps: A mixed-method Empirical Study", 16th International Conference on Software Architecture (ICSA). Hamburg, Germany. 2019.
- "Architectural Technical Debt Identification: The Research Landscape", 1st International Conference on Technical Debt (TechDebt). Gothenburg, Sweden. 2018.
- "FAST Approaches to Scalable Similarity-based Test Case Prioritization", 40th International Conference on Software Engineering (ICSE). Gothenburg, Sweden. 2019.
- "Identifying Architectural Technical Debt in Android Applications through Compliance Checking", 5th International Conference on Mobile Software Engineering and Systems (MOBILESoft). Gothenburg, Sweden. 2018.
- "Empirical Evaluation of the Energy Impact of Refactoring Code Smells", 5th International Conference on ICT for Sustainability, (ICT4S). Toronto, Canada. 2018.
- "Architectural Technical Debt: Moving Forward", 15th International Conference on Software Architecture, (ICSA). Seattle, United States. 2018.
- "Architectural Technical Debt Identification and Management", 5th National Conference for ICT-Research in the Netherlands, (ICT.OPEN). Amersfoort. The Netherlands. 2018.
- "Estimating Energy Impact of Software Releases and Deployment Strategies: The KPMG Case Study", 11th International Symposium on Empirical Software Engineering and Measurement (ESEM). Toronto, Canada. 2017.
- "Green ICT Research and Challenges", International Conference on Environmental Informatics (EnviroInfo 2017). Luxemburg. Luxemburg.
- "Empirical Assessment of Energy Efficiency of ORM Frameworks", National Day for Sustainability in Higher Education, (NDDHO 2016). Breda. The Netherlands.

Services

Ogranizing Commitee	MSR4SA 2022 (*Co-Organizer*), ECSA 2022 (Proceedings Co-Chair), BoKSS 2021 (*Virtualization Chair*) GREENS 2023 (Web Chair, Proceedings Chair)
Program Committee member	ICSE (2021, 2023), MSR (2022), ICSME (2022), TechDebt (2020-2023), MobileSoft (2022, 2023), ECSA (2021-2022), SAML (2022), TD4ViS (2022), ICSOFT (2021-2022), TD4ViS (2022), SOFTENG (2020), GREEN (2019)
Journal Reviewer	TOSEM (2021-), TSE (2020-), JSS (2019-), EMSE (2020-), IST (2020-), IEEE Software (2021-), SUSCOM (2019-), COLA (2019-), IJES (2021-), JSRED (2021-)
External Conference Reviewer	EASE (2022), ICSE (2018, 2019), ICSA (2018, 2019), ECSA (2018, 2019), MOBILESoft (2018, 2019), ESEC/FSE (2018), ICT4S (2018, 2019)
Volunteer	ICSE (2018, 2019), ICPE (2018)

Visitings

Electrical and Computer Engineering Department (University of British Columbia) — *Vancouver, Canada*

Visiting research scholar — *April 2019 - June 2019*

- Topic: Approaches for architectural technical debt identification and management
- Host: Philippe Kruchten

SEDC Lab, ISTI-CNR (Italian National Research Council) — *Pisa, Italy*

Visiting research scholar — *July 2017, July 2018, July 2019*

- Topic: Fast static approaches for test prioritization, selection, and flakiness prediction
- Host: Antonia Bertolino

PhD Schools

International Software Architecture PhD School (iSAPS) — *Leiden, The Netherlands*

PhD School Attendee — *June 2017, June 2018, June 2019*

- Topic: PhD school series on Software Architecture providing researchers and practicing architects the opportunity to learn from the leaders in the field the most recent methods, tools, and theories produced by top software architecture research and industrial groups around the world.

In-Vivo Analytics for Big Software Quality — *Leiden, The Netherlands*

PhD School Attendee — *September 2018*

- Topic: PhD school aimed to address how Big Data analysis techniques on runtime data could be used to address software quality in DevOps. Discussion on core challenges to develop cooperations in the related areas, e.g., log data analysis, requirements engineering, automated testing, program repair, and distributed systems.

