

# Curriculum Vitæ

Enrico Bini

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## Current and Past Positions

**Oct 2016–today Associate professor** at Computer Science Department, University of Turin, Italy.

**23/01/2015 Youngest** researcher eligible as **full processor** in Italian universities, in the area 09/H1 “Sistemi di elaborazione delle informazioni” (Computer Engineering), after the 2013 evaluation of the Italian national qualification procedure.

**31/01/2014** Eligible as **associate processor** in Italian universities, in the area 01/B1 “Informatica” (Computer Science), after the 2012 evaluation of the Italian national qualification procedure.

**04/12/2013** Eligible as **associate processor** in Italian universities, in the area 09/H1 “Sistemi di elaborazione delle informazioni” (Computer Engineering), after the 2012 evaluation of the Italian national qualification procedure.

**Apr 2007–Sep 2016 Assistant professor** at Scuola Superiore Sant’Anna, Pisa, Italy.

**Mar 2012–Feb 2014 Marie-Curie fellow** at Lund University (on leave from Scuola Superiore Sant’Anna).

**Sep 2005–Aug 2006 Post-doc** at the Scuola Superiore Sant’Anna.

**Jan–May 2001** Internship at **Ericsson Lab Italy**, R&D dept., Rome. Studying the software behavior under heavy load and stress conditions.

## Education

**Jan 2010 Diploma di Laurea Specialistica** in Mathematics from Università di Pisa (grade: **110/110 e lode**), achieved on January 29th, 2010. Thesis title: “*Design of Optimal Control Systems*”.

**Oct 2004 PhD degree** in Computer Engineering from Scuola Superiore Sant’Anna (grade: **100/100 e lode**), achieved on October 1st, 2004. Thesis title: “*The Design Domain of Real-Time Systems*”.

**Oct 2001 Diploma di Licenza** from Scuola Superiore Sant’Anna (grade: **100/100 e lode**), achieved on October 26th, 2001. Thesis title: “*A method to perform time-variant load measure*”, work developed while visiting Ericsson Lab Italy, Rome.

**Dec 2000 Diploma di Laurea** (five years degree) in Computer Engineering from Università di Pisa (grade: **110/110 e lode**), achieved on December 13th, 2000. Thesis title: “*Developing real-time applications on embedded systems: the microcontroller ST10*”.

**Nov 1995** Admitted to the undergraduate Engineering school of excellence Scuola Superiore Sant’Anna. Ranked **3rd among 331 participants** at national level.

**May 1994** Admitted to the National Finals of the Mathematics Olympic Games.

## Teaching

- Mar 2017** Teacher of the course **Basics of Computer Science** for undergraduate students at University of Turin, 72 hours of teaching.
- Nov 2016** Teacher of the course **Unix laboratory** for undergraduate students at University of Turin, 60 hours of teaching.
- Apr 2016** Teacher of the course **Basics of C Programming** for undergraduate students at Scuola Superiore Sant'Anna, 30 hours of teaching.
- Mar 2016** Teacher of the course **Component-based software design** within the Laurea Magistrale in Embedded Computing Systems at Scuola Superiore Sant'Anna, 30 hours of teaching.
- July 2015** Teacher of the lecture **Embedded Systems design and its Impact on Control**, within the course Design Flows for Control and Verification of Thermal Fluid Systems at University of Connecticut, 3 hours of teaching.
- Mar 2015** Teacher of the course **Component-based software design** within the Laurea Magistrale in Embedded Computing Systems at Scuola Superiore Sant'Anna, 30 hours of teaching.
- May 2014** Teacher of the course **Real-Time Systems: an Optimal Design Approach** for PhD and master students at Scuola Superiore Sant'Anna, 10 hours of teaching.
- Nov 2012** Teacher of the course **Advanced Real-Time Systems** for PhD and master students at Lund University, 7.5 ECTS.
- Mar 2011** Teacher of the course **Optimization Methods** within the Laurea Magistrale congiunta in ICT by Scuola Superiore Sant'Anna and University of Trento, 48 hours of teaching and laboratory.
- Mar 2010** Teacher of the course **Optimization Methods 2, discrete variables** within the Laurea Magistrale congiunta in ICT by Scuola Superiore Sant'Anna and University of Trento, 30 hours of teaching and laboratory.
- Jan 2010** Teacher of the course **Optimization Methods 1, continuous variables** within the Laurea Magistrale congiunta in ICT by Scuola Superiore Sant'Anna and University of Trento, 30 hours of teaching and laboratory.
- Mar 2008** Teaching Assistant of the course **Advanced Real-Time Systems** for PhD students at the Scuola Superiore Sant'Anna, 15 hours of teaching.
- Oct 2007** Teacher of the course **Optimization Methods** at the Scuola Superiore Sant'Anna, 20 hours of teaching and laboratory.
- Mar 2007** Teaching Assistant of the course **Advanced Real-Time Systems** for doctoral students at the Scuola Superiore Sant'Anna, 10 hours of teaching.
- Sep 2006** Teacher of the course **Real-Time Operating Systems** at Ericsson Lab Italy, Rome, 12 hours of teaching;
- Jan–Apr 2005** Teacher of the course **Design of Embedded Systems** within the Laurea Specialistica in Computer Engineering at Università di Siena. 60 hours of teaching and laboratory.
- Sep–Dec 2004** Teacher of the course **Basics of Computer Architecture (Calcolatori Elettronici)** within the Laurea in Telecommunications Engineering at Università di Siena. 72 hours of teaching and laboratory.
- Sep 2004–May 2005** Teaching Assistant of the course **Mathematics** for first year undergraduate students at Università di Pisa, Engineering faculty. 40 hours of exercises.
- Feb 2002** Teacher of the course **Optimization Methods** at the Scuola Superiore Sant'Anna, 12 hours of teaching.

## Visits and invitations

### Visiting Periods

- Mar 2012–Feb 2014** Marie-Curie fellowship at Lund University, Sweden, hosted by Karl-Erik Årzén.
- Feb–Mar 2009** Visiting researcher at **INRIA Rocquencourt**, France, project AOSTE, invited by Yves Sorel.
- Mar–Dec 2003** Visiting PhD student at **University of North Carolina at Chapel Hill**, USA, Computer Science Department, invited by Sanjoy Baruah.
- Aug 1999–Feb 2000** Visiting student at Technische Universiteit Delft (TUD), The Netherlands, through the **Erasmus** European exchange program.

### Invited talks

- Oct 2015** **Keynote speaker** at the CSI Symposium on Real-Time and Embedded Systems and Technologies, Tehran, Iran. Title of the talk: “Challenges in the Design of Resource Constrained Cyber Physical Systems”. Invited by Mehdi Kargahi.
- Mar 2015** Invited speaker at the ***Dagstuhl Seminar on Mixed Criticality on Multicore/Manycore Platforms***, seminar number 15121, Dagstuhl, Germany. Invited by Sanjoy Baruah, Liliana Cucu-Grosjean, Robert Davis, Claire Maiza.
- Feb 2012** Invited speaker at the 1st Interdisciplinary Workshop on Algorithmic Challenges in Real-Time Systems, Berlin, Germany, invited by Sebastian Stiller, Nicole Megow, and Marko Bertogna.
- Dec 2011** Invited speaker at the LCCC Workshop on Control of Computing Systems, Lund, Sweden. Invited by Karl-Erik Årzén and Anton Cervin.
- Nov 2011** Invited speaker at the Workshop on Synthesis and Optimization Methods for Real-Time Embedded Systems, co-located with the 32nd IEEE Real-Time Systems Symposium, Vienna, Austria. Invited by Marco Di Natale.
- Feb 2010** Invited speaker at the ***Dagstuhl Seminar on Scheduling***, seminar number 10071, Dagstuhl, Germany. Invited by Susanne Albers, Sanjoy K. Baruah, Rolf H. Möhring, and Kirk Pruhs.
- Oct 2009** **Keynote speaker** at the 17-th International Conference on Real-Time and Network Systems, Paris, France, October 26–27, 2009. Title of the talk: “The design is an optimization problem: the real-time control system case”. Invited by Laurent George.
- Feb 2008** Invited speaker at the ***Dagstuhl Seminar on Scheduling***, seminar number 08071, Dagstuhl, Germany. Invited by Jane W. S. Liu, Rolf H. Möhring, and Kirk Pruhs.
- Sep 2007** Invited lecturer at the **French Summer School on Real-Time 2007** in Nantes. Title of the presentation “Minimising Energy Consumption in Real-Time Systems”. Invited by Nicolas Navet.

### Invited seminars

- Nov 2016** Seminar at **University of Lille** on “Optimal Sampling for Linear Control Systems”. Invited by Laurentiu Hetel.
- Mar 2014** Seminar at **Università di Pisa** on “Optimal Sampling for Linear Control Systems”. Invited by Giuseppe Buttazzo.

**Jan 2014** Seminar at **Università di Trento** on “Optimal Sampling for Linear Control Systems”. Invited by Luigi Palopoli.

**Aug 2013** Seminar at **TU Munich** on “Optimal Sampling for Linear Control Systems”. Invited by Samarjit Chakraborty.

**Nov 2006** Seminar at **Università di Padova** on “Designing Hierarchical Embedded Systems”. Invited by Tullio Vardanega;

**Nov 2003** Seminar at **University of California at Berkeley** within the course “Design of Embedded Systems: Models, Validation and Synthesis”. Title of the presentation: “Designing Real-Time Software”. Invited by Alessandro Pinto.

**Sep 2003** Seminar at **University of Illinois at Urbana-Champaign** within the course “Advanced Resource Management in Real-Time Systems”. Title of the presentation: “Scheduling Tasks by Static Priority”. Invited by Lui Sha.

## Awards

1. **Best paper award** for the paper: Victor Millnert, Johan Eker, Enrico Bini. “Dynamic control of NFV forwarding graphs with end-to-end deadline constraints”. In *Proceedings of the IEEE International Conference on Communications*, May 2017.
2. **Best paper award** for the paper: Martina Maggio, Juri Lelli, Enrico Bini. “A Tool for Measuring Supply Functions of Execution Platforms”. In *Proceedings of the 22nd IEEE International Conference on Embedded and Real-Time Computing Systems and Applications*, Daegu, South Korea, August 2016.
3. In 2011, elevated to the grade of **IEEE Senior member** (only 8% members are with this grade.)
4. **Premio Spitali** for the best scientific PhD thesis at the Scuola Superiore Sant’Anna of the two academic years 2003/04 and 2004/05.
5. **Best paper award** for the paper: Enrico Bini, Sanjoy K. Baruah. “Efficient computation of response time bounds under fixed-priority scheduling”. In *Proceedings of the 15-th conference on Real-Time and Network Systems*, Nancy, France, March 2007.
6. **Best paper award** for the paper: Enrico Bini, Giorgio C. Buttazzo, Marko Bertogna. “The Multi Supply Function Abstraction for Multiprocessors”, In *Proceedings of the 15-th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications*, Beijing, China, August 2009.

## PhD student supervision

**Sep 2014** Supervisor of Andrea Parri, Scuola Superiore Sant’Anna. Research project: Scheduling real-time applications over virtualized multiprocessors.

**May 2012** Co-supervisor of Artem Burmyakov, Polytechnic Institute of Porto, Portugal. Research project: Design of compositional real-time framework over multicore architectures.

**Nov 2009** Supervisor of Giulio Mancuso, Scuola Superiore Sant’Anna, Pisa, Italy. Research project: Investigation of the effect of parallel execution platform over control systems.

**Nov 2008** Supervisor of Stefano Fontanelli, Scuola Superiore Sant’Anna, Pisa, Italy. Research project: Development of a co-simulation platform for wireless network and vehicular transportation.

## Grants

**Mar 2012–Feb 2014** Principal Investigator of the Marie-Curie Intra-European Fellowship project Vi-CyPhySys (Virtual Cyber Physical Systems). Ranked 18th in the Engineering panel of all European submissions (3327 overall submissions, 507 in the panel of Engineering) with score 91.6/100. Overall budget of the project 250 KEuro.

**Nov 2012–Oct 2014** Principal Investigator of the project GESTI, (Management of failures in sensor networks for energy savings) funded by Regione Toscana, in liaison with Telecom Italia, call POR CRO FSE 2007-2013, Decreto 27/12/2011 n. 6076. Ranked 10th over 183 (score 82.7/100). Overall budget of the project 108 KEuro.

## Services to the research community

### Steering, advising committees

**since 2015** Member of the Steering Committee of the CSI Symposium on Real-Time and Embedded Systems and Technologies

### Project reviewer

- Israeli Science Foundation, Exact Sciences and Technology, Individual Research Grants, 2016
- Italian Ministry of University and Research, call “Futuro in Ricerca”, 2013
- European Commission, FP7 framework program, call ICT Future Emerging Technologies (FET), 2011

### Editorial service

**2011** Guest Editor of ACM SIGBED Review, Volume 8, Issue 3, September 2011, special issue on Work-in-Progress (WiP) session of the 23rd Euromicro Conference on Real-Time Systems (ECRTS),

**2011** Guest Editor of ACM SIGBED Review, Volume 8, Issue 1, March 2011, special issue on 3rd Workshop on Compositional Theory and Technology for Real-Time Embedded Systems (CRTS),

**2008** Member of the Guest Editorial Board of the special issue on Power-Aware Computing of the International Journal of Embedded Systems.

### Positions as chair

1. Program co-Chair of the 25th International Conference on Real-Time Networks and Systems (RTNS 2017), Grenoble, France, October 2017.
2. Local Organization co-Chair of the Embedded Systems Week 2018 (ESWeek 2018), Turin, Italy.
3. Organizer and Program co-Chair of the 1st Tutorial on Tools for Real-Time Systems (TuToR 2016) held during CPSWeek 2016, Vienna, Austria.
4. Organizer and Program co-Chair of the Workshop on Real-Time Scheduling in the Linux Kernel (RTS-LIKE), June 2014, Pisa.
5. Program chair of the Workshop on Computation and Control (COMCO) held during CPSWeek 2013, Philadelphia, PA, USA.
6. Workshops chair of the 33rd IEEE Real-Time Systems Symposium (RTSS) 2012, San Juan, Puerto Rico.

7. Organizer of the Workshop on Emerging Problems in Real-Time Embedded Systems (EPRES), Pisa, Italy, July 2012.
8. Workshops chair of the 32nd IEEE Real-Time Systems Symposium (RTSS) 2011, Vienna, Austria.
9. Publicity chair (Europe) of the 17th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA) 2011, Toyama, Japan.
10. Program chair of the Work-in-Progress session of the 23rd Euromicro Conference on Real-Time Systems (ECRTS) 2011, Porto, Portugal.
11. Program co-chair of the 3rd Workshop on Compositional Theory and Technology for Real-Time Embedded Systems (CRTS), San Diego, CA, USA, 2010
12. Organizer of the Workshop on multicores: theory and practice, Kaiserslautern, Germany, October 2008, organized within the EU research project ACTORS.

### Invitation in PhD committees abroad

**Sep 2015** Member of the examination committee of Thomasz Kloda PhD defence. Title of the dissertation: “Conditions d’ordonnançabilité pour un langage dirigé par le temps”. Supervisor: Bruno d’Ausbourg. Université de Toulouse, France.

**Dec 2014** Member of the examination committee of Rafia Inam PhD defence. Title of the dissertation: “Hierarchical scheduling in component based and multicore systems”. Supervisor: Mikael Sjödin, Mälardalen University, Västerås, Sweden.

**Apr 2014** Member of the examination committee of Martin Stigge PhD defence. Title of the dissertation: “Real-Time Workload Models: Expressiveness vs. Analysis Efficiency”. Supervisor: Wang Yi, Department of Information Technology, Uppsala Universitet, Sweden.

**Mar 2013** Opponent of Martin Korsgaard PhD defence. Title of the dissertation: “Process-Oriented Real-time Programming”. Supervisor: Sverre Hendseth, Department of Engineering Cybernetics, Faculty of Information Technology, Mathematics and Electrical Engineering, Norwegian University of Science and Technology, Trondheim, Norway.

**Oct 2012** Reviewer of Jan Kelbel PhD thesis. Title of the dissertation: “Scheduling in manufacturing systems”. Supervisor: Zdeněk Hanzálek, Dep. Control Engineering, Faculty of Electrical Engineering, Czech Technical University, Prague, Czech Republic.

**Jun 2012** Opponent of Yue Lu PhD defence. Title of the dissertation: “Pragmatic Approaches for Timing Analysis of Real-Time Embedded Systems”. Supervisor: Thomas Nolte, Mälardalen University, Västerås, Sweden.

### Program committees of conferences

Also, Enrico was invited in the Technical Program Committee (TPC) of 58 conferences, sorted by date of latest invitation

**RTSS** IEEE Real-Time Systems Symposium: 2017, 2015, 2014, 2010;

**RTCSA-RT** IEEE International Conference on Embedded and Real-Time Computing Systems and Applications, Real-Time Systems track: 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2007;

**EMSOFT** International Conference on Embedded Software: 2017, 2016, 2011;

**RTAS** IEEE Real-Time and Embedded Technology and Applications Symposium: 2016, 2015, 2013, 2011, 2010, 2009;

**RTNS** International Conference on Real-Time and Network Systems: 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007;

