Sara Vinco

Associate Professor, Politecnico di Torino, Italy

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Current Position

Politecnico di Torino — *Torino, IT*

Associate Professor — *December 2021 - PRESENT*

- Department of Control and Computer Science (ING-INF05, 09/H1)
- Teaching duties: Computer Science, Programming techniques, Digital technologies laboratory for industry 4.0
- Responsible for Outgoing Mobility for the Computer Science students (since 2018)
- Member of the Coordination Team of the Ph.D. in Control and Computing Engineering (since 2022)
- Member of the Evaluation Committee for the Admission to the Ph.D. School in Computer and Control Engineering (XXXVIII cycle)

Experience

Politecnico di Torino — *Torino, IT*

Assistant Professor with Tenure Track — *December 2018 - December 2021*

- Department of Control and Computer Science
- Teaching duties: Computer Science, Programming techniques, Digital technologies laboratory for industry 4.0
- Responsible for Outgoing Mobility for the Computer Science students

Competence Industry Manufacturing 4.0 (CIM4.0) Academy — *Torino, IT*

Lecturer — *December 2020 – PRESENT*

- Course: Introduction to Digital Twins, modulo: STEP 3 - I4.0 TECHNOLOGY GAP RECOVERY

Politecnico di Torino — *Torino, IT*

Assistant Professor without Tenure Track — *June 2017 - December 2018*

- Department of Control and Computer Science
- Teaching duties: Computer Science, Energy management in mobile systems

Ideas and Motion s.r.l. — *Cherasco, IT*

Cooperation and training contract — *March 2017 - April 2017*

- Presentation of the SystemC TLM 2.0 standard
- Development of a practical project

Politecnico di Torino — *Torino, IT*

Postdoctoral Research Fellow — *January 2014 - June 2017*

- Department of Control and Computer Science
- Teaching duties (exerciser): Computer Science, Energy management in mobile systems
- Representative of Research Fellows, Control and Computer Science Department

University of Southampton — *Southampton, UK*

Visiting Research Fellow — *September 2013 - November 2013*

- Electronic Systems and Devices Research Group, Prof. Mark Zwolinski
- Formal modeling of analog circuit descriptions with VHDL-AMS and Verilog-AMS to gain C++ code generation
- Sponsored by the CooperInt (COOPERazione INTernazionale) mobility plan - 2012

University of Verona — *Verona, IT*

Postdoctoral Research Fellow — *January 2013 - December 2013*

- Department of Computer Science
- Teaching duties (exerciser): Embedded System Design

University of Michigan — *Ann Arbor, US*

Visiting Research Fellow — *June 2011 - December 2011*

- Electrical Engineering and Computer Science, Prof. Valeria Bertacco
- Efficient simulation of SystemC systems on GP-GPUs

University of Verona *Verona, IT*

Ph.D. Student *January 2010 - December 2012*

- Department of Computer Science
- Advisor: Prof. Franco Fummi
- Thesis title: Reuse and Integration of Heterogeneous Components for Efficient Embedded Software Generation
- Teaching duties (exerciser): Computer Architectures, Embedded System Design
- Representative of Ph.D. Students, Computer Science Department

Education

University of Verona *Verona, IT*

Ph.D. in Computer Science *January 2010 – May 2013*

- **Thesis title:** Reuse and Integration of Heterogeneous Components for Efficient Embedded Software Generation

University of Verona *Verona, IT*

Master Degree in Computer Science (cum laude) *October 2007 – July 2009*

- **Thesis title:** Reuse and Integration of Heterogeneous Components for Efficient Embedded Software Generation

University of Verona *Verona, IT*

Bachelor Degree in Computer Science (cum laude) *September 2004 – July 2007*

- **Thesis title:** Reuse and Integration of Heterogeneous Components for Efficient Embedded Software Generation

