



Franco Fummi Biography



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Franco Fummi received the Laurea degree in Electronic Engineering at Politecnico di Milano in 1990 and the Ph.D. in Electronic and Communication Engineering in 1994 at Politecnico di Milano.

In 1993 he was Research Assistant at the department of Computer Science of the University of Victoria (B.C.).

In 1996 he obtained the position of Assistant Professor in Computer Science at the Dipartimento di Elettronica e Informazione of Politecnico di Milano where he remained until October 1998.

In July 1998 he obtained the position of Associate Professor in Computer Architecture at the Computer Science Department of Università di Verona.

Since March 2001 he is Full Professor in Computer Architecture at Università di Verona, before at the Computer Science Department and then at the Department of Engineering IM (DIMI).

He is leading the Cyber-physical and IoT Systems Design (CISD) group of the Università di Verona, currently composed of more than 20 people and working on hardware description languages and electronic design automation methodologies for modeling, verification, testing and optimization of cyber-physical systems.

The main research directions exploited by Franco Fummi are:



- Embedded system verification (Static verification - Dynamic verification- Semi-formal verification - Hybrid and real-time systems – Smart systems integration);
- Networked embedded systems (System/Network co-simulation - System/Network co-design - QoS-enabled design - Sensor networks and M2M systems);
- Embedded systems design (TLM-RTL synthesis and abstraction - RTL-to-SW abstraction - TLM transactor generation - Device-driver generation - Embedded SW for multi/many core systems - Middleware-based design).
- Cyber-physical production systems modeling, design, simulation and testing.

In relation to such research areas, he published more than 350 papers; three of them received the "best paper award" respectively at IEEE EURODAC'96, IEEE DATE'99 and IEEE FDL'11.

He is co-founder and CTO of the EDA company EDALab (www.edalab.it), spin-off of the Università di Verona, focused on networked embedded systems design the automation control software company FACTORYAL, spin-off of the Università di Verona.

He has been partner in eleven IST European projects: FP5-IST-2001-34607 (SYMBAD), FP6-2005-IST-5-033506 (VERTIGO), FP6-2005-IST-5-033709 (ANGEL), FP7-REGPOT-2008-1 (CREDES), FP7-2007-IST-4-247999 (COMPLEX), FP7-ICT-2011-7-288827 (SMAC), FP7-ICT-2011-7-288166 (TOUCHMORE), FP7-ICT-2013-10-611146 (CONTREX), and he coordinated the FP7-2007-IST-1-217069 (COCONUT), the H2020-MSCA-IF-2019-894237 (DEFACTO) and the HORIZON-MSCA-PF-2022-101109243 (STRATEGUS) projects.

From 2012 to 2018 is has been the head of the Department of Computer Science at the Università di Verona, that has been selected by the Italian Ministry of Education, Universities and Research (MIUR) in the 180 "Dipartimenti di Eccellenza 2018-2022" (Departments of Excellence). Under this framework, he leded the project Computer Engineering for Industry 4.0 (<https://www.icelab.di.univr.it/>) which focused the research of the entire Department to industrial computer engineering.

Journal publications (2015-2022):

1. Bombieri, Nicola; Scaffeo, Silvia; Mastrandrea, Antonio; Caligola, Simone; Carlucci, Tommaso; Fummi, Franco; Laudanna, Carlo; Constantin, Gabriela; Giugno, Rosalba, SystemC implementation of Stochastic



- Petri Nets for Simulation and Parametrization of Biological Networks, «*ACM Transactions on Embedded Computing Systems*», vol. 20, n. 4, pp. 1-20, 2021
2. Fummi, Franco; O'Connor, Ian, Holding Conferences Online in Pandemic Times: The DATE Experience, «*IEEE Design & Test*», vol. 38, n. 4, pp. 128-130, 2021
 3. Fraccaroli, Enrico; Lora, Michele; Fummi, Franco, Automatic Generation of Analog/Mixed Signal Virtual Platforms for Smart Systems, «*IEEE Transactions on Computers*», vol. 69, n. 9, pp. 1263-1278, 2020
 4. Spellini, Stefano; Chirico, Roberta; Panato, Marco; Lora, Michele; Fummi, Franco, Virtual Prototyping a Production Line using Assume-Guarantee Contracts, «*IEEE Transactions on Industrial Informatics*», vol. 17, n. 9, pp. 6294-6302, 2020
 5. Vinco, Sara; Bombieri, Nicola; Pagliari, Daniele Jahier; Fummi, Franco; Macii, Enrico; Poncino, Massimo: A Cross-level Verification Methodology for Digital IPs Augmented with Embedded Timing Monitors, «*ACM Transactions on Design Automation of Electronic Systems*», vol. 24, n. 3, pp. 1-23, 2019
 6. Spellini, Stefano; Lora, Michele; Fummi, Franco; Chattopadhyay, Sudipta: Compositional Design of Multi-Robot Systems Control Software on ROS, «*ACM Transactions on Embedded Computing Systems*», vol. 18, n. 5s, pp. 1-24, 2019
 7. Teich, Jurgen; Fummi, Franco: Conference Reports: Recap of DATE 2019 in Florence, Italy, «*IEEE Design & Test*», vol. 36, n. 4, pp. 59-61, 2019
 8. Lora, Michele; Vinco, Sara; Fummi, Franco: Translation, Abstraction and Integration for Effective Smart System Design, «*IEEE Transactions on Computers*», vol. 68, n. 10, pp. 1525-1538, 2019
 9. Fraccaroli, Enrico; Stefanni, Francesco; Rizzi, Romeo; Quaglia, Davide; Fummi, Franco: Network Synthesis for Distributed Embedded Systems «*IEEE Transactions on Computers*», vol. 67, n. 9, pp. 1315-1330, 2018
 10. Lora, Michele; Vinco, Sara; Fraccaroli, Enrico; Quaglia, Davide; Fummi, Franco: Analog Models Manipulation for Effective Integration in Smart System Virtual Platforms «*IEEE Transactions on CAD/ICAS*», vol. 37, n. 2, pp. 378-391, 2018
 11. Vinco, Sara; Chen, Yukai; Fummi, Franco; Macii, Enrico; Poncino, Massimo: A Layered Methodology for the Simulation of Extra-Functional Properties in Smart Systems «*IEEE Transactions on CAD/ICAS*» vol. 36, n.10, pp. 1702-1715, 2017
 12. Nicola Bombieri, Federico Busato, Franco Fummi, Pro++: A Profiling Framework for Primitive-based GPU Programming «*IEEE Transactions on Emerging Topics In Computing*», vol. 6, n. 3, pp. 382-394, 2016
 13. Sara Vinco, Valerio Guarnieri, Franco Fummi, Code Manipulation for Virtual Platform Integration «*IEEE Transactions on Computers*», vol. 65, n. 9, pp. 2694-2708, 2016
 14. Nicola Bombieri, Franco Fummi, Sara Vinco, A Methodology to Recover RTL IP Functionality for Automatic Generation of SW Applications «*ACM Transactions on Design Automation of Electronic Systems*», vol. 20, n. 3, pp. 1-25, 2015
 15. Emad Ebeid, Franco Fummi, Davide Quaglia, HDL Code Generation From UML/MARTE Sequence Diagrams For Verification and Synthesis «*An International Journal on Design Automation for Embedded Systems*», vol. 19, n. 3, pp. 277-299, 2015
 16. He, Diwei; Morgan, Stephen P; Trachanis, Dimitrios; van Hese, Jan; Drogoudis, Dimitris; Fummi, Franco; Stefanni, Francesco; Guarnieri, Valerio; Hayes-Gill, Barrie R, A Single-Chip CMOS Pulse Oximeter with On-Chip Lock-In Detection «*Sensors*», vol. 15, n. 7, pp. 17076-17088, 2015
 17. E. Ebeid, F. Fummi, D. Quaglia, Model-Driven Design of Network Aspects of Distributed Embedded Systems «*IEEE Transactions on CAD/ICAS*», vol. 34, n. 4, pp. 603-614, 2015
 18. Nicola Bombieri, Franco Fummi, Valerio Guarnieri, Graziano Pravadelli, Francesco Stefanni, Tara Ghasempouri, Michele Lora, Giovanni Auditore, Mirella NegroMarcigaglia, Reusing RTL assertion



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checkers for verification of SystemC TLM models «*Journal of Electronic Testing: Theory and Applications*», vol. 31, n. 2, pp. 167-180, 2015

19. M. Lora; R. Muradore; D. Quaglia; F. Fummi, Simulation Alternatives for the Verification of Networked Cyber-Physical Systems «*Microprocessors and Microsystems*», vol. 39, n. 8, pp. 843-853, 2015

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