**V2CPS** Workshop on Verification and Validation of Cyber-Physical Systems: 2016;

**WATERS** International Workshop on Analysis Tools and Methodologies for Embedded and Real-time Systems: 2016;

**RTEST** CSI Symposium on Real-Time and Embedded Systems and Technologies: 2015.

**CRTS** Workshop on Compositional Real-Time Systems: 2014, 2009;

**RTCSA-UC** International Conference on Embedded and Real-Time Computing Systems and Applications, Ubiquitous Computing/Cyber-Physical Systems Track: 2013, 2012, 2011;

**ETFA-RTNES** IEEE Emerging Technologies and Factory Automation, Real-Time and (Networked) Embedded Systems track: 2012, 2011, 2010;

**ECRTS** Euromicro Conference on Real-Time Systems: 2012, 2011, 2010;

**SOMRES** Workshop on Synthesis and Optimization Methods for Real-Time Embedded Systems: 2011;

**MISTA** Multidisciplinary International Scheduling Conference: Theory and Applications: 2011, 2009;

**BWRTS** Brazilian Workshop on Real-Time Systems: 2011;

**ECRTS-WiP** Euromicro Conference on Real-Time Systems, Work-in-Progress session: 2010, 2008;

**COESD** Workshop on Combinatorial Optimization for Embedded System Design: 2010;

**RTSS-WiP** IEEE Real-Time Systems Symposium, Work-in-Progress session: 2009, 2008;

**SAC** ACM Symposium on Applied Computing: 2008;

**EUC** IFIP International Conference on Embedded and Ubiquitous Computing: 2005.

## Reviewing work

He has served the research community by reviewing papers submitted to the following journals (grouped by publishers):

**IEEE** Transactions on Computers; Transactions on Control Systems Technology; Access; Transactions on Parallel and Distributed Systems; Transactions on Industrial Informatics; Transaction on Computer-Aided Design; Computer; Transactions on Software Engineering; Transactions on Robotics;

**ACM** Transaction on Embedded Computing Systems;

**Springer** Algorithmica; Journal of Scheduling; Cluster Computing; Real-Time Systems; Journal of Computer Science and Technology;

**Elsevier** Journal of Logical and Algebraic Methods in Programming; Automatica; Advances in Space Research; Systems & Control Letters; Information Processing Letters; Journal of Systems Architecture; Journal of Systems and Software; Life Sciences in Space Research; Sustainable Computing, Informatics and Systems;

**Oxford Journals** The Computer Journal, IMA Journal of Mathematical Control and Information.

The number of reviews made personally is summarized in Table 1 (only data from 2008 is reported). Reviews are classified by event/journal (row) and year of assignment (column).

	2008	2009	2010	2011	2012	2013	2014	2015	2016	total
RTAS	8	10	0	11	8	0	7	6	?	50+?
RTSS	6	8	8	2	0	1	11	10	?	46+?
RTCSA	0	0	5	6	7	10	8	5	?	41+?
ECRTS	7	3	10	10	10	0	0	0	?	40+?
RTNS	5	3	5	3	3	4	4	6	?	33+?
ETFA	0	0	5	5	4	2	3	0	?	19+?
EMSOFT	0	0	0	11	0	0	0	0	?	11+?
DATE	1	0	1	0	1	0	0	0	?	3+?
DAC	0	0	0	0	0	0	0	1	?	1+?
IEEE-TC	5	1	3	2	2	1	4	2	?	20+?
RTSJ	0	1	7	4	0	1	1	4	?	18+?
Automatica	0	0	0	1	1	2	0	2	?	6+?
ACM-TECS	0	1	0	0	2	2	0	0	?	5+?
IEEE-TII	1	1	0	1	1	1	0	0	?	5+?
IPL	1	1	0	0	1	0	0	0	?	3+?
SCHED	0	0	1	0	0	0	1	1	?	2+?
Algorithmica	0	0	2	0	0	0	0	0	?	2+?
IEEE-TRO	0	0	0	0	0	0	1	1	?	2+?
JMCI	0	0	0	0	0	0	1	1	?	2+?
others	7	7	0	4	5	0	6	4	?	33+?
<b>total</b>	41	36	47	60	45	24	47	43	36	379

Table 1: Reviewing work (data of last year are intentionally hidden).

## Patents

- Johan Eker, Enrico Bini, Bengt Lindoff, Victor Millnert. “Controlling Allocation or Deallocation of an Interconnected Hardware Infrastructure Resource”. File n. US 62/299953. 2016.

## Publications

**Publications in numbers** Enrico published 23 papers on journals. The publications on journal in the area of Computer Science and Engineering (in Italian: corrispondenti ai Settori Scientifico Disciplinari ING-INF/05 e INF/01) are classified according to “classes”, as determined by the ANVUR for the 2004–2010 VQR evaluation:

- “Class 1” journal publications: 1 IEEE-TAC, 5 IEEE-TC, 3 IEEE-TII, 7 Springer-RTS, 2 ACM-TECS,
- “Class 2” journal publications: 1 IEEE-Micro,
- not listed in the ranking: 1 IJES, 1 JEC, 1 Elsevier-ENTCS.
- other research areas: 1 Automatica,

In addition, he published 65 papers on conference proceedings. The publications on conference proceedings in the area of Computer Science and Engineering, are classified according to the recent ranking by the GII-GRIN:

- “Class 1” conference publications: 9 RTSS,
- “Class 2” conference publications: 9 ECRTS, 2 IPDPS, 2 DATE, 3 RTAS,
- “Class 3” conference publications: 4 RTCSA, 2 ETFA,

source	citations (inc. self-cit.)	H-index (inc. self-cit.)	citations (no self-cit. by any au.)	H-index (no self-cit. by any au.)
Google Scholar	3212	29	n/a	n/a
Scopus	1539	20	1332	20

Table 2: Summary of citations. (checked on 2017-02-23)

- not listed in the ranking: 5 RTNS, 1 DASIP, 1 VNC, 2 IFAC-WC, 1 MISTA, 1 RTSS-WiP, 1 RTLW, 1 RTAS-demo, 2 RTAS-WiP, 5 CRTS, 1 ECRS-WiP, 1 MAPSP, 1 COESD, 1 PARC, 2 DROPS, 1 WEA-CPS, 1 WARM.
- other research areas: 2 CDC, 1 ACC, 1 HSCC, 1 EBCCSP, 1 ECC,

The number of my co-authors is 54, belonging to 31 different institutions in 14 countries.

Some citation metrics are reported in Table2. The ten most cited papers are: [J6], [C63], [J7], [J8], [C12], [J20], [C15], [J18], [C66], and [C51].

Publications are classified by topic. Publications labeled as [J $x$ ] appeared on journals, while publications labeled with [C $y$ ] appeared on conference proceedings.

**Analysis and design of time-critical applications** In time-critical applications (such as in avionics, automotive, etc.), it is necessary to guarantee at design time precise temporal constraints.

My contributions within this area are mostly into the derivation of tighter guarantee test. I also proposed a standardized procedure to measure the quality of guarantee tests.

- [J1]. Lucia Lo Bello, Enrico Bini, Gaetano Patti. “Priority-driven Swapping-based Scheduling of Aperiodic Real-Time Messages over EtherCAT Networks”, *IEEE Transactions on Industrial Informatics* 11(3):741–751, June 2015.  
DOI: 10.1109/TII.2014.2350832
- [J2]. Enrico Bini. “The Quadratic Utilization Upper Bound for Arbitrary Deadline Real-Time Tasks” *IEEE Transactions on Computers*, 64(2):593–599, February 2015.  
DOI: 10.1109/TC.2013.209
- [J3]. Thi Huyen Châu Nguyen, Pascal Richard, and Enrico Bini. “Approximation techniques for response-time analysis of static-priority tasks” *Real-Time Systems*, 43(2):147–176, October 2009.  
DOI: 10.1007/s11241-009-9078-5
- [J4]. Enrico Bini, Thi Huyen Châu Nguyen, Pascal Richard, and Sanjoy Baruah. “A response time bound in fixed-priority scheduling with arbitrary deadlines” *IEEE Transactions on Computers*, 58(2):279–286, February 2009.  
DOI: 10.1109/TC.2008.167  
(12th most cited among the 138 papers appeared in IEEE TC 2009)
- [J5]. Enrico Bini and Giorgio C. Buttazzo. “The space of EDF deadlines: the exact region and a convex approximation” *Real-Time Systems*, 41(1):27–51, January 2009.  
DOI: 10.1007/s11241-008-9060-7
- [J6]. Enrico Bini and Giorgio C. Buttazzo. “Measuring the performance of schedulability tests” *Real-Time Systems*, 30(1–2):129–154, May 2005.  
DOI: 10.1007/s11241-005-0507-9  
(**most cited** among the 25 papers appeared in RTS 2005)
- [J7]. Enrico Bini and Giorgio C. Buttazzo. “Schedulability analysis of periodic fixed priority systems” *IEEE Transactions on Computers*, 53(11):1462–1473, November 2004.  
DOI: 10.1109/TC.2004.103  
(9th most cited among the 140 papers appeared in IEEE TC 2004)

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- [J8]. Enrico Bini, Giorgio C. Buttazzo, and Giuseppe M. Buttazzo. “Rate monotonic scheduling: The hyperbolic bound” *IEEE Transactions on Computers*, 52(7):933–942, July 2003.  
DOI: 10.1109/TC.2003.1214341  
(14th most cited among the 150 papers appeared in IEEE TC 2003)
- [C1]. Enrico Bini, Andrea Parri, Giacomo Dossena. “A Quadratic-Time Response Time Upper Bound with a Tightness Property”, *Proceedings of the 36th IEEE Real-Time Systems Symposium*, San Antonio, TX, USA, December 2015.  
DOI: 10.1109/RTSS.2015.9  
(**most cited** among the 44 papers appeared at RTSS 2015)
- [C2]. Artem Burmyakov, Enrico Bini, Eduardo Tovar. “An Exact Schedulability Test for Global FP Using State Space Pruning”, *Proceedings of the 23rd International Conference on Real-Time Networks and Systems*, Lille, France, November 2015.  
DOI: 10.1145/2834848.2834877
- [C3]. Giorgio C. Buttazzo, Enrico Bini, Darren Buttle. “Rate-Adaptive Tasks: Model, Analysis, and Design Issues” *Design, Automation and Test in Europe (DATE) Conference*, Dresden, Germany, March 2014.  
DOI: 10.7873/DATE2014.266
- [C4]. Enrico Bini. “Modeling Preemptive EDF and FP by Integer Variables”. *Proceedings of the 4th Multidisciplinary International Scheduling Conference*, Dublin, Ireland, August 2009.
- [C5]. Thi Huyen Châu Nguyen, Pascal Richard, and Enrico Bini. “Improved approximate response time bounds for static-priority tasks” *Proceedings of the 16th International Conference on Real-Time and Network Systems*, Nantes, France, October 2008.
- [C6]. Cesare Bartolini, Enrico Bini, and Giuseppe Lipari. “Slack-based sensitivity analysis for EDF” *14th IEEE Real-Time and Embedded Technology and Applications Symposium, Work-in-Progress session*, St. Louis, MO, USA, April 2008.
- [C7]. Enrico Bini. “Uniprocessor EDF feasibility is an integer problem” *Proceedings of Dagstuhl Seminar on Scheduling*, Schloss Dagstuhl — Leibniz-Zentrum fuer Informatik, Germany, February 2008.
- [C8]. Enrico Bini and Giorgio C. Buttazzo. “The space of EDF feasible deadlines” *Proceedings of the 19th Euromicro Conference on Real-Time Systems*, Pisa, Italy, July 2007.  
DOI: 10.1109/ECRTS.2007.35
- [C9]. Sanjoy Baruah, Enrico Bini, Thi Huyen Châu Nguyen, and Pascal Richard. “Continuity and approximability of response time bounds” *19th Euromicro Conference on Real-Time Systems, Work-in-Progress session*, Pisa, Italy, July 2007.
- [C10]. Enrico Bini and Sanjoy K. Baruah. “Efficient computation of response time bounds under fixed-priority scheduling” *Proceedings of the 15th conference on Real-Time and Network Systems*, Nancy, France, March 2007.  
(**best paper award**)
- [C11]. Enrico Bini, Marco Di Natale, and Giorgio C. Buttazzo. “Sensitivity analysis for fixed-priority real-time systems” *Proceedings of the 18th Euromicro Conference on Real-Time Systems*, Dresden, Germany, July 2006.  
DOI: 10.1109/ECRTS.2006.26  
(**most cited** paper among the 27 appeared at ECRTS 2006)
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**Resource management on single-core, distributed, multi-core systems** When many applications co-exist over the same execution platform, it is necessary to properly assign and manage the available resources. A careful allocation policy is of great importance in environments characterized by scarce resource availability (e.g. embedded systems) or in the need of reducing power consumption (e.g. data centers, battery-operated devices).

Resource management can occur at design-time (when the application is fully characterized) and/or at run-time (when the number and type of applications may vary). My contributions in the design-time resource management were mostly in modeling the resource management problem as an optimization problem and then in applying specialized techniques to solve it. In the run-time resource management, my contributions are in the design and implementation of feedback mechanism to monitor and possibly adjust the allocated resources.

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**Cyber-Physical Systems** As embedded systems interact more and more with the surrounding environment, an efficient design of computing elements cannot neglect the physical interactions between devices and environment. This originated the so-called Cyber-Physical Systems (CPS), in which a holistic design must address computation, communication, and control.

My contributions in this area are mostly into the design of digital control systems with awareness of the underlying physical constraints of the execution platform.

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DOI: 10.1109/RTSS.2008.45  
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- [C52]. Manel Velasco, Pau Martí, and Enrico Bini. “Control-driven tasks: Modeling and analysis” *Proceedings of the 29th IEEE Real-Time Systems Symposium*, Barcelona, Spain, December 2008.  
DOI: 10.1109/RTSS.2008.29
- Composition of real-time systems** A key design principle in engineering is the modular design: several components are designed in isolation and then are composed. If applications have real-time constraints, it is necessary that their temporal properties are preserved also after the integration phase.
- Within this area, I have proposed abstractions of real-time applications, both for single core and for multi-core and distributed platforms. The proposed abstractions present different degree of accuracy vs. simplicity.
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DOI: 10.1007/s11241-013-9199-8
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DOI: 10.1109/RTAS.2011.12
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- [C61]. Enrico Bini, Giorgio C. Buttazzo, Marko Bertogna. “The Multi Supply Function Abstraction for Multiprocessors” *Proceedings of the 15th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications*, Beijing, China, August 2009.  
DOI: 10.1109/RTCSA.2009.39  
(**best-paper award**)
- [C62]. José L. Lorente, Giuseppe Lipari, and Enrico Bini. “A hierarchical scheduling model for component-based real-time systems” *Proceedings of the 20th IEEE International Parallel and Distributed Processing Symposium*, Rhodes Island, Greece, April 2006.  
DOI: 10.1109/IPDPS.2006.1639405
- [C63]. Giuseppe Lipari and Enrico Bini. “Resource partitioning among real-time applications” *Proceedings of the 15th Euromicro Conference on Real-Time Systems*, Porto, Portugal, July 2003.  
DOI: 10.1109/EMRTS.2003.1212738  
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**Power-aware CPU scheduling in embedded systems** With the increased attention to save natural resources, great attention was directed to the reduction of energy savings, in all areas. In embedded systems with real-time constraints, the challenge is to deliver the application results with the specified temporal constraints.

Within this area I have developed CPU scheduling techniques, which are capable to minimize the energy consumed by a CPU, without violating the temporal constraints by the application.

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- [C64]. Tullio Facchinetti, Enrico Bini, Marko Bertogna. “Reducing the Peak Power through Real-Time Scheduling Techniques in Cyber-Physical Energy Systems” *First International Workshop on Energy Aware Design and Analysis of Cyber Physical Systems*, Stockholm, April, 2010.
- [C65]. Claudio Scordino and Enrico Bini. “Optimal speed assignment for probabilistic execution times” *2nd Workshop on Power-Aware Real-Time Computing*, Jersey City, NJ, USA, September 2005.

- [C66]. Enrico Bini, Giorgio C. Buttazzo, and Giuseppe Lipari. “Speed modulation in energy-aware real-time systems” *Proceedings of the 17th Euromicro Conference on Real-Time Systems*, Palma de Mallorca, Spain, July 2005.  
DOI: 10.1109/ECRTS.2005.29

## Relevant institutional services

- 2016–today** Elected member of the board for planning teaching appointments, Computer Science department, University of Turin, Italy.
- 2016–today** Member of the PhD board of the Computer Science department, University of Turin, Italy.
- 2012–16** Member of the PhD board of the TeCIP department, Scuola Superiore Sant’Anna, Pisa, Italy.
- 2011–14** Elected representative of the researchers in the Ethical Committee of the Scuola Superiore Sant’Anna;
- 2002** Elected representative of the PhD students in the highest board of the Scuola Superiore Sant’Anna (“Consiglio Direttivo”);
- 1998** Elected representative of the undergraduate students in the highest board of the Scuola Superiore Sant’Anna (“Consiglio Direttivo”).

## Volunteering

- 2006–2007** (Associazione Dialogo) Teaching basics of office software, computer architecture and networking to inmates in Porto Azzurro prison.
- 2015** (“Programma il futuro”, initiative by the Italian ministry) Teacher of basic principles of programming for primary school pupils.