Curriculum Vitae

Guido Maione

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1. General information and academic positions

General Information

Surname:	Maione
Name:	Guido
Place and date of birth:	Naples (Italy), August 10, 1967
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Current Academic Position and Affiliation

Assistant Professor (Lecturer) in the scientific field of Control Systems Engineering
Department of Electrical and Information Engineering
Polytechnic University of Bari

Italian name:
Dipartimento di Ingegneria Elettrica e dell'Informazione – DEI
(formerly known as *Dipartimento di Elettrotecnica ed Elettronica* – DEE)
Politecnico di Bari

Address: Via E. Orabona, 4 - 70125 – Bari – Italy

Past Positions

- April 1993 – July 1994: military service

  Training in *Complementary Officers' Corps* of the *Italian Navy* at *Accademia Navale* in Livorno (IT): 14/04/1993 - 13/07/1993
  Complementary Officers' Corps of the *Navy Coast Guard* in Bari (IT): 14/07/1993 - 13/07/1994

- January 1994 – January 1997: Ph.D. student in a research Doctoral program

  Institution Department of Electrical and Electronic Engineering (DEE), 1st School of Engineering, Politecnico di Bari, Bari
  Program *Electrical Engineering*, IX cycle (academic years 1993-1996) - "Industrial Automation", supervisor Prof. G. Piscitelli, head of program Prof. Eng. F. Torelli

- 16 September 1996 – 15 September 1999: Assistant Professor (evaluation period)

  Institution School of Engineering, University of Lecce, Lecce (IT)
  Department of Material Science

- 16/09/1999 – today: Assistant Professor

  Period 16/09/1999 – 30/12/2002
  Institution School of Engineering, University of Lecce, Lecce (IT)
  Department of Innovation Engineering (1999-2002)

  Period 31/12/2002 – Dec. 2011
  Institution 2nd School of Engineering - Politecnico di Bari, Taranto
  Department of Electrical and Electronic Engineering – DEE (2003), Department of Environmental Engineering and Sustainable Development – DIASS (2004 – Nov. 2011),

Department of Electrical and Information Engineering – DEI, formerly named Department of Electrical and Electronic Engineering – DEE (Dec. 2011)

Period Dec. 2011 – today
Institution Politecnico di Bari
Department of Electrical and Information Engineering – DEI, formerly named Department of Electrical and Electronic Engineering – DEE

2. Education

2.1 *Laurea* (M.Sc.) degree in Electronic Engineering: 22 Dec. 1992 – Politecnico di Bari – Bari (IT)

Program	*Electronic Engineering* (sub-program in "Control Systems Engineering"), 1st School of Engineering, Politecnico di Bari, Bari
Thesis (in Italian)	*Problemi di stabilità dello scheduling nei sistemi flessibili di produzione* (transl. as "Stability issues in scheduling of flexible manufacturing systems")
Supervisors	Prof. G. Piscitelli, Prof. Eng. B. Turchiano
Grade	110/110 *cum laude* (the term *cum laude* is added as a special distinction to the maximum marks)

2.2 Qualification as licensed engineer for the engineering profession: June 1993 – Politecnico di Bari – Bari (IT)

2.3 Short intensive post-degree attended courses

- ***"Fuzzy Logic & Soft Computing"*** by Consorzio Milano Ricerche, Co.Ri.M.Me., SGS-Thomson Microelectronics, Dipartimento di Scienze dell'Informazione – Università degli Studi di Milano, Milano, Italy, 18-21 Oct. 1994
- COMETT Course on ***"Design and Operation of Manufacturing Systems"*** by Prof. G. Chryssolouris (Univ. of Patras, Greece – MIT, USA): Dipartimento di Progettazione e Produzione Industriale, Politecnico di Bari, Bari, Italy, 26-28 Oct. 1994
- ***"Identification and Robust Control Design – A Practical Approach"***, by Prof. I. D. Landau, Adaptech, Grenoble, France, 17-20 Jan. 1995
- ***"Dinamica non lineare – teoria e applicazioni"*** (transl. as "Nonlinear dynamics – Theory and applications") by CNR - Centro di Studio per la Teoria dei Sistemi, Dipartimento di Elettronica – Politecnico di Milano, Firenze, Italy, 6-10 Febr. 1995
- ***"Algebraic Approach to Control System Design"*** by Prof. V. Kucera, Dipartimento di Elettronica e Informazione – Politecnico di Milano, Milano, Italy, 18-19 Oct. 1995
- ***"Fuzzy Control (Internet Course)"*** by Prof. J. Jantzen (Technical University of Denmark), long-distance Internet course, 1996
- ***"Identificazione e Controllo Robusto di Sistemi Incerti"*** (transl. as "Identification and Robust Control of Uncertain Systems"), Centro per lo Studio dei Sistemi Complessi, Siena, Italy, 8-9 Nov. 2002

2.4 Doctoral (Ph.D.) degree in *Electrical Engineering*: 7 July 1997 – Politecnico di Bari – Bari (IT)

Program	*Electrical Engineering*, IX cycle (1993-1996) - "Industrial Automation"
Institution	Department of Electrical and Electronic Engineering (DEE), 1st School of Engineering (DEE), Politecnico di Bari, Bari
Thesis (in Italian)	*Progettazione Orientata agli Oggetti del Controllore di un FMS* (transl. as "Object-oriented design of flexible manufacturing systems control")

2.5 Other scholar activities

Visiting Scholar at *Electrical and Computer Systems Engineering Department*, *Rensselaer Polytechnic Institute*, Troy (NY), USA. Study and research with the group of Prof. Frank DiCesare and Prof. Alan A. Desrochers: 22 Aug. 1997 - 8 Dec. 1997

IEEE student member: 1996, IEEE Member: 1997-today

Starter and founder of the IEEE Student Branch, Politecnico di Bari, Department of Electrical and Electronic Engineering (DEE): 1996. Volunteer as *ad-interim* President of the branch until 1997.

3. Research

3.1 Main interests

a1) *MODELLING, SIMULATION AND CONTROL OF DISCRETE EVENT DYNAMIC SYSTEMS (DEDS)*

Modelling, performance analysis, computer simulation and synthesis of control strategies of complex systems classified as DEDS. Applications: automated flexible manufacturing/assembly systems (FMS, FAS, AMS) for discrete part processes, control of traffic flows, control of data and information flows.

- *Methodologies for modelling and control of manufacturing systems by directed graphs* [J33, J40, J41, J43, B8, C58, C65, C67, C68, C69, CN9, CN12, CN13].

  A *working procedure digraph* describes precedence relations between available system resources to process parts. A *transition digraph* represents the current system state (busy resources by in-process parts and resources requires for the next step in working procedures). Properties of these digraphs are used to define *deadlock* states, i.e conditions in which each part in a set is permanently blocked in a circular wait by some other parts in the same set. Supervisory controllers are designed to enable or disable controllable events (part transitions between resources) in order to prevent deadlock. Some control policies detect deadlocks and recover standard operating conditions; some other statically prevent dangerous conditions by an off-line mechanism; some other dynamically avoid deadlock by an on-line policies.

- *Methodologies for modelling and control of manufacturing systems by Petri nets* [J33, C58, C66, C67, CN8].

  Petri nets effectively represent concurrency, conflict and cooperation. But, combinatorial explosion of the state set dramatically reduces efficiency of Petri net-based supervisors. An approach was developed to avoid exploring the complete state set of the Petri net modelling system dynamics and to define efficient controllers. Control places were introduced in the Petri net to statically or dynamically avoid deadlock states.

- *Modelling and control of processes in container terminals* [J7, B5, C48, C50, C51, C53, C54, BN1, CN4, CN7].

  Controlling flows of containers in multi-modal terminal systems is a complex task to be efficiently resolved. Digraph tools and Petri nets were used to define DEDS models which can be adopted to build a simulation platform. Then, different control strategies can be designed and tested both in standard steady-state operating conditions and in perturbed conditions. In particular, the Taranto Container Terminal (Taranto, Italy) was considered as a case-study to develop the simulation model.

- *Object-oriented design of FMS control* [J42, CN11].

  Modelling and control of a generic FMS in uncertain conditions can be with methods and techniques which are derived from the object-oriented software paradigm. The models result from interactions between objects, representing physical (machines, transporters, hardware equipment) or virtual (control system, management level) entities. Objects exchange messages one with another, and make their state or the system state change according to methods they use to interact between themselves and with the external environment and to execute activities.

a2) *MODELLING, SIMULATION AND DISTRIBUTED CONTROL OF FLEXIBLE MANUFACTURING SYSTEMS WITH SOFT COMPUTING AND MULTI-AGENT SYSTEMS* [J35, J37, J38, B6, B7, C55, C56, C57, C59, C60, C61, C62, C63].

Modelling, simulation and control of a generic FMS can be approached by using the paradigm of intelligent interacting agents. Multi-Agent Systems are based on the dynamics of

interactions between agents. Agents behave as local autonomous controllers, responsible for system resources or parts in process. These entities are represented by software programs distributed on specific computers or centralized in a unique station. Each agent obeys a set of decision rules to fulfil its local tasks and reach its desired objectives by using its own data. It operates independently of other agents, without knowing their specific objectives and eventually competing for shared resources or services. Agents interact by communication and negotiation mechanisms to require and offer services. Nevertheless, the overall system desired performance can be achieved by using a supervisor, which adapts in real-time the agents' decision logic by a feedback on the current system state. A DEDS model was developed to describe interactions between agents and the supervisory control mechanism.

a3) *NON-INTEGER ORDER SYSTEMS AND FRACTIONAL-ORDER CONTROLLERS* [J1, J2, J3, J4, J5, J6, J9, J10, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J23, J25, J26, J27, J28, J29, J30, J31, J32, J36, J39, B3, C16, C17, C18, C19, C20, C21, C23, C25, C26, C29, C30, C31, C32, C33, C34, C35, C36, C37, C39, C41, C42, C43, C46, C52].

After the XVII century studies of Leibniz and Newton on infinitesimal calculus, fractional calculus was investigated and developed without interruptions in math but it received considerable attention in physics and engineering only in the last decades. Modeling of viscoelastic phenomena, neural behavior in biologic systems, traffic in communication channels, peculiar chaotic systems and some electromagnetic phenomena, is nowadays very influenced by fractional calculus. Engineering applications are in the field of circuits theory, analysis of signals, innovative materials, robotics, mechatronics, etc.

The first attempts to apply fractional calculus in electronics and control engineering date back to Bode (1945), who conceived the optimal shape of the open loop transfer function as an fractional integrator, with order between 1 and 2. After the pioneer results of Manabe, Axel and Bise in the sixties, the French team of Oustaloup developed the concept of “fractal robustness” on which the CRONE control is based. An interesting frequency-domain design solution was proposed for robust controllers in automotive applications. In 1994, Lurie achieved a US patent for a fractional controller with transfer function $s^{-1/n}$ (with n integer). After, Podlubny introduced a $PI^{\lambda}D^{\mu}$ controller as a generalization of standard PID. To synthesize, fractional integrals are used to match the ability to track step reference inputs and great flexibility in changing frequency response by modifying the integral fractional exponent. The fractional derivative action guarantees a lower amplification of high-frequency noise, as compared with the conventional integer derivative action. Finally, recent results showed that fractional compensators guarantee better performance in controlling some systems modeled by integer order differential equations, and, above all, many systems represented by fractional order differential equations, often with partial derivatives.

Personally, I studied the realization of integro-differential actions [J21], [J25], [J26], [J27], [J28], [J31], [J32] with reference to analogue and digital controllers. I discretized the fractional operator s^{ν} (with ν noninteger order), by using a generating function and approximation techniques based on continued fractions expansion. The resulting rational functions showed a frequency response much better than other realizations, on the basis of interlaced poles and zeros, with stable and minimum-phase characteristics. I also considered approximating fractional controllers with generalized Laguerre orthogonal functions, achieving accurate approximations both in the time- and frequency-domain [J30], [J39]. Moreover, I applied generalized Laguerre orthogonal functions and continued fractions to give some methods to invert fractional transfer functions [J27], [J36]. These methods are more amenable than those based on Mittag-Leffler functions. Remarkable is the opportunity to obtain digital realizations of non-integer integro-differential operators that are particularly robust and insensitive to truncation and round-off errors [J26]. These benefits are very useful in digital control applications where high sampling frequencies and memories with finite word lengths are used.

Moreover, in some papers, I extended some concepts used in the synthesis of linear time-invariant control systems, to the design of fractional controllers. Reference [J29] extends the popular *symmetrical optimum* method, used in electromechanical drives, to fractional controllers. Then in [J23] I developed a *loop-shaping* technique inspired to the symmetrical optimum, to determine closed and simple formulae for designing and tuning robust fractional controllers. These controllers can be applied to a wide class of systems, i.e. those modeled as a first order system plus an integrator. The fractional controllers are based on a proportional action and a integral action of non-integer order. In [J20] I introduced a complete and efficient method to tune and approximate fractional controllers that are not only using classical proportional actions but also integral or derivative actions of non-integer order. The method is in two steps. It employs evolutionary techniques both to tune the controller parameters that optimize a cost function and to realize a rational approximation of the controller transfer function. Finally, in [J21] I obtained a discrete rational approximation of the Tustin fractional operator by using the Laguerre continued fraction. Then I proved that this approximation verifies important properties. All zeros and poles of the rational discrete transfer function are real and interlaced in the unitary circle and, moreover, they lie in symmetrical positions with respect to the origin.

a4) MANAGING EVACUATION FROM CIVIL BUILDINGS AND CONTROLLING COLLECTIVE MOTION IN EMERGENCY CONDITIONS [B2, B4, C38, C40, C44, C45, C47, C49, CN5, CN6].

Since many decades, all industrialized countries have defined norms and rigorous prescriptions to protect civil buildings from fire or adverse events (explosions, terrorist attacks, etc.). More recently, the international regulations have come to a 'performance-oriented' vision. The norms related to dimensions, architecture and materials of the buildings are integrated with criteria to manage adverse events, thanks to the new communication and control technologies. In particular, controlling collective motion in emergency conditions has become a current research challenge. The trend is to use networks of distributed wireless sensors and actuators, to detect critical values of measured variables and of crowd motion. Sensors measure temperature, toxic gas concentrations (NOx, CO, CO2, etc.) and detect dangerous events, e.g. fire, smoke and gas diffusion, and overcrowding at critical points (doors, exits, transit ways). They may also send feedback on distribution and crowd of people to rescue expert agents. Instead, actuators (monitors, panels, flashing lights, acoustic signals, etc.) are placed in strategic points and show the crowd the best routes to escape. It is also possible that expert and trained agents are equipped with PDA to receive signals and information to help and guide the crowd.

To control egress by using these technologies, it is necessary to build a model of the evacuation dynamics to improve performance of egress. The model must allow a better understanding of the crowd motion, by estimating characteristic parameters (average speed depending on density of the crowd, flows through doors and bottlenecks, crowded areas, etc.). The model must also provide data useful to comparative analysis of control strategies. Finally, it must support the real-time control of people evacuation by proper commands to actuators (signs, acoustic signals and alarms, automatic doors opening/closing, instructions to safety staff, etc.). In this context, I developed discrete event models based on graphs and queuing networks and on modular descriptions of the building or the environment to be evacuated. I first described the crowd motion in the considered spaces by using queues whose parameters depend on simplifying assumptions on the human behavior. Then I simulated models in Matlab/Simulink environment and validated them by commercial simulation tools.

In a second phase, I defined evacuation control strategies that can be dynamically adapted to egress routes and that are capable to face unexpected events (interrupt of escape routes, blocking or unavailability of doors and exits, collapses, etc.), sudden overcrowding of spaces, sudden danger in escape paths. These sudden events in their turn depend on diffusion of risk factors (fire, smoke, toxic gases, etc.) and on individual reaction to alarms. If we consider that the total evacuation time depends on the sum of three times, that are the time to recognize emergency, the time to process information, the time to drive people to a safe place, then the

control objective is to minimize this third element. In practice, the aim is twofold. It is desired both to maximize flows by monitoring what happens close to each door or critical point and consequently redirectioning people to better points, and also to minimize the total evacuation time by identifying the shortest escape routes. The developed control strategy is based on a routing algorithm that is inspired to the Dijkstra's algorithm, that is modified by taking into account not only the building characteristics but also the best routes, the risk conditions and the peculiarities of crowd motion.

a5) *CONTROLLING MULTIMEDIA STREAMING ON UMTS NETWORKS* [J13, J22, C24, C27].

This research line was recently started to apply feedback control algorithms to communication of 2D or 3D video or multimedia by streaming on UMTS networks. The initial idea is using feedback packets offered by the RTCP standard and aiming at maintaining a certain Quality of Service for the final users. However, I further developed a control technique based on PI control with anti-windup to prevent problems determined by the emptying or filling of buffers in the users' devices. Namely, these phenomena typically create data losses or slow or jerky video reproductions, even if advanced scheduling algorithms are used, because these algorithms often do not have effective control. I recently proposed an algorithm [J22] that has provided better performance than two algorithms that are a reference for the considered application. This superiority is due to taking into account interactions by the users and in compensating those that act as disturbances on the desired buffer levels. Future developments will consider 3D videos, different coding standards, and innovative and more robust control algorithms. The paper [J13] proposes an innovative model of reduced complexity to characterize 3D video streaming sequences. The model can be useful to simplify scheduling and to control the quality of the streaming process.

3.2 Activities in research groups

b1) *Project management and responsibility*

- Cost Action CA 15225, National Member of the Italian Unit and National Italian Member of the Management Committee, Cost Action CA 15225 "Fractal" (Fractional-order systems: analysis, synthesis and their importance for future design), European Cooperation in Science and Technology, EU Horizon 2020/FP7
- PRIN 2009 (Project of Relevant National Interest), Research Unit at Politecnico di Bari, *"High-performance robust fractional controllers for applications in industry and mechatronics"*, inside the National project titled *"Non integer order systems in modeling and control"*, scientific responsible Dr. Ing. Riccardo Caponetto, University of Catania
- Project FRA ex 60% (2016), *"Modeling, estimation, optimization and control of automotive and electrical drive systems"* , Politecnico di Bari
- Project FRA ex 60% (2013), *"Modeling and control by fractional calculus"*, Politecnico di Bari
- Project FRA ex 60% (2003), *"Control of manufacturing systems with distributed agents"*, Politecnico di Bari
- Project FRA ex 60% (2002), *"Adapting multi-agent control of manufacturing systems"*, University of Lecce
- Project FRA ex 60% (2001), *"Multi-agent control of flexible manufacturing systems"*, University of Lecce

b2) *Participation in other projects*

- European Project, *optiTruck* (Topic: GV-6-2015 - Powertrain control for heavy-duty vehicles with optimised emission), Programme/Call: H2020 — H2020-GV-2014-2015/H2020-GV-2015, local unit head Prof. Maria Pia Fanti.

- Project PON 2007-2013: PON03PE_00067_8 *"MEA: Gestione ibrida dell'energia per applicazioni aeronautiche"* (transl. as "MEA: Hybrid energy management for aeronautics applications")
- PON 2007-2013: headed by MEDIS S.c.a.r.l. - Distretto Meccatronico Regionale of Puglia Region; project code: PON02_00576_3333604; title: *"INNOVHEAD - Tecnologie innovative per riduzione emissioni, consumi e costi operativi di motori Heavy Duty"* (transl. as "Innovative technologies to reduce emissions, consumptions and operational costs of heavy duty engines")
- PON 2007-2013: headed by Centro Ricerche FIAT S.c.p.a.; project code: PON01_02238; title: *"EURO6 - Elettronica di controllo, sistema di iniezione, strategie di combustione, sensoristica avanzata e tecnologie di processo innovativi per motori diesel a basse emissioni inquinanti"* (transl. as "EURO6 – Innovative electronic control, injection system, combustion strategies, advanced sensors and process technology for diesel engines with low polluting emissions")
- Project "Meccatronica" (transl. as "Mechatronics"): Accordo di Programma Quadro Ricerca –Puglia Region (2010-2011), "Modelli Innovativi per Sistemi Meccatronici" (transl. as "Innovative Models for Mechatronic Systems"), Del. CIPE 20/04, DM01
- Strategic Project financed by Regione Puglia (2006), *"Infrastrutture di telecomunicazione e reti wireless di sensori nella gestione di situazioni di emergenza"* (transl. as *"Telecommunication infrastructures and wireless sensor networks for managing emergency"*) scientific co-ordination by Prof. Eng. B. Maione, DEE, Politecnico di Bari
- Strategic Project financed by Regione Puglia (2006), *"ICT a supporto dei servizi logistici: un modello di mercato organizzato"* (transl. as *"ICT for supportino logistic services: an organized market model"*) scientific co-ordination by Prof. P. Pontrandolfo, DIASS, Politecnico di Bari
- Explorative Experimentation Project financed by Regione Puglia (2006), *"DESAL - Impianto di dissalazione autonomo e auto-controllato alimentato mediante energie rinnovabili"* (transl. as *"Autonomous and self-controlled desalination plant powered by renewable energies"*), scientific co-ordination by Prof. L. Liberti, DIASS, Politecnico di Bari
- Project for Technology Transfer (2005). *"Programma integrato per il trasferimento tecnologico di sistemi intelligenti e sensori virtuali per l'automazione industriale"*, (transl. as *"Integrated program for technological transfer of intelligent systems and virtual sensors for industrial automation"*), responsible Prof. Eng. B. Maione, Politecnico di Bari, in a program for pilot projects for technology transfer to small and medium enterprises and companies
- National Italian Project PRIN 2004 (2005-2007), *"Miglioramento della sicurezza in veicoli dotati di cisterna"* (transl. as *"Safety improvement in long tank-vehicles"*), responsible Prof. Eng. G. Mantriota, 2nd School of Engineering, Politecnico di Bari, Taranto
- National Italian Project PRIN 2003 (2004-2006), *"Modellizzazione di aggregati neuronali per il controllo di sistemi di movimentazione e manifatturieri"* (transl. as *"Modelling of neural networks for controlling handling and manufacturing systems"*), responsible Prof. Eng. L. Fortuna, University of Catania, Catania
- Education Project with Centro Ricerche FIAT 07/2003-06/2005, responsible Prof. Eng. B. Maione, Politecnico di Bari
- National Italian Project PRIN 2002 (2003-2005), *"Controllo a commutazione con supervisione"* (transl. as *"Supervisory switching control"*), responsible Prof. Eng. E. Mosca, University of Florence, Florence
- Project FRA ex 60%, (2000), responsible Prof. Eng. M. L. Corradini, University of Lecce

- Project FRA ex 60% (1999), responsible Prof. Eng. M. E. Valcher, University of Lecce
- National Italian Project PRIN 1998 (1999-2001), *"Modelli per la gestione di sistemi di produzione in condizioni di incertezza"* (transl. as *"Models for managing production systems in uncertainty"*), responsible Prof. Eng. A. Villa, Politecnico di Torino
- Project FRA ex 60% (1998), *"Analisi di un sistema produttivo mediante tecniche di simulazione"* (transl. as *"Analysis of a production system with simulation techniques"*), responsible Prof. Eng. A. Anglani, University of Lecce
- Project CNR n. 96.00056.PF01 (1996), *"Sviluppo di un ambiente di progettazione integrata (meccatronica) orientato ai sistemi di lavorazione meccanica avanzati"* (transl. as *"Development of an integrated mechatronic design system for advanced mechanical production systems"*), responsible Prof. Eng. B. Maione, Politecnico di Bari
- National Italian Project MPI 40% (1996), *"Gestione integrata di agenti produttivi autonomi"* (transl. as *"Integrated management of autonomous production agents"*), responsible Prof. Eng. F. Nicolò, Third University of Rome
- MURST 60% (1996), responsible Prof. G. Piscitelli, Politecnico di Bari
- MPI 60% *"Gestione dei flussi fisici ed informativi nei sistemi di produzione con automazione flessibile"* (1995), responsible Prof. Biagio Turchiano, Politecnico di Bari
- MPI 60% *"Prevenzione delle situazