

Oggetto: comunicazione della candidatura a direttore dell'istituto TeCIP

Pisa, 23 maggio 2019

A tutto il personale dell'istituto TeCIP.

Come sapete, in questi anni non ho mai considerato la possibilità di candidarmi alla direzione dell'istituto, principalmente perché non volevo sottrarre tempo alla ricerca, ragione per cui ho intrapreso la carriera accademica. Tuttavia, al momento si sono verificate alcune condizioni che mi hanno convinto a candidarmi e che voglio condividere con voi per trasparenza:

1. In linea di principio, ritengo corretto che la direzione dell'istituto sia affidata di volta in volta ad un docente afferente ad un'area di ricerca diversa da quelle a cui afferiscono i direttori dei due mandati precedenti, rispettando così il sano principio di rotazione delle tre aree, già approvato con ampio consenso durante la precedente elezione.

Considerato che il direttore precedente (prof. Prati) e il direttore uscente (prof. Bergamasco) afferiscono rispettivamente all'area di Telecomunicazioni e di Robotica Percettiva, il principio di rotazione indica che la direzione spetterebbe (a meno di assenza di candidature) ad un professore ordinario dell'area di Sistemi Embedded. Nel caso specifico, i professori ordinari afferenti a quest'area sono il prof. Marco Di Natale ed il sottoscritto.

2. Il prof. Di Natale aveva espresso inizialmente l'intenzione di candidarsi, ma a causa di eventi recentemente accaduti, ha deciso di chiedere il tempo parziale, che da regolamento lo esclude da una possibile candidatura a direttore. In seguito a questa notizia, diversi colleghi mi hanno chiesto di candidarmi per cercare di trovare un equilibrio fra le diverse esigenze dell'istituto.

Dopo aver riflettuto a lungo, ho deciso di prendere in considerazione la proposta fattami dai colleghi e di candidarmi. Pertanto, vorrei condividere con voi gli obiettivi che intendo perseguire se venissi eletto. Per chi non mi conosce, o per chi fosse preoccupato per gli spazi e la distribuzione di risorse in genere, tengo a precisare che non sono una persona con mire espansionistiche. Gli obiettivi che intendo perseguire non sono legati ad interessi personali, né di area, ma riguardano qualità, efficienza, equità di rappresentanza, meritocrazia e trasparenza.

- **Qualità:** nella ricerca, formazione, e amministrazione, attraverso l'uso di strumenti atti a promuoverla. Ad esempio:
  - nella ricerca: incentivando la ricerca di base mediante un incremento dei fondi di ateneo e una gestione più flessibile dei cofinanziamenti degli assegni di ricerca.
  - nella formazione: attraverso una programmazione pianificata con sufficiente anticipo, un'allocazione di fondi dedicati all'acquisto di materiale didattico, licenze, e risorse di calcolo adeguate, ed interventi mirati ad attrezzare tutte le aule con impianti audio-video per la registrazione e la connessione remota.
  - nelle procedure amministrative: attraverso una semplificazione delle procedure, comprese le procedure informatizzate, per far sì che richiedano solo l'immissione delle informazioni strettamente necessarie. Chiederò inoltre alle strutture centrali una migliore pianificazione delle risorse e una distribuzione più consona alle necessità degli istituti. In particolare, ritengo prioritario semplificare le procedure relative agli acquisti e alle missioni, offrendo ai docenti la possibilità di utilizzare carta di credito fornite dall'istituto.
- **Equità:** rappresentanza paritetica delle diverse aree di ricerca negli organi decisionali. Intendo superare la linea stabilita dalla Scuola e far sì che la rappresentatività in giunta e negli altri organi di controllo non sia decisa dal direttore, ma mediante votazione da parte dei membri afferenti a ciascuna area.
- **Meritocrazia:** valorizzare e promuovere i giovani ricercatori che hanno dimostrato eccellenti risultati, compatibilmente con la disponibilità delle posizioni assegnate all'istituto e le strategie stabilite in modo collegiale. Valorizzare le competenze dei colleghi dell'istituto a supporto della direzione, attraverso deleghe alla formazione, all'orientamento e quant'altro risulti necessario. Valorizzare le competenze amministrative mediante riconoscimenti economici e di carriera.

- **Trasparenza:** Condivisione delle decisioni strategiche che riguardano l'acquisizione di nuove posizioni. Comunicazione a tutti i docenti delle opportunità di finanziamento con sufficiente anticipo.

Ultimo, ma non meno importante, è mio obiettivo instaurare un clima di **serena collaborazione tra le diverse aree di ricerca**. Al fine di ottenere questo obiettivo, vi espongo sinteticamente la mia visione.

- **Spazi.** Dopo vari assestamenti tellurici avvenuti nel passato, la situazione attuale non mi sembra eccessivamente critica, per cui non dovrebbero essere necessarie modifiche significative. Nel momento in cui si presenterà un problema di spazio, convocherò una riunione a cui potranno partecipare i rappresentanti delle aree e comunque tutte le persone interessate, al fine di discutere le soluzioni più opportune.
- **Posizioni.** Per prima cosa, andrà stabilita una strategia di acquisizione chiara e articolata, condivisa da tutte le aree afferenti all'istituto. Tale strategia dovrà bilanciare tra l'equità di crescita delle aree (anche tenendo conto del pregresso) e le esigenze specifiche dei gruppi di ricerca, tra cui l'esistenza di candidati eccellenti che possano fare domanda. Una volta concordata la strategia, seguirà l'allocazione delle posizioni alle aree (laddove opportuno). Riguardo alle commissioni di concorso, ritengo corretto che per ogni posizione bandita, il direttore di istituto, sebbene possa operare in autonomia, consulti preventivamente i docenti del settore disciplinare in cui la posizione è bandita al fine di concordare la modalità di svolgimento del concorso.
- **Fondi di ricerca.** Di solito i conflitti sui fondi si generano a causa delle sovrapposizioni di argomenti che possono esistere tra i vari gruppi di ricerca dell'istituto. Al fine di evitare tali conflitti, raccomando che i docenti dell'istituto operino in modo congiunto presentandosi all'esterno come un'entità con una linea coerente, evitando contraddizioni e utilizzando al meglio le risorse e le competenze esistenti. Sarà mia cura indire delle riunioni tra tutti i docenti per definire con chiarezza le diverse expertise di ciascun gruppo di ricerca, in modo che, in presenza di grossi contratti industriali, ognuno possa esporre le proprie competenze e ricevere finanziamenti per la propria ricerca. Nel caso in cui alcune competenze dovessero risultare sovrapposte tra più gruppi, sarà mia cura incoraggiare delle collaborazioni inter-area in modo che il finanziamento possa essere ripartito tra da più gruppi proporzionalmente ai contributi forniti.

Non si possono infine ignorare alcune delle principali attività della Scuola che riguardano direttamente l'istituto e in particolare:

**Fondazione Inphotec:** ritengo che sia assolutamente inopportuno che l'istituto sia completamente estraneo dagli organi che la Scuola ha definito per pianificare e regolare le attività della fondazione. L'istituto dovrà avere presenza in tali organi e avere al suo interno un gruppo che gestisca le relazioni con la fondazione in modo da sfruttare al meglio le possibili sinergie e utilizzare correttamente le risorse.

**ARTES 4.0 e DdE:** malgrado le strutture attualmente in essere (delegati di area per l'istituto) siano state adeguate fino ad oggi, nel futuro è opportuno definire le attività ed il ruolo dell'istituto riguardo a tali progetti, includendo eventualmente per ARTES la creazione di un sottogruppo che inizi a pianificare i rapporti con i partner industriali del progetto in modo da identificare quanto prima l'offerta progettuale dell'istituto.

Sono a disposizione per qualsiasi ulteriore chiarimento.

Un caro saluto a tutti.



Giorgio Buttazzo

# CURRICULUM VITAE

## Giorgio Buttazzo

Dati personali		Recapito ufficio
<i>Cognome:</i>	Buttazzo	Retis Lab – Istituto TeCIP
<i>Nome:</i>	Giorgio Carlo	Scuola Superiore Sant'Anna
<i>Data di nascita:</i>	15 luglio 1960	Via Moruzzi, 1
<i>Luogo di nascita:</i>	Castri di Lecce (LE)	56124 Pisa
<i>Cittadinanza:</i>	Italiana	Tel: 050-882.012
<i>Professione attuale:</i>	Professore Ordinario	Email: giorgio.buttazzo@sssup.it

Indici bibliometrici	H-index	Citazioni
Google Scholar	60	22504
Scopus	40	6193

### CV Sintetico

Giorgio Buttazzo è Professore Ordinario in Ingegneria Informatica presso la Scuola Superiore Sant'Anna di Pisa, dove svolge attività di ricerca nel campo dei sistemi embedded in tempo reale e insegna corsi di informatica, programmazione real-time, reti neuronali e deep learning.

Nel 1985 si è laureato in Ingegneria Elettronica presso l'Università di Pisa, nel 1987 ha conseguito il titolo di Master in Computer Science presso l'Università della Pennsylvania (Philadelphia, USA), e nel 1991 il titolo di Dottorato di Ricerca presso la Scuola Superiore Sant'Anna di Pisa. Dal 1987 al 1988, ha svolto attività di ricerca sulla percezione artificiale attiva e il controllo real-time di robot sensorizzati presso il laboratorio G.R.A.S.P. della Moore School di Philadelphia. Dal 1991 al 1998, è stato ricercatore presso la Scuola Superiore Sant'Anna di Pisa, dove ha costituito e coordinato il laboratorio di ricerca RETIS sui sistemi real-time. Dal 1998 al 2005, è stato Professore Associato presso l'Università di Pavia, dove ha coordinato il laboratorio di robotica del Dipartimento di Informatica e Sistemistica. Dal 2005 coordina il laboratorio RETIS di Sistemi Real-Time presso l'Istituto TeCIP della Scuola Superiore Sant'Anna.

Il Prof. Buttazzo è IEEE Fellow “for contributions to dynamic scheduling algorithms in real-time systems.” Egli è stato Program Chair e General Chair delle maggiori conferenze internazionali sui sistemi real-time, tra cui l'IEEE Real-Time Systems Symposium (RTSS 2001), la Euromicro Conference on Real-Time Systems (ECRTS 2003, ECRTS 2007, ECRTS 2012), l'ACM Conference on Embedded Software (EMSOFT 2004), e la ACM International Conference on Hybrid Systems: Computation and Control (HSCC 2007). Egli è Editor-In-Chief della rivista Real-Time Systems (Springer) e Associate Editor dell'ACM Transactions on Cyber-Physical Systems. Dal 2010 al 2012 è stato Chair dell'IEEE Technical Committee on Real-Time Systems.

Egli è autore di 9 libri e di oltre 300 pubblicazioni nel settore dei sistemi real-time, della robotica avanzata e delle reti neuronali. Ha ricevuto numerosi riconoscimenti e 10 best paper award. Il suo libro “Hard Real-Time Computing Systems” è utilizzato come libro di testo in numerose prestigiose università del mondo. I risultati più significativi della ricerca svolta dal Prof. Buttazzo riguardano:

- lo sviluppo di nuovi algoritmi per aumentare la prevedibilità del software real-time;
- lo sviluppo di metodologie per la gestione efficiente e sicura dei sovraccarichi computazionali;
- la realizzazione di sistemi operativi modulari ad elevata prevedibilità e configurabilità;
- lo sviluppo di metodologie e algoritmi per la gestione del software in centraline di controllo motore.

I suoi contributi hanno avuto un elevato impatto industriale, offrendo soluzioni sicure ed efficienti per gestire la crescente complessità dei sistemi embedded.

## Titoli di Studio

- 02.08.1978** **Diploma di maturità scientifica**, conseguito presso il Liceo Scientifico "Cosimo De Giorgi" di Lecce. Votazione: 58/60.
- 19.12.1985** **Laurea in Ingegneria Elettronica** (indirizzo Calcolatori e Bioingegneria), conseguita presso la Facoltà di Ingegneria dell'Università degli Studi di Pisa. Votazione: 110 e Lode.  
Titolo della tesi: "Progetto, realizzazione e sperimentazione di un sistema di controllo ibrido per un dispositivo robotico sensorizzato dedicato all'esplorazione tattile".
- 07.08.1987** **Master in Computer Science** conseguito alla *University of Pennsylvania*, Philadelphia, USA, Department of Computer and Information Science.  
Esami sostenuti: Programming Languages, Artificial Intelligence, Machine Perception, Computer Architectures, Advanced Topics in Computer Architectures, Logic, Analysis of Algorithms, Computational Geometry.  
Tema di ricerca: Metodologie informatiche per la percezione artificiale e il controllo di robot sensorizzati.
- 25.12.1988** Corso di Programmazione in VAL-II dei Manipolatori PUMA/UNIMATION, presso il CISE, Milano, Novembre 1988.
- 18.12.1990** **Perfezionamento** (equipollente al **Dottorato di Ricerca**) presso la Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna di Pisa, Classe di Scienze Sperimentali e Applicate, Settore di Ingegneria.  
Tema di ricerca: Architetture di calcolatori per il controllo in tempo reale di robot sensorizzati.  
Titolo della tesi: Un'architettura distribuita per il controllo di un sistema robotico multisensoriale.
- 01.03.1991** **Ricercatore universitario** presso la Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna di Pisa, Classe di Scienze Sperimentali, Settore di Ingegneria, Raggruppamento Disciplinare N. 103 – Sistemi di Elaborazione delle Informazioni.
- 01.03.1994** **Ricercatore confermato** presso la Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna di Pisa, Classe di Scienze Sperimentali, Settore di Ingegneria, Settore Scientifico Disciplinare K05A – Sistemi di Elaborazione delle Informazioni.
- 01.11.1998** **Professore Associato** presso l'Università di Pavia, Facoltà di Ingegneria, Dipartimento di Informatica e Sistemistica, Settore Scientifico Disciplinare K05A – Sistemi di Elaborazione delle Informazioni.
- 01.11.2001** **Professore Associato confermato** presso l'Università di Pavia, Facoltà di Ingegneria, Dipartimento di Informatica e Sistemistica, Settore Scientifico Disciplinare ING-INF/05 – Sistemi di Elaborazione delle Informazioni.
- 01.11.2005** **Professore Straordinario** presso la Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna di Pisa, Classe di Scienze Sperimentali, Settore di Ingegneria, Settore Scientifico Disciplinare ING-INF/05 – Sistemi di Elaborazione delle Informazioni.
- 01.11.2008** **Professore Ordinario** presso la Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna di Pisa, Classe di Scienze Sperimentali, Settore di Ingegneria, Settore Scientifico Disciplinare ING-INF/05 – Sistemi di Elaborazione delle Informazioni.

## Premi e Riconoscimenti

- **Outstanding Paper** for "Partitioning and Interface Synthesis in Hierarchical Multiprocessor Real-Time Systems", International Conference on Real-Time Networks and Systems (RTNS 2016), Brest, France, Oct. 19-21, 2016.
- **Best Open Problem Paper** for "How Does Task Scheduling Affect Engine Control Performance?", Proc. of the 7th International Real-Time Scheduling Open Problems Seminar (RTSOPS 2016), in conjunction with ECRTS 2016, Toulouse, France, July 5, 2016.
- **Best Paper Nomination** for "Performance-driven Design of Engine Control Tasks", Proceedings of the 7th International Conference on Cyber-Physical Systems (ICCPs 2016), Vienna, Austria, April 11-14, 2016.
- **Outstanding Paper** for "Supporting Component-Based Development in Partitioned Multiprocessor Real-Time Systems", Proceedings of the 27th Euromicro Conference on Real-Time Systems (ECRTS 2015), Lund, Sweden, July 8-10, 2015.
- **Best Paper Award** for "Response-Time Analysis for Real-Time Tasks in Engine Control Applications", presented at the 6th International Conference on Cyber-Physical Systems (ICCPs 2015), Seattle, USA, April 14-16, 2015.
- **IEEE Service Award for chairing the IEEE Technical Committee on Real-Time Systems, 2011-2012**, Rome, Italy, December 4, 2014.
- **IEEE Outstanding Technical Contributions and Leadership Award**, from the IEEE Technical Committee on Real-Time Systems, Vancouver, Canada, December 5, 2013.
- **Premio Civetta**, assegnato dal comune di Castri di Lecce “per le sue capacità umane e professionali ampiamente apprezzate e stimate nel campo scientifico a livello nazionale e internazionale.” Castri di Lecce, 8 Settembre, 2012.
- **IEEE Fellowship** “for contributions to dynamic scheduling algorithms in real-time systems”, 2012.
- **IEEE Outstanding Contributions to the Transactions**, for the contributions given to the IEEE Transactions of Industrial Informatics as Associate Editor, December 2011.
- **Best Paper Award** for the paper "Feasibility Analysis under Fixed Priority Scheduling with Fixed Preemption Points", presented at the 16th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2010), Macau, China, August 23-25, 2010.
- **Best Paper Award** for the paper "The Multi Supply Function Abstraction for Multiprocessors", presented at the 15th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2009), Beijing, China, August 24-26, 2009.
- **Best Paper Award** for the paper "Embedded data logging platform for research in diving physiology", presented at the Seventh Workshop on Intelligent Solutions in Embedded Systems (WISES 09) Ancona, Italy, June 25-26, 2009.
- **IEEE Senior Member** for the relevant contributions on the field of real time systems, 2005.
- **ACM Recognition of Service Award** for his contribution as a Program Chair and General Chair of the Fourth International Conference on Embedded Software (EMSOFT 2004), October 2004.
- **Best Paper Award** for the paper “The Jitter Margin and Its Application in the Design of Real-Time Control Systems”, presented at the 10<sup>th</sup> Int. Conference on Real-Time and Embedded Computing Systems and Applications (RTCSA 2004), Gothenburg, Sweden, August 25-27, 2004.
- **Euromicro Certificate of Appreciation** for his contribution as a Program Chair of the 15th Euromicro Conf. on Real-Time Systems (ECRTS 2003), Porto, Portugal, July 2003.
- **IEEE Certificate of Appreciation** for his contribution as a Program Chair of the 22nd IEEE Real-Time Systems Symposium (RTSS 2001), London, UK, December 2001.
- **Best Paper Award** given by ANIPLA (Italian Association for Industrial Automation) for the best paper and presentation on the Workshop on Operating Systems for Industrial Control Applications, Milan, Italy, November 18, 1999.
- **IEEE Certificate of Appreciation** for his contribution in the organization of the 16th IEEE Real-Time Systems Symposium (RTSS '95), Pisa, Italy, December 1995.
- **Best Paper Award** given by Honeywell for the best journal publication on robotic systems in 1987, for the paper “An Anthropomorphic Robot Finger For Investigating Artificial Tactile Perception”, published on The International Journal of Robotics Research, Vol. 6, No. 3, MIT Press, pp. 25-48, Fall 1987.
- **“Special Science Fellowship”** from the Special Programme Panel on Sensory Systems for Robot Control, NATO Scientific Affairs Division, March 1986.

## Attività Professionali

### IEEE Technical Committee Chair

- of the IEEE Technical Committee on Real-Time Systems, January 2011- December 2012.

### IEEE Technical Committee Vice Chair

- of the IEEE Technical Committee on Real-Time Systems, January 2009- December 2010.

### Program Chair

- The 9th IEEE Int. Symposium on Industrial Embedded Systems (SIES 2014), Pisa, Italy, June 18-20, 2014.
- The 27<sup>th</sup> Conference on Future Education and Teaching, DIDAMATICA 2013, May 7-9, 2013, Pisa, Italy.
- The 6th International Workshop on Compositional Theory and Technology for Real-Time Embedded Systems (CRTS 2013), Vancouver, Canada, December 3, 2013.
- The 16th International Conference on Real-Time and Network Systems (RTNS 2008), Rennes, France, October 16-17, 2008.
- The Tenth ACM Conference on Hybrid Systems: Computation and Control (HSCC 2007), Pisa, Italy, April 3-5, 2007.
- The Fourth ACM Int. Conference on Embedded Software (EMSOFT 2004), October 2004.
- The 15<sup>th</sup> Euromicro Int. Conference on Real-Time Systems (ECRTS 2003), Porto, Portugal, July 2003.
- The 22<sup>nd</sup> IEEE Real-Time Systems Symposium (RTSS 2001), London, UK, December 2001.
- The Second International Workshop on Mechatronical Computer Systems for Perception and Action (MCPA 1997), Pisa, Italy, February 1997.

### General Chair

- The 21<sup>st</sup> International Conference on Reliable Software Technologies (Ada-Europe 2016), 13-17 June 2016, Pisa, Italy.
- The 31<sup>st</sup> ACM Symposium on Applied Computing (SAC 2016), Pisa, Italy, April 4-8, 2016.
- The 9th IEEE International Symposium on Industrial Embedded Systems (SIES 2014), Pisa, Italy, June 18-20, 2014.
- The 27<sup>th</sup> Conference on Future Education and Teaching, DIDAMATICA 2013, May 7-9, 2013, Pisa, Italy.
- The 24<sup>th</sup> Euromicro Conference on Real-Time Systems (ECRTS 2012), Pisa, Italy, July 11-13, 2012.
- The 8<sup>th</sup> IEEE International Conference on Embedded Software and Systems (ICESS 2011), Changsha, China, November 16-18, 2011.
- The 13<sup>th</sup> IEEE Int. Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2007), Korea, August 2007.
- The 19th Euromicro International Conference on Real-Time Systems (ECRTS 2007), Pisa, Italy, July 2007.
- The Tenth International ACM Conference on Hybrid Systems: Computation and Control (HSCC 2007), Pisa, Italy, April 2007.
- The Fourth ACM Int. Conference on Embedded Software (EMSOFT 2004), Pisa, Italy, September 27-29, 2004.
- The 23rd IEEE Real-Time Systems Symposium (RTSS 2002), Austin, Texas, December 2002.

### Program Committee Member

- **RTSS** - IEEE Real-Time Systems Symposium: 1995, 1998, 1999, 2000, 2002, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2015, 2016, 2017, 2019.
- **RTAS** - IEEE Real-Time Technology and Applications Symposium: 2001, 2002, 2003, 2004, 2015, 2016.
- **ECRTS** - Euromicro Int. Conference on Real-Time Systems: 1999, 2000, 2001, 2002, 2004, 2005, 2006, 2008, 2009, 2011, 2012, 2013, 2014, 2015.
- **RTCSA** - IEEE Int. Conference on Real-Time Computing Systems and Applications: 1997, 1998, 1999, 2000, 2003, 2004, 2005, 2011, 2014, 2015, 2016, 2017.
- **ETFA** - IEEE Int. Conference on Emerging Technologies and Factory Automation: 2005, 2013, 2014, 2015, 2016, 2019.
- **SAC** - ACM Symposium on Applied Computing: 2004, 2005, 2006, 2007, 2008, 2016.
- **DATE** - International Conference on Design, Automation and Test in Europe: 2005, 2006.
- **ESTIMedia** - IEEE Workshop on Embedded Systems for Real-Time Multimedia: 2004, 2005.
- **SIES** - IEEE International Symposium on Industrial Embedded Systems: 2015, 2016.
- **EMSOFT** - ACM International Conference on Embedded Software: 2003.

- **ICARSC** - IEEE International Conference on Autonomous Robot Systems and Competitions: 2015, 2016.
- **ICDCS** - IEEE International Conference on Distributed Computing Systems: 2003.
- **IPDPS** - IEEE International Parallel & Distributed Processing Symposium: 2002, 2003.
- **BodyNets** - EAI International Conference on Body Area Networks: 2014, 2015.

### **Editor-In-Chief**

- Real-Time Systems, Springer, since 2006.

### **Associate Editor**

- ACM Transactions on Cyber-Physical Systems, 2015 - present.
- IEEE Transactions on Industrial Informatics, 2009-2014.
- Journal of Embedded Computing, Cambridge International Science Publishing, 2004-2011.
- Real-Time Systems, Kluwer Academic Publishers, 2001-2005.

### **Guest Editor**

- Special Issue on Real-Time Applications and Tools Design, IEEE Transactions on Industrial Informatics, Vol. 6, No. 4, November 2010.
- Special Issue on Real-Time Systems, Part II, IEEE Transactions on Industrial Informatics, Vol. 5, No. 1, February 2009.
- Special Issue on Real-Time Systems, Part I, IEEE Transactions on Industrial Informatics, Vol. 4, No. 4, November 2008.
- Special Issue on Flexible Scheduling on Real-Time Systems, Real-Time Systems, The International Journal of Time-Critical Computing Systems, Springer, Vol. 22, No. 1-2, January-March 2002.

### **Member of Technical Committees**

- IEEE Technical Committee on Real-Time Systems, 2002-2004, 2007-2008.
- Euromicro Technical Committee on Real-Time Systems, 2000-present.

### **Reviewer for Journals**

- IEEE Transactions on Computers, since 1999.
- IEEE Transactions on Software Engineering, since 2000.
- IEEE Transactions on Industrial Informatics, since 2004.
- IEEE Transactions on Parallel and Distributed Processing, since 2003.
- IEEE Computer, since 2002.
- IEEE Control Systems Magazine, since 1994.
- ACM Transactions on Embedded Computing, since 2005.
- Journal of Real-Time Systems (Springer), since 1996.
- Journal of Embedded Computing (Cambridge International Science Publishing), since 2005.
- Journal of Systems Architecture (Elsevier), since 2000.

### **Reviewer for Projects**

- The National Science Foundation, USA
- ARTES (A network for Real-Time research and graduate Education in Sweden), Sweden.
- Consiglio Nazionale delle Ricerche (CNR), Italy
- Science Foundation of Ireland.

### **Project consultant**

- CIDER Project (Communication Infrastructure for Dependable Evolvable Real-Time Systems), PRAXIS XXI Programme of the Portuguese FCT (Foundation of Science and Technology), Project Number POSI/1999/CHS/33139, 2000.
- DISCO Project (DIStributed Embeddable Systems for COntrol Applications), funded by the Portuguese Foundation of Science and Technology, 2001-2003.

### **Company Co-founder**

- Co-founder of Evidence *Srl*, (<http://www.evidence.eu.com>), a company for services and solutions for real-time embedded software.

## **Visiting Professor**

- at the University of Aveiro (Portugal) for teaching a graduate course in a Master on Real-Time Systems. Period: 3.10.2000 - 21.10.2000.

## **Organizzatore locale delle seguenti conferenze:**

- IEEE Real-Time Systems Symposium (RTSS '95), Pisa, Italy, December 1995.
- International Workshop on Mechatronical Computer Systems for Perception and Action (MCPA '97), Pisa, Italy, February 1997.

## **Attività Istituzionali**

### **Coordinatore del Corso di Perfezionamento in Innovative Technologies**

- Scuola Superiore Sant'Anna, 2007- 2013.

### **Coordinatore del Dottorato in Emerging Digital Technologies**

- Scuola Superiore Sant'Anna, 2013- 2019.

### **Coordinatore di laboratorio**

- Real-Time Systems Laboratory (RETIS Lab), Scuola Superiore Sant'Anna, 1996-1998.
- Laboratorio di Robotica e Sistemi Real-Time, Dipartimento di Informatica e Sistemistica, Università di Pavia, 1998-2005.
- Real-Time Systems Laboratory (RETIS Lab), Istituto TeCIP, Scuola Superiore Sant'Anna, 2005-present.

## **Keynote speeches**

1. “**L’Intelligenza Artificiale e la Società del Futuro**”, Università di Palermo, Palermo, Italy, May 31, 2018.
2. “**Menti Artificiali e Implicazioni Filosofiche**”, Università di Palermo, Palermo, Italy, May 31, 2018.
3. “**Complessità, determinismo e imprevedibilità: esiste il libero arbitrio?**”, Associazione Arte e Medicina, Santa Cesarea Terme (LE), Italy, June 23, 2018.
4. **L’era dei robot: possibili conseguenze sul futuro sull’umanità**”, SOCIP s.r.l., Pisa, Italy, July 07, 2017.
5. “**Programmi e Robot: tassonomia ed evoluzione**”, Accademia Toscana di Scienze e Lettere “La Colombaria”, Firenze, June 15, 2017.
6. “**I Robot del Futuro: dalla Programmazione all’Apprendimento**”, Teatro Comunale, Pomarance, December 14, 2016.
7. “**Menti biologiche e menti artificiali: esiste un limite?**”, Scuola di Orientamento della Scuola Superiore Sant’Anna, Pisa, June 29, 2016.
8. “**Sistemi in grado di apprendere: presente e prospettive future**”, Scuola di Orientamento della Scuola Normale, San Miniato, June 22, 2016.
9. “**Scheduling Issues for Engine Control Systems**”, Malardalen University, Vasteras, Sweden, May 27, 2016.
10. “**L’informatica nelle applicazioni robotiche**”, Teatro Comunale, Pomarance, December 10, 2015.
11. “**Esperimenti Mentali**”, SOCIP s.r.l., Pisa, Italy, June 26, 2015.
12. “**Real-Time Systems: Achievements and Perspectives**”, IEEE Real-Time Systems Symposium (RTSS 2014), Rome, Italy, December 3, 2014.
13. “**Dall’Intelligenza Artificiale alla Coscienza Artificiale**”, Rotary Club Firenze Est, Firenze, Italy, May16, 2014.

14. “**Real-time Support for Multicore Platforms**”, Distinguished Lecture Series, School of Information Science and Computer & Electrical Engineering, Halmstad University, Sweden, January 14, 2014.
15. “**Research Challenges in Exploiting Multi-Core Platforms for Real-Time Applications**”, at the 18th Int. Conference on Reliable Software Technologies (Ada-Europe 2013) June 10-14, 2013, Berlin, Germany.
16. “**L’impatto tecnologico: possibili scenari futuri**”, Rotary Club Montecarlo – Piana di Lucca, Porcari (Lucca), Italy, March 20, 2013.
17. “**Intelligenza e Coscienza: Autorganizzazione o Progetto?**”, SOCIP s.r.l., Pisa, Italy, July 20, 2012.
18. “**Un universo di atomi: alcune considerazioni sullo strano mondo in cui viviamo**”, SOCIP s.r.l., Pisa, Italy, June 29, 2012.
19. “**Supporting Real-Time Applications on Multi-core Platforms**”, at the 6th IEEE International Symposium on Industrial Embedded Systems (SIES 2011), Vasteras, Sweden, June 15, 2011.
20. “**Intelligenza Artificiale e Coscienza Artificiale**”, Tavola rotonda su “Robotica tra Etica e Diritto”, ITTIG-CNR, Florence, Italy, November 24, 2010.
21. “**Real-Time Operating Systems and Task Scheduling**”, at the ARTIST International Summer School on Embedded Systems, Rabat, Morocco, July 13, 2010.
22. “**Hard Real-Time Systems**”, at Ansaldo STS – Signalling and Transortation Solutions., Genova, Italy, May 10-11, 2010.
23. “**Real-Time Systems: Applications, Characteristics, and Research Aspects**”, Workshop on “Real-Time Systems: Living on the Deadline”, Florence, Italy, November 3, 2009.
24. “**Real-Time Operating Systems**”, at Gambio S.p.A., Medolla, (MO), Italy, September 23, 2009.
25. “**Real-Time Scheduling and Resource Management**”, at the ARTIST International Summer School on Embedded Systems Design, Autrans, Grenoble, France, September 10, 2008.
26. “**Resource Reservation on Multi-core Systems**”, at the 14<sup>th</sup> International Conference of Embedded and Real-Time Computing Systems and Applications, August 25, 2008.
27. “**Real-Time Issues in Embedded Systems**”, at the International Congress on Automatic Computation (AICA 2007), Mantova, Italy, September 28, 2007.
28. “**Why Real-Time Computing?**”, at the International Congress on Methodologies for Emerging Technologies in Automation (ANIPLA 2006), Rome, Italy, November 13-15, 2006.
29. “**Towards Component-Based Operating Systems**”, at the Workshop on Operating Systems Platforms for Embedded Real-Time Applications” (OSPERT 2006), Dresden, Germany, July 4, 2006.
30. “**ROBOTICA: Presente e futuro. Spunti di riflessione fra scienza e filosofia**”, SOCIP s.r.l., Pisa, Italy, May 19, 2006.
31. “**Real-Time Issues in Mobile Wireless Networks**”, at the 9th International Conference of Principles of Distributed Systems (OPODIS 2005), Pisa, Italy, December 12–14, 2005.
32. “**Real-Time Methodologies for supporting Autonomous Robots**”, at the 49th Conference of the Italian Association for Automation (ANIPLA 2005), Napoli, 24 November 2005.
33. “**Adaptive Resource Reservation**”, at the First Workshop on “Real-Time and Control Systems”, Lund, Sweden, June 14, 2005.
34. “**Adaptive Real-Time Scheduling: Why and How**”, at the First ARTIST Workshop on Embedded Systems Design, held in conjunction with DATE 2005, Munich, Germany, March 11, 2005.
35. “**Flexible Scheduling for Energy-Aware Computing Systems**”, Department of Automatic Control, University of Lund, Sweden, April 24, 2003.
36. “**Scalable Applications for Energy-Aware Processors**”, 2<sup>nd</sup> ACM International Conference on Embedded Software (EMSOFT 2002), Grenoble, France, October 2002.

37. "**Towards Adaptive Real-Time Systems**", at the International Workshop on Theory and Practice of Timed Systems, (ETAPS 2002), Grenoble, France, April 6-7, 2002.
38. "**Real-time Operating Systems: problems and novel solutions**", 7<sup>th</sup> International Conference on Formal Techniques in Real-Time and Fault-Tolerant Systems (FTRTFT 2002), Oldenburg, September 12, 2002.
39. "**From Hard to Soft Real-Time Systems: Predictability vs. Efficiency**", 7<sup>th</sup> International Conference of Real-Time Computing Systems and Applications (RTCSA 2000), Cheju Island, South Korea, December 13, 2000.
40. "**Real-time Systems for predictable control**", Distinguished Lectures Series, Polytechnic Institute of Porto, Porto, Portugal, February 29, 2000.
41. "**Predictable Computing Systems**", Department of Computer Engineering, University of Aveiro, Portugal, February 28, 2000.
42. "**Real-Time Systems for Control**", Italian Association for Industrial Automation, Milano, Italy, November 18, 1999.
43. "**Self-learning systems**", Distinguished Lectures Series, Department of Mathematics, Piacenza, November 3, 1999.
44. "**Autonomous Robotic Systems**", Scuola di orientamento della Scuola Normale Superiore, Cortona (Italy), September 5, 1999.
45. "**Predictability vs. efficiency in real-time systems: need for novel approaches**", Distinguished Lectures Series, Department of Computer Engineering, Mälardalen University, Västerås, Sweden, April 14, 1999.
46. "**Robotics and Self-Learning Systems**", Scuola Normale Superiore, Cortona (Italy), September 3, 1997.
47. "**Introduction to Artificial Neural Networks**", at the Italian Association for Computer Science, Rosignano Solvay, April 19, 1993.
48. "**Open problems in Robotics**", Department of Mathematics, University of Pisa, Italy, March 24, 1993.

## Esperienze professionali

- 1985-1986** Attività di ricerca presso il Centro "Enrico Piaggio", laboratorio di Automatica e Bioingegneria, Facoltà di Ingegneria, Università di Pisa. Tema di ricerca: *Elaborazione di segnali provenienti da sensori tattili artificiali*.
- 1986-1987** Full-Time Research Fellow presso il **G.R.A.S.P.** (General Robotics for Active Sensory Processing) Laboratory, Department of Computer and Information Science, University of Pennsylvania, Philadelphia, USA. Tema di ricerca: *Algoritmi di controllo di robot basati su sensori*. Periodo: 05.05.1986 – 07.08.1987.
- 1987-1990** Attività di ricerca presso il laboratorio A.R.T.S. (Advanced Robotics Technology and Systems) della Scuola Superiore S. Anna of Pisa, in qualità di perfezionando. Tema di ricerca: *Architetture per il controllo in tempo reale di sistemi robotici*. Periodo: 30.11.1987 – 31.10.1990.
- 1990-1991** Contratto a termine (tre mesi) con la Scuola Superiore S. Anna per la progettazione e la realizzazione di un sistema sensoriale ad ultrasuoni. Approvato dal Consiglio Direttivo nella seduta del 20 Dicembre 1990.
- 2000** Professore a contratto presso l'università di Aveiro (Portogallo) per l'insegnamento di un corso di Master sui sistemi real-time. Periodo: 3.10.2000 – 21.10.2000.

## PROGETTI DI RICERCA

- 2018-2021 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto N.3/2018 “**Realizzazione di un kernel hard real time per architetture ARM® ed Intel® e di un hypervisor per architetture Intel®**”, Funded by RFI, Contract n. 548/2017 – CIG710174515F. CIG: 7473483146.
- 2018-2019 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**Feasibility Study About the Use of IMU Technologies in the ERTMS Train Position Function**”, document number SS-30032018”. Funded by Ansaldo.
- 2018-2019 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**Trusted domain implementation based on ARM TrustZone and Security by design - MILS Technologies**”, Funded by Magneti Marelli.
- 2017-2018 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**Real Time Virtual Hardware Trust Anchor implementation using MILS technologies – approaching “Secure by Design” Technologies**”, Funded by Magneti Marelli.
- 2015-2016 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**Connected Car: Real-Time Monitoring Systems for Accident Prevention**”. Funded by Telecom Italia, Contract 0721522-P.
- 2013-2015 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**Sistema di controllo remoto di luci avioiche**”. Funded by Sirio Panel, Contract 6wd-td10000-i.
- 2012-2014 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**Real-time limb tracking system for patients affected by Parkinson's disease**”. Funded by Telecom Italia, Contract 2/2013-0001603-TI.
- 2012-2014 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**SIS-TAG: A wearable monitoring system for the tele-rehabilitation of the knee**”. Cofunded by Telecom Italia and Tuscan Region, Project POR-CRO-FSE 2007-2013-IV-16.
- 2010-2011 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**ASCOLTA: Assistenza domiciliare allo SCOpenso cardiaco attraverso Le Tecniche Avanzate di comunicazione digitale**”. Funded by Regione Toscana, Contract Number: ICT-216008.
- 2008-2012 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**ArtistDesign: Embedded Systems Design**”. European Project, Contract Number: ICT-214373.
- 2008-2011 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**PREDATOR: Design for predictability and efficiency**”. European Project, Contract Number: ICT-216008.
- 2008-2011 Responsabile Scientifico per la Scuola Superiore Sant'Anna del progetto “**ACTORS: Adaptivity and Control of Resources in Embedded Systems**”. European Project, Contract Number: ICT-216586.
- 2004-2008 Responsabile Scientifico del cluster “**Adaptive Real-Time Systems**” della Network of Excellence “**ARTIST2: Embedded Systems Design**”. European Project, Contract Number: 004527.
- 2004-2006 Responsabile Scientifico dell’unità di ricerca di Pavia per il Progetto MIUR dal titolo: “**Sistemi operativi real-time per il supporto di robot autonomi cooperanti**”. Progetto N. 2004095094\_003.
- 2003-2005 Responsabile Scientifico dell’unità di ricerca di Pavia per il Progetto MIUR dal titolo: “**Software Real-Time Open Source per il Supporto di Sistemi di Controllo Distribuiti**”. Progetto N. 2003094275\_002.
- 2002-2003 Collaboratore esterno per la Scuola Superiore S. Anna nel progetto europeo “**FABRIC: Federated Applications Based on Real\_time Interacting Components**”, IST-2001-37167.
- 2002-2005 Coordinatore europeo del gruppo di ricerca su “**Adaptive Real-Time Systems for QoS Management**” nel progetto europeo: “**ARTIST: Advanced Real-Time Systems**”, IST-2001-34820.
- 2002-2005 Collaboratore esterno per la Scuola Superiore S. Anna nel progetto europeo **FIRST - “Flexible Integrated Real-time Systems Technology”**, IST-2001-32467.
- 2002-2005 Collaboratore esterno per la Scuola Superiore S. Anna nel progetto europeo **OCERA – “Open Components for Embedded Real-time Applications”**, IST-2001-35102.
- 2002-2003 Responsabile Scientifico dell’unità di ricerca di Pavia per il Progetto MIUR dal titolo: “**Elaborazione ad alte prestazioni per applicazioni con requisiti di elevata intensità computazionale**”. Prog. N. 2001097825\_001.

- 2001-2003 Responsabile Scientifico dell'unità di ricerca di Pavia per il Progetto Coordinato CNR dal titolo: "**Metodologie e strumenti per laboratori virtuali distribuiti**". Progetto N. CNRC002FE3.
- 2001-2003 External Consultant del progetto **CIDER: Communication Infrastructure for Dependable Evolvable Real-Time Systems**, PRAXIS XXI Programme of the Portuguese FCT (Foundation of Science and Technology), Project Number POSI/1999/CHS/33139.
- 2001-2003 External Consultant del progetto **DISCO**, finanziato dal Comitato della ricerca scientifica portoghese per la University of Aveiro (Portugal). Periodo: 2001-2003.
- 1999-2001 Coordinatore e Responsabile Scientifico del Progetto Coordinato CNR dal titolo: "**Unità robotica mobile di monitoraggio ambientale di colture in serra per il controllo della qualità dei prodotti**". Contributo di ricerca n. 99.00578.CT12.
- 1996-98 Responsabile del Progetto Integrato CNR dal titolo: "**Metodologie, strumenti e modelli per la progettazione e valutazione di sistemi Real-Time Affidabili**". Contributo di ricerca n. 96.00058.PF01.
- 1996-98 Responsabile del Progetto CNR dal titolo: "**Architetture parallele e algoritmi per le reti neurali e loro applicazioni**". Contributo di ricerca n. 96.001945.CT12.
- 1995-98 Technical Manager per la Scuola Superiore S. Anna nel progetto europeo **ESPRIT IV** - N. 20521, denominato "**MORIS - Motorcycle Rider Simulator**".
- 1995 Responsabile del progetto di ricerca MURST 60% dal titolo: "**Sistemi di calcolo per applicazioni in tempo reale**". Approvato dal Consiglio Direttivo della Scuola Superiore S. Anna nella seduta del 19 Luglio 1995.
- 1993-94 Responsabile del progetto MAN (Metropolitan Area Network), finanziato dal CNR, per lo sviluppo di applicazioni robotiche su reti ad alta velocità.
- 1992-95 Project Leader per la Scuola Superiore S. Anna nel progetto europeo **ESPRIT III** - N. 6373, denominato **TRACS - Flexible Real-Time Architecture for Traffic Control Systems**.
- 1992-94 Partecipazione al Progetto Finalizzato Robotica CNR denominato "**URMAD - Unità Robotica Mobile per l'Assistenza ai Disabili**" per la realizzazione di un'architettura in tempo reale per il controllo di un robot mobile. Contratto CNR n. 93.01039.PF67.
- 1990-91 Responsabile del progetto di ricerca CNR sul tema "**Architetture parallele e reti neuronali**". Contributo CNR n. 90.00815.CT07.
- 1989-90 Partecipazione al Progetto 60% del Ministero della Pubblica Istruzione sul tema: **Stazione robotica per assistenza di disabili**. Unità Operativa della Scuola Superiore S. Anna di Pisa. Responsabile: Prof. Paolo Dario.
- 1989-90 Partecipazione al Progetto 40% del Ministero della Pubblica Istruzione sul tema: **Metodologie Informatiche per la Robotica Avanzata (M.I.R.A.)**. Unità Operativa della Scuola Superiore S. Anna di Pisa. Coordinatore centrale: Prof. Giuseppe Gaglio, Titolare: Prof. Paolo Dario.
- 1989-90 Partecipazione alla convenzione tra Olivetti S.p.A., Istituto di Elettronica e Telecomunicazioni dell'Università di Pisa e Scuola Superiore S. Anna, sul tema: "**Attività di ricerca e sviluppo di metodologie didattiche avanzate nell'ambito dell'ingegneria dei sistemi di elaborazione**", approvata dal Consiglio Direttivo della Scuola il 16 gennaio 1989, delibera n. 39.
- 1988-89 Partecipazione al Progetto 60% del Ministero della Pubblica Istruzione sul tema: **Tecniche Robotiche per la manipolazione fine**. Unità Operativa della Scuola Superiore S. Anna di Pisa. Responsabile: Prof. Paolo Dario.
- 1987-90 Partecipazione al Progetto MADESS - Materiali e Dispositivi Elettronici allo Stato Solido del C.N.R. Unità Operativa Centro "E. Piaggio", Università di Pisa. Responsabile: Prof. Paolo Dario.
- 1987-90 Partecipazione al Progetto Finalizzato Robotica del C.N.R. Unità Operativa del Centro "E. Piaggio" dell'Università di Pisa. Responsabile: Prof. Paolo Dario.

## DIDATTICA

### Corsi universitari per laurea specialistica/magistrale

- "**Real-Time Computing**", Scuola Superiore Sant'Anna of Pisa, Italy, 1998-present.
- "**Neural Networks and Deep Learning**", Scuola Superiore Sant'Anna of Pisa, Italy, 2016-present.
- "**Component-Based Software Design**", Scuola Superiore Sant'Anna of Pisa, Italy, 2015.
- "**Introduction to Neural Networks**", Scuola Superiore Sant'Anna of Pisa, Italy, 1997-2015.
- "**Real-Time Embedded Systems**", University of Pisa, Italy, 2012-2013.
- "**Artificial Neural Networks**", University of Pisa, Italy, 1991-2009.
- "**Real-Time Operating Systems**", University of Pisa, Italy, 1991-1997.
- "**Computer Programming**", University of Pisa, Italy, 1996-1998.
- "**Computer Architectures**", University of Pavia at Mantova, Italy, 1998-2005.
- "**Industrial Informatics**", University of Pavia, Italy, 2003-2006.

### Corsi per Dottorato

- "**How to do research**", Scuola Superiore Sant'Anna, Pisa, Italy, 2011-present
- "**Advanced Real-Time Systems**", University of Pisa, Italy, 2006-2012.
- "**Real-Time Operating Systems**", within the Master on Embedded Systems, Scuola Superiore Sant'Anna, Pisa, Italy, 2006-2013.
- "**Real-Time Scheduling**", within the Master on Embedded Systems, Scuola Superiore Sant'Anna, Pisa, Italy, March-April 2005.
- "**Real-Time Systems**", University of Pavia, Italy, 1998-2005.
- "**Predictable Computing Systems**" Department of Computer Engineering, University of Pavia, intensive course for PhD Students, September 1996.

### Corsi specialistici organizzati nell'ambito di Summer School

- "**Real-Time Scheduling and Resource Management**", Enna, Italy, July 2004.
- "**First workshop on hard real-time kernels**", Scuola Superiore Sant'Anna of Pisa, Italy, February 2005.
- "**First European Laboratory on Real-Time Embedded Systems**", Scuola Superiore Sant'Anna, July 10-14, 2006.
- "**Graduate Course on OSEK Kernels for Microcontrollers**", Scuola Superiore Sant'Anna, March 26-28, 2007.
- "**Second European Laboratory on Real-Time Embedded Systems**", Scuola Superiore Sant'Anna, July 9-13, 2007.
- "**Graduate Course on Real-Time Kernels for Microcontrollers**", Scuola Superiore Sant'Anna June 23-25, 2008.
- "**Graduate Course on Embedded Control Systems: Theory and Practice**", Scuola Superiore Sant'Anna, June 8-12, 2009.

### Tutorials

- "**Real-Time scheduling**", Tutorial at the Design and Automation Conference (DAC 2019), Las Vegas, Nevada, USA, June 3, 2019.
- "**Adaptive Safety-Critical Real-Time Systems**", Tutorial at the NASA/ESA Conference on Adaptive Hardware and Systems (ASH 2015), Montreal, QC, Canada, June 15, 2015.
- "**Analysis and Development of Real-Time Applications**", at Gambio S.p.A., Medolla, (MO), Italy, November 19-20, 2014.
- "**Real-Time Operating Systems and Task Scheduling**", ARTIST International Summer School on Embedded Systems, Rabat, Morocco, July 13, 2010.
- "**Hard Real-Time Systems**", at Ansaldo STS – Signalling and Transportation Solutions., Genova, Italy, May 10-11, 2010.
- "**Real-Time Operating Systems**", at Gambio S.p.A., Medolla, (MO), Italy, September 23, 2009.
- "**Real-Time Scheduling and Resource Management**", ARTIST International Summer School on Embedded Systems Design, Autrans, Grenoble, France, September 10, 2008.

## PUBBLICAZIONI SCIENTIFICHE

### Libri

1. Sanjoy Baruah, Marko Bertogna, Giorgio Buttazzo, "Multiprocessor Scheduling for Real-Time Systems", Springer, 2015.
2. Giorgio Buttazzo, "HARD REAL-TIME COMPUTING SYSTEMS: Predictable Scheduling Algorithms and Applications", **Third Edition**, Springer, 2011.
3. Giorgio Buttazzo: "Sistemi in Tempo Reale", **Terza Edizione**, Pitagora Editrice, Bologna, 2006.
4. Giorgio Buttazzo, Giuseppe Lipari, Luca Abeni, and Marco Caccamo, "Soft Real-Time Systems: Predictability vs. Efficiency", Springer, 2005.
5. Giorgio Buttazzo, "HARD REAL-TIME COMPUTING SYSTEMS: Predictable Scheduling Algorithms and Applications", **Second Edition**, Springer, 2005.
6. J. Stankovic, K. Ramamritham, M. Spuri, and G. Buttazzo, "Deadline Scheduling for Real-Time Systems", Kluwer Academic Publishers, Boston, 1998.
7. Giorgio Buttazzo, Marco Di Natale, "Linguaggio C/C++: Esercizi Risolti", Progetto Leonardo, Esculapio Editrice, Bologna, 1998.
8. Giorgio Buttazzo, "HARD REAL-TIME COMPUTING SYSTEMS: Predictable Scheduling Algorithms and Applications", Kluwer Academic Publishers, Boston, 1997.
9. Giorgio Buttazzo: "Sistemi in Tempo Reale", Pitagora Editrice, Bologna, 1995.

### Capitoli di Libri

1. Giorgio Buttazzo, "Adaptive Methods for Handling Overload Conditions in Real-Time Embedded Systems", Handbook of Cyber-Physical Systems, Springer, to appear.
2. Giorgio Buttazzo, "Handling Overload Conditions in Real-Time Systems", in Real-Time Systems, Architecture, Scheduling, and Application, Seyed Morteza Babamir (Ed.), IN-TECH, ISBN ISBN 978-953-51-0510-7, pp. 149-172, 2012.
3. Gianluca Franchino, Giorgio Buttazzo, and Tullio Facchinetto, "Token Passing Techniques for Hard Real-Time Communication", in Factory Automation, Javier Silvestre (Ed.), IN-TECH, ISBN 978-953-307-024-7, March 2010.
4. Giuseppe Carnevali and Giorgio Buttazzo, "Implementation of a Remote Laboratory accessible through the web", in Web-Based Control and Robotics Education. Series: Intelligent Systems, Control and Automation: Science and Engineering, Vol. 38, Tzafestas, Spyros G. (Ed.), Springer, 2009.
5. Giorgio Buttazzo, "Real-Time Scheduling and Resource Management", in The Handbook of Real-Time and Embedded Systems, Edited by Joseph Leung, Insup Lee, and Sang Son, CRC Press, 2006.
6. M. Caccamo, T. Baker, A. Burns, G. Buttazzo, and L. Sha, "Real-Time Scheduling for Embedded Systems", in Handbook of Networked and Embedded Control Systems, D. Hristu-Varsakelis and W. S. Levine Editors, Birkhauser, Boston, 2005.
7. Giorgio Buttazzo, "Real-Time Operating Systems: The Scheduling Aspects", in The Embedded Systems Handbook, Edited by Richard Zurawski, CRC Press, 2005.
8. Giorgio Buttazzo et al. "Adaptive Real-Time Systems for Quality of Service Management", in Embedded Systems Design, The ARTIST Roadmap for Research and Development, Lecture Notes in Computer Science, Vol. 3436, Edited by Bruno Bouyssounouse and Joseph Sifakis, Springer, 2005.
9. Giorgio Buttazzo, "Can a Machine Ever Become Self-aware?", in Artificial Humans, an Historical Retrospective of the Berlin International Film Festival 2000, Edited by R. Aurich, W. Jacobsen and G. Jatho, Goethe Institute, Los Angeles, pp. 45-49, May 2000.
10. Giorgio Buttazzo and John Stankovic, "Adding Robustness in Dynamic Preemptive Scheduling", in Responsive Computer Systems: Steps Toward Fault-Tolerant Real-Time Systems, Edited by D. S. Fussell and M. Malek, Kluwer Academic Publishers, Boston, 1995.
11. Daniele Micci Barreca and Giorgio Buttazzo, "A Hybrid Architecture for Failure-Based Learning", in Neural Nets WIRN Vietri-93, Edited by E. R. Caianiello, World Scientific Publishing, Singapore-New Jersey-London, pp. 233-240, 1994.

## Articoli su rivista

1. Daniel Casini, Alessandro Biondi, and Giorgio Buttazzo, "Handling Transients of Dynamic Real-Time Workload Under EDF Scheduling", *IEEE Transactions on Computers*, to appear.
2. Luigi Pannocchi, Carmelo Di Franco, Mauro Marinoni, and Giorgio Buttazzo, "Integrated Framework for Fast Prototyping and Testing of Autonomous Systems", *Journal of Intelligent & Robotic Systems*, to appear.
3. Enrico Rossi, Marvin Damschen, Lars Bauer, Giorgio Buttazzo, Jörg Henkel, "Preemption of the Partial Reconfiguration Process to Enable Real-Time Computing with FPGAs", *ACM Transactions on Reconfigurable Technology and Systems*, Vol. 11, Issue 2, pp. 10:1–10:24, November 2018 .
4. Carmelo Di Franco, Mauro Marinoni, Enrico Bini, Giorgio Buttazzo, "Dynamic Multidimensional Scaling with Anchors and Height Constraints for Indoor Localization of Mobile Nodes", *Robotics and Autonomous Systems*, Vol. 108, pp. 28-37, October 2018.
5. Tauã Milech Cabreira, Carmelo Di Franco, Paulo Roberto Ferreira Junior, and Giorgio Buttazzo, "Energy-Aware Spiral Coverage Path Planning for UAV Photogrammetric Applications", *IEEE Robotics and Automation Letters*, Vol. 3, Issue 4, pp. 3662-3668, October 2018.
6. Alessandro Biondi, Giorgio Buttazzo, and Marko Bertogna, "A Design Flow for Supporting Component-based Software Development in Multiprocessor Real-Time Systems", *Real-Time Systems*, Vol. 54, Issue 4, pp. 800–829, October 2018.
7. Alessandro Biondi and Giorgio Buttazzo, "Modeling and Analysis of Engine Control Tasks Under Dynamic Priority Scheduling", *IEEE Transactions on Industrial Informatics*, Vol. 14, Issue 10, pp. 4407-4416, October 2018.
8. Pasquale Buonocunto, Andrea Giantomassi, Mauro Marinoni, Davide Calvaresi, and Giorgio Buttazzo, "A Limb Tracking Platform for Tele-Rehabilitation", *ACM Transactions on Cyber-Physical Systems*, Vol. 2 Issue 4, pp. 30:1–30:23, September 2018.
9. Alessandro Biondi, Marco Di Natale, and Giorgio Buttazzo, "Response-Time Analysis of Engine Control Applications under Fixed-Priority Scheduling", *IEEE Transactions on Computers*, Vol. 67, Issue 5, pp. 687-703, May 2018.
10. Timo Feld, Alessandro Biondi, Rob Davis, Giorgio Buttazzo, and Frank Slomka, "A Survey of Schedulability Analysis Techniques for Rate-Dependent Tasks", *Journal of Systems and Software*, Volume 138, April 2018.
11. Alessandro Biondi, Marco Di Natale, Giorgio Buttazzo, and Paolo Pazzaglia, "Selecting the Transition Speeds of Engine Control Tasks to Optimize the Performance", *ACM Transactions on Cyber-Physical Systems*, Volume 2, Issue 1, January 2018.
12. Alessandra Melani, Marko Bertogna, Robert I. Davis, Vincenzo Bonifaci, Alberto Marchetti-Spaccamela, and Giorgio Buttazzo, "Exact Response Time Analysis for Fixed Priority Memory-Processor Co-scheduling", *IEEE Transactions on Computers*, Vol. 66, No. 4, pp. 631-646, April 2017.
13. Gianluca Franchino and Giorgio Buttazzo, "A Power-Aware MAC layer Protocol For Real-Time Communication in Wireless Embedded Systems", *Journal of Network and Computer Applications*, Vol. 82, pp. 21-34, March 2017.
14. Mauro Marinoni, Alessandro Biondi, Gianluca Franchino, Daniel Cesarini, Pasquale Buonocunto, and Giorgio Buttazzo, "Real-Time Analysis and Design of a Dual Protocol Support for Bluetooth LE Devices", *IEEE Transactions on Industrial Informatics*, Vol. 13, No. 1, pp. 80-91, February 2017.
15. Alessandra Melani, Marko Bertogna, Vincenzo Bonifaci, Alberto Marchetti Spaccamela, and Giorgio Buttazzo, "Schedulability Analysis of Conditional Parallel Task Graphs in Multicore Systems", *IEEE Transactions on Computers*, Vol. 66, Issue 2, pp. 339-353, February 2017.
16. Sikandar Khan and Giorgio Buttazzo, "Increasing the Resolution of Laser Range finders using Low Frequency Pulses", *International Journal of Embedded Systems*, Vol. 9, No. 2, pp. 157–167, January 2017.
17. Carmelo Di Franco and Giorgio Buttazzo, "Coverage Path Planning for UAVs Photogrammetry with Energy and Resolution Constraints", *Journal of Intelligent & Robotic Systems*, Vol. 83, Issue 3-4, pp. 445-462, September 2016.
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