Editorial Activities

Springer Design Automation for Embedded Systems

Associate Editor *PRESENT*

- https://www.springer.com/journal/10617

Languages, Design Methods, and Tools for Electronic System Design

Book editor *2019*

- Selected Contributions from FDL 2017, ISBN 978-3-030-02215-0
- Book editors: Daniel Große, Sara Vinco, Hiren Patel

IEEE Transactions on Circuits and Systems-I: Regular Papers (TCAS-I)

Associate Editor *2018–2019*

- Papers in the areas of Computer Aided Design and Electronic Design Automation
- https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8248592

IEEE Transactions on Circuits and Systems II Express Briefs

Guest Editor *2018*

- Papers associated with the *Late Breaking News Session* of the IEEE International Symposium on Circuits and Systems (ISCAS), 2018
- TCAS-II Volume 65, Issue 12, December 2018

MAYFEB Journal of Electrical and Computer Engineering

Associate Editor *2016–2017*

- Papers in the area: Computer Aided Design and Electronic Design Automation

ACM Transactions on Embedded Computing Systems

Associate Editor *2015*

- Special Issue *Innovative design methods for smart embedded systems*
- ACM TECS Volume 15, Issue 2, May 2016

Organization Commitees of International Conferences

Track Chair

Asia and South-Pacific regions on Electronic Design Automation Conference (ASP-DAC) *2022*

Track: Embedded Systems Software

Program Chair

Forum on Design Languages (FDL) *2022*

Best Paper Award Committee

Asia and South Pacific Design Automation Conference (ASP DAC) *2022*

- Best paper award from candidate papers of the 2022 edition
- 10-Year Retrospective Most Influential Paper Award

Track Co-Chair

Design Automation Conference (DAC) *2022*

- Track: EDA7. Design Verification and Validation

Track Co-Chair

IEEE International Conference on Omni-layer Intelligent systems (COINS) *2021*

- Track: CAD for IoT, Cyber-Physical Systems and AI

Track Co-Chair

IEEE Computer Society Annual Symposium on VLSI (ISVLSI) *2020–2021*

- Track: Computer-Aided Design and Verification (CAD)

Young People Program Co-Chair

Design, Automation and Test in Europe Conference *2021–2022*

Track Chair

Design, Automation and Test in Europe Conference *2020–2022*

- Track: Embedded Software Architecture, Compilers and Tool Chains

Special Session Chair

IEEE Forum on specification and Design Languages (FDL) *2020–2021*

Young Professionals Program Co-Chair

IEEE International Symposium on Circuits and Systems (ISCAS) *2020*

Tutorial and Special Session Co-Chair

IEEE International Conference on Computer Design (ICCD) *2018–2019*

Late Breaking News Co-Chair

IEEE International Symposium on Circuits and Systems (ISCAS) *2018*

Panel and Tutorial Chair

IEEE Forum on specification and Design Languages (FDL) *2018*

Ph.D. Forum Co-Chair

IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SOC) *2018*

Publication Co-Chair

ECSI/IEEE Forum on specification and Design Languages (FDL) *2017*

Program Co-Chair

IEEE International High-Level Design Validation and TestWorkshop (HLDVT) *2017*

Publication Co-Chair

IEEE International High-Level Design Validation and Test Workshop (HLDVT) *2016*

Track Co-Chair

IEEE/IFIP International Conference on Embedded and Ubiquitous Computing (EUC) *2014*

- Track: Hardware/Software Co-design and Design Automation

Techical Program Commitees of International Conferences

IEEE/ACM Design Automation Conference (DAC)

Subcommittee: Design Verification and Validation — *2018–2022*

IEEE/ACM Design, Automation and Test in Europe (DATE)

Subcommittees: System Simulation and Validation, Embedded Software Architecture, Compilers and Tool Chains — *2017–2021*

Great Lakes Symposium on VLSI (GLS-VLSI)

Track: Electronic Design Automation — *2022-2023*

IEEE Reconfigurable Architectures Workshop (RAW)

2017–2022

IEEE Computer Society Annual Symposium on VLSI (ISVLSI)

Computer-Aided Design and Verification — *2020*

INSTICC International Conference on Pervasive and Embedded Computing and Communication Systems

2019

IEEE International Conference on Electronics, Circuits and Systems (ICECS)

Track: Circuit Design: EDA CAD optimization test and reliability — *2018–2019*

ECSI/IEEE Forum on specification and Design Languages (FDL)

2016–2019

IEEE International Conference on Computer Design (ICCD)

Track: Special Sessions and Tutorials — *2016–2017, 2019*

ACM International Conference on Computing Frontiers (CF)

2017

IEEE International High-Level Design Validation and Test Workshop (HLDVT)

2016–2017

Euromicro Digital Systems Design (DSD)

Special Session on Design of Cyber-Physical Systems — *2016–2017*

ACM/IEEE SBCCI Symposium on Integrated Circuits and Systems Design (SBCCI)

2016

Euromicro Digital Systems Design (DSD)

Special Session on Design of Cyber-Physical Systems — *2016–2017*

Euromicro/ACM International Conference on Pervasive and Embedded Computing (PEC)

2016, 2018

NASA/ESA Conference on Adaptive Hardware and Systems (AHS)

2015, 2018

IEEE/IFIP International Conference on Embedded and Ubiquitous Computing (EUC)

2013

Awards

Best Paper Award

ECSI/IEEE Forum on Design Languages — *2011*

- Paper: N. Bombieri, F. Fummi, V. Guarnieri, F. Stefanni and S. Vinco, *Efficient implementation and abstraction of SystemC data types for fast simulation*

Seminars and Panels

Women in Engineering - Past Present and Future

IEEE CAS/Synopsys Virtual Conference *March 31, 2021*

- Panelists: Malgorzata Chrzanowska-Jeske, Maria Jose Escobar, Sara Vinco, https://ieee-cas.org/virtual-conference-women-engineering-past-present-and-future

Application of EDA Models and Languages to Industry 4.0

Forum on Design Languages *September 03, 2019*

- Panelists: Frank Schirmeister, Ronald Jancke, Sara Vinco, Julio Medina, Peter Wilson, http://fdl-conference.org/FDL2019/program.html#panel

Projects

Work package leader

Project: ICS-MSC - Industry 4.0 Complex Solution for Manufacturing Supply Chain *Gennaio 2021 - Dicembre 2022*

- Programma Operativo Regionale "Investimenti a favore della crescita e dell'occupazione" F.E.S.R. 2014/2020 (overall budget €3.400.000, budget for Politecnico di Torino € 350.000)
- Work Package: "OR 2 - Specifiche Tecniche e Metodologiche" and "WP2.1 - Analisi del contesto applicativo e dello stato dell'arte"

Work package leader for Politecnico di Torino

Project: Mathematical models for orders forecasting and management and big data analysis for orders pre-configuration *2017*

- Work package "Phase 2 - Collection and Analysis of data", project sponsored by Fiat Chrysler Automobiles N.V. (12 months, overall budget €93.600).

Work package leader for Politecnico di Torino

Project: Mathematical models for orders forecasting and management and big data analysis for orders pre-configuration 2.0 *2016*

- Work packages "Phase 1 – Collection and Analysis of data" and "Phase 2 – Tool development", project sponsored by Fiat Chrysler Automobiles N.V. (12 months, overall budget €60.450).

Work package leader for Politecnico di Torino

Project: SMArt systems Co-design" – SMAC (FP7-ICT-2011-7-288827) *2014*

- Work package "WP4 - Integration-aware component and subsystem design and optimization", EU funded project in the FP7 framework (3 years, overall budget €12,993,896, EU funding for Politecnico di Torino €763,791).

Work package leader for Politecnico di Torino

Project: Interactive Power Devices for Efficiency in Automotive with Increased Reliability and Safety" – IDEAS (ENIAC–304603) *2014–2015*

- Work package "WP3 - Advanced high bandwidth storage technologies for multicore architecture and control systems", EU funded project in the FP7 framework (3 years, overall budget €9,950,109, EU funding for Politecnico di Torino €200,400).

Work package leader for Politecnico di Torino

Project: Design of embedded mixed-criticality CONTRol systems under consideration of EXtra-functional properties" – CONTREX (FP7-ICT-2013-10-611146) *2014–2016*

- Work package "WP3 - Platform Service Abstraction and Extra-Functional Properties", EU funded project in the FP7 framework (3 years, overall budget €9,341,564, EU funding for Politecnico di Torino €461,131).

Teaching

Lecturer

Politecnico di Torino

- *Programming Techniques*: course on learning programming as a tool for solving real problems with the introduction of the C language, academic years 2022-2023, 2021-2022, 2020-2021.
- *Computer Science*: course that introduces the main issues related to computer science from both the "cultural" and the technological perspective, and introduces the use of computer programming as a way to solve realistic problems through the Python language, academic years 2022-2023, 2021-2022, 2020-2021.
- *Computer Science*: course that introduces the main issues related to computer science from both the "cultural" and the technological perspective, and introduces the use of computer programming as a way to solve realistic problems through the C language, academic 2019-2020.
- *Laboratory of digital technologies for industry 4.0*: in-depth overview of the information technologies that are the basis of the Industry 4.0 paradigm to provide the student with the skills necessary to manage the digitalization processes of businesses, academic year 2022-2023, 2021-2022.

Contract Professor

Università degli Studi di Verona

- *Basic Information Technology*: introduces the basic notions in computer science that are necessary for a knowledgeable use of computer systems, academic year 2012-2013.

Teaching Assistant

Politecnico di Torino

- *Laboratory of digital technologies for industry 4.0*: in-depth overview of the information technologies that are the basis of the Industry 4.0 paradigm to provide the student with the skills necessary to manage the digitalization processes of businesses, academic year 2020-2021.
- *Object programming*: focuses of teaching the object-oriented paradigm, with a focus on the Java language.
- *Computer Science*: course that introduces the main issues related to computer science from both the "cultural" and the technological perspective, and introduces the use of computer programming as a way to solve realistic problems through the C language, academic 2019-2020, 2018-2019, 2017-2018, 2016-2017, 2015-2016.
- *Energy management for IoT*: issues related to the modeling, design and simulation of resource-constrained embedded systems used in the Internet-of-things (IoT) world, where constraints concern especially energy and computational power, academic year 2019-2020.
- *Energy management in mobile systems*: issues related to the modeling, design and simulation of resource-constrained embedded systems, where constraints concern especially energy and computational power, academic years 2018-2019, 2017-2018, 2016-2017, 2015-2016.
- *Energy management for embedded systems*: issues related to the modeling, design and simulation of resource-constrained embedded systems, where constraints concern especially energy and computational power, academic year 2014-2015.

Teaching Assistant

Università degli Studi di Verona

- *Embedded systems design*: presentation of some design automation techniques for embedded systems covering the entire design flow through modeling, verification, synthesis and testing, academic years 2012-2013, 2011-2012, 2010-2011.

Research Interests

The research of Sara Vinco focuses on design and simulation of heterogeneous systems, in the context of smart and industrial systems. Her main interests are:

- Modeling and simulation of heterogeneous systems, in presence of performance and energy constraints;
- Automatic synthesis of components, to enhance design space exploration and to ease integration;
- System and component validation and verification, including their interaction with the overall surrounding system and by considering both functional and extra-functional aspects (e.g., thermal, power, reliability);
- Modeling and simulation of energy systems.

Publications

Full list	`https://eda.polito.it/sara-vinco/`
Google Scholar	Citations 546, H-Index 14, i10-index 21
Scopus	Citations 386, H-Index 10, 105 co-authors
International Peer Reviewed Journals	19
International Peer Reviewer Conferences	49
Book Chapters	7
Books (as Editor)	1