PhD Schools (continued)

ICT for Sustainability (ICT4S)

Leiden, The Netherlands

PhD School Attendee

May 2017, May 2020

- Topic: PhD school series on ICT for Sustainability (ICT4S), focusing both on how to make ICT greener, and how to use ICT to develop sustainable solutions in diverse areas. The goal of the school is to build a bridge between related communities, kickstart new scientific collaborations and nurture the next generation of community members through presentations by leading academics and collaborative paper writing.

ICT with Industry

Leiden, The Netherlands

PhD School Attendee

November 2017, November 2019

- Topic: PhD school bringing together junior scientists and professionals from industry and governments to collaborate on industrial hands-on projects. The workshop focused on case studies, which were subject to an intense week of analyzing, discussing, and modeling solutions.

Research Collaborations

Software Engineering Architecture Laboratory (SEAL), Department of Electrical and Computer Engineering, University of British Columbia (UBC)

Vancouver, Canada.

Principal Investigator

- Collaboration with: Prof. Philippe Kruchten (UBC).
- Topic: Application of qualitative empirical research methods to gain insights into the architectural technical debt phenomenon as experienced by industrial practitioners.
- Resulting publications:
  1. "Architectural Technical Debt: A Grounded Theory", 14th European Conference on Software Architecture (ECSA), 2020.
  2. "Building and Evaluating a Theory of Architectural Technical Debt in Software Systems", Journal of Systems and Software (JSS), 2021.

Software Engineering Institute (SEI), Carnegie Mellon University (CMU)

Pittsburgh, USA

Principal Investigator

- Collaboration with: Dr. Ipek Ozkaya (principal researcher and technical director of the Engineering Intelligent Software Systems group, SEI).
- Topic: Application of quantitative empirical research methods to statically identify and rank the severity of architectural technical debt items.
- Resulting publications:
  1. "ATDx: Building an Architectural Technical Debt Index".15th International Conference on Evaluation of Novel Approaches to Software Engineering (ENASE), 2020.
  2. "ATDx: A tool for Providing a Data-driven Overview of Architectural Technical Debt in Software- intensive Systems". 15th European Conference on Software Architecture (ECSA), 2021.
  3. "Empirical evaluation of an architectural technical debt index in the context of the Apache and ONAP ecosystems". PeerJ Computer Science. 2022.

Information Science and Technologies – Consiglio Nazionale delle Ricerche (ISTI-CNR)

Pisa, Italy

Co-Principal Investigator

- Collaboration with: Antonia Bertolino (research director of the Software Engineering & Dependable Computing Research Laboratory, ISTI-CNR).
- Topic: Application of quantitative research methods to efficiently tackle via static similarity-based techniques various testing challenges.
- Resulting publications:
  1. "Scalable Approaches for Test Suite Reduction". 41st IEEE/ACM International Conference on Software Engineering (ICSE), 2019. ACM SIGSOFT Distinguished Paper Award.
  2. "FAST Approaches to Scalable Similarity-based Test Case Prioritization". 40th International Conference on Software Engineering (ICSE), 2018.
  3. "JTeC: A Large Collection of Java Test Classes for Test Code Analysis and Processing". 7th International Conference on Mining Software Repositories (MSR), 2020.
  4. "Know Your Neighbor: Fast Static Prediction of Test Flakiness". IEEE Access. 2021.
  5. "Testing non-testable programs using association rules". 3rd IEEE International Conference on Automation of Software Test (AST), 2022.

Software and Sustainability Group (S2 group), Vrije Universiteit Amsterdam (VU)

Amsterdam, The Netherlands

Principal Investigator and Co-principal investigator

- Collaboration with: Prof. Patricia Lago (VU), Prof. Ivano Malavolta (VU), Dr. Ilias Gerostathopoulos (VU), Dr. Emitzá Guzmán (VU), and Dr. Remco de Boer (VU & ArchiXL), among others.
- Participation both as double-PhD student and subsequently as research associate to numerous activities of the group, including among others topics researches related to empirical software engineering research methods, software architecture, technical debt, software sustainability, mobile app development, and software engineering education.

Delft University of Technology (TU Delft)

Delft, The Netherlands.

Co-principal Investigator

- Collaboration with: Dr. Luís Cruz.
- Topic: Empirical investigation of data-centric techniques to improve the energy efficiency of AI models.
- Resulting publications:
  1. "Data-Centric Green AI: An Exploratory Empirical Study", 8th International Conference on ICT for Sustainability (ICT4S), 2022.

Research Collaborations (continued)

Software Engineering Architecture Laboratory (SEAL), Department of Electrical and Computer Engineering, University of British Columbia (UBC) *Vancouver, Canada.*

Co-Principal Investigator

- Collaboration with: Prof. Philippe Kruchten (UBC).
- Topic: Design and evaluation of a serious game aimed at improving software architecture education and training.
- Resulting publications:
    1. "DecidArch: Playing Cards as Software Architects". 52nd Hawaii International Conference on System Sciences (HICSS), 2019. Best Paper Award, and ISSIP-IBM-CBA Student Paper Award for Best Industry Studies Paper.
    2. "DecidArch v2: An improved Game to teach Architecture Design Decision Making". 3rd International Workshop on Decision Making in Software Architecture (MARCH), 2019.

Software and Service Engineering Group, Polytechnic University of Catalonia *Barcelona, Spain.*

Scientific Research Collaborator

- Collaboration with: Dr. Silverio Martińez-Fernańdez.
- Topic: Design and evaluation of empirical software engineering techniques, with emphasis on the impact of software architecture design decisions, to improve the sustainability of AI-based software systems (Green AI).

Marie Sklodowska-Curie Research and Innovation Staff Exchange 2019 (H2020-MSCA-RISE-2019)

Scientific Research Collaborator

- Involved paties: Consorzio Interuniversitario Nazionale per l'Informatica ("CINI"), Roma, Italy. Vrije Universiteit Amsterdam (VU), Amsterdam, The Netherlands. Karlsruher Institut fuer Technologie (KIT), Karlsruher, Germany. Universidad de Alcala (UAH), Madrid, Spain. Silensec LTD (Silensec), Cyprus. Panel Sistemas Informaticos SL (Panel), Madrid, Spain.
- Topic: Application of quantitative empirical methods to assess and improve the software quality assurance for microservice development operations engineering (uDEVOPS).

Department of Information Engineering, Computer Science, and Mathematics, University of L'Aquila *L'Aquila, Italy.*

Co-Principal Investigator

- Collaboration with: Prof. Marco Autili (University of L'Aquila), Dr. Gian Luca Scoccia (University of L'Aquila), Dr. Alexander Perucci (University of L'Aquila).
- Topic: Review of the literature based on 12,000 potentially relevant studies and a final set of 261 primary studies to identify research trends, characteristics, and potential for industrial adoption of software engineering techniques for statically analyzing mobile apps.
- Resulting publications:
    1. "Software Engineering Techniques for Statically Analyzing Mobile Apps: Research Trends, Characteristics, and Potential for Industrial Adoption". Journal of Internet Services and Applications (JISA). 2021.

Institute of Software Engineering, University of Stuttgart *Stuttgart, Germany.*

Co-Principal Investigator

- Collaboration with: Dr. Justus Bogner (Head of the Division for Software Engineering for AI- & Microservice-Based Systems (SE4AI&MS)).
- Topic: Software engineering techniques to improve the development and maintenance of AI-based systems.
- Resulting publications:
    1. "Characterizing Technical Debt and Antipatterns in AI-Based Systems: A Systematic Mapping Study". 4th International Conference on Technical Debt (TechDebt). 2021. Best presentation award.

Green Software Engineering Group, University of Applied Sciences Trier *Birkenfeld, Germany.*

Principal Investigator

- Collaboration with: Dr. Evan Kern (Environmental Campus Birkenfeld, Birkenfeld), Achim Guldner (Environmental Campus Birkenfeld, Birkenfeld), Yannick Becker (Environmental Campus Birkenfeld, Birkenfeld).
- Topic: Application of quantitative empirical research methods to identify energy hotspots in software- intensive systems via the combination of static and dynamic source code analyses.
- Resulting publications:
    1. "Code-level Energy Hotspot Localization via Naive Spectrum Based Testing", 32nd International Conference on Informatics for Environmental Protection (EnviroInfo), 2018.

Languages

Italian	Native
German	Native
English	Full professional proficiency

Publications

Journal Publications

- R. Verdecchia, P. Lago. *Tales of Hybrid Teaching in Software Engineering: Lessons Learned and Guidelines. IEEE Transactions on Education.* 2022.
- R. Verdecchia, P. Lago, C. de Vries. *The future of sustainable digital infrastructures: A landscape of solutions, adoption factors, impediments, open problems, and scenarios*. Sustainable Computing: Informatics and Systems. 2022.
- R. Verdecchia, I. Malavolta, P. Lago, I. Ozkaya. *Empirical evaluation of an architectural technical debt index in the context of the Apache and ONAP ecosystems*. PeerJ Computer Science. 2022.
- R. Verdecchia, P. Kruchten, P. Lago, and I. Malavolta. *Building and evaluating a theory of architectural technical debt in software-intensive systems*. Journal of Software and Systems (JSS), 2021. 🏆 Best Paper Award.
- R. Verdecchia, P. Lago, C. Ebert. *Green IT and Green Software*. IEEE Software. 2021.
- R. Verdecchia, E. Cruciani, B. Miranda, A. Bertolino. *Know You Neighbor: Fast Static Prediction of Test Flakiness*. IEEE Access. 2021.
- M. Autili, I. Malavolta, A. Perucci, G.L. Scoccia, R. Verdecchia. *Software Engineering Techniques for Statically Analyzing Mobile Apps: Research Trends, Characteristics, and Potential for Industrial Adoption*. Journal of Internet Services and Applications. 2021.
- S. Herbold *et al. A fine-grained data set and analysis of tangling in bug fixing commits*. Empirical Software Engineering. 2022.

Conference Publications

- N. Kozanidis, R. Verdecchia, E. Guzmán. *Asking about Technical Debt: Characteristics and Automatic Identification of Technical Debt Questions on Stack Overflow*. International Symposium on Empirical Software Engineering and Measurement. 2022.
- A. Bertolino, E. Cruciani, B. Miranda, R. Verdecchia. *Testing non-testable programs using association rules*. International Conference on Automation of Software Test. 2022.
- R. Verdecchia, L. Cruz, J. Sallou, M. Lin, J. Wickenden, E. Hotellier. *Data-Centric Green AI: An Exploratory Empirical Study*. International Conference on ICT for Sustainability. 2022.
- L. Wattenbach, B. Aslan, M.M. Fiore, H. Ding, R. Verdecchia, I. Malavolta. *Do You Have the Energy for This Meeting? An Empirical Study on the Energy Consumption of the Google Meet and Zoom Android apps*. International Conference on Mobile Software Engineering and Systems (MOBILESoft). 2022.
- S. Vos, P. Lago, R. Verdecchia, I. Heitlager. *Architectural Tactics to Optimize Software for Energy Efficiency in the Public Cloud*. International Conference on ICT for Sustainability. 2022.
- J. Bogner, R. Verdecchia, I. Gerostathopoulos. *Characterizing Technical Debt and Antipatterns in AI-Based Systems: A Systematic Mapping Study*. International Conference on Technical Debt. 2021. 🏆 Best Research Presentation Award.
- S. Ospina, R. Verdecchia, I. Malavolta, P. Lago. *ATDx: A tool for Providing a Data-driven Overview of Architectural Technical Debt in Software-intensive Systems*. European conference on Software Architecture. 2021.
- F. Coró, R. Verdecchia, E. Cruciani, B. Miranda, A. Bertolino. *JTeC: A Large Collection of Java Test Classes for Test Code Analysis and Processing*. International Conference on Mining Software Repositories, 2020.
- P. Lago, R. Verdecchia, N. Condori-Fernandez, E. Rahmadian, J. Sturm, T. van Nijnanten, R. Bosma, C. Debuysscher, P. Ricardo. *Designing for Sustainability: Lessons Learned from Four Industrial Projects*. International Conference on Informatics for Environmental Protection. 2020.
- R. Verdecchia, P.Kruchten, P. Lago. *Architectural Technical Debt: A Grounded Theory*. European Conference on Software Architecture, 2020.
- R. Verdecchia, P.Lago, I. Malavolta, P. Lago, I.Ozkaya. *ATDx: Building an Architectural Technical Debt Index*. International Conference on Evaluation of Novel Approaches to Software Engineering, 2020.
- E. Cruciani, B. Miranda, R. Verdecchia, A. Bertolino. *Scalable Approaches for Test Suite Reduction*. International Conference on Software Engineering, 2019. 🏆 ACM SIGSOFT Distinguished Paper Award.
- R. Verdecchia, I. Malavolta, and P. Lago. *Guidelines for Architecting Android Apps: A mixed-method Empirical Study*. International Conference on Software Architecture (ICSA), 2019.
- P. Lago, Jia F. Cai, Remco C. de Boer, Philippe Kruchten, and R. Verdecchia. *DecidArch: Playing Cards as Software Architects*. Hawaii International Conference on System Sciences (HICSS), 2019. 🏆 Best Paper Award. 🏆 ISSIP-IBM-CBA Student Paper Award for Best Industry Studies Paper.
- P. Lago, Jia F. Cai, Remco C. de Boer, Philippe Kruchten, and R. Verdecchia. *DecidArch v2: An improved Game to teach Architecture Design Decision Making*. International Workshop on decision Making in Software ARCHitecture (MARCH), 2019.
- I. Malavolta, R. Verdecchia, M. Bruntink , B. Filipovic and P. Lago. *On the Evolution of Maintainability Issues of Android Applications* . IEEE International Conference on Software Maintenance and Evolution, 2018.
- R. Verdecchia, R. A. Saez, Giuseppe Procaccianti, and P. Lago. *Empirical Evaluation of the Energy Impact of Refactoring Code Smells*. International Conference on ICT for Sustainability (ICT4S), 2018. 🏆 Runner-up Best Paper Award.
- R. Verdecchia. *Identifying Architectural Technical Debt: Moving Forward*. IEEE International Conference On Software Architecture (ICSA), 2018.
- B. Miranda, E. Cruciani, R. Verdecchia, A. Bertolino. *FAST Approaches to Scalable Similarity-based Test Case Prioritization*. International Conference on Software Engineering (ICSE) , 2018.
- R. Verdecchia. *Identifying Architectural Technical Debt in Android Applications through Compliance Checking*. International Conference on Mobile Software Engineering and Systems (MobileSoft), 2018. 🏆 Bronze medal - ACM Student Research Competition.
- R. Verdecchia, A. Guldner, Y. Becker, and E. Kern. *Code-level Energy Hotspot Localization via Naive Spectrum Based Testing*. International Conference On Enviromental Informatics (EnviroInfo), 2018. itemR. Verdecchia, I. Malavolta, and P. Lago. *Architectural Technical Debt Identification: The Research Landscape*. International Conference on Technical Debt (TechDebt), 2018.
- R. Verdecchia, Giuseppe Procaccianti, I. Malavolta, P. Lago, and J. Koedijk. *Estimating Energy Impact of Software Releases and Deployment Strategies: The KPMG Case Study*. Empirical Software Engineering and Measurement (ESEM), 2017.
- R. Verdecchia, F. Ricchiuti, A. Hankel, P. Lago, and Giuseppe Procaccianti. *Green ICT Research and Challenges*. Advances and New Trends in Environmental Informatics, pp. 37-48, 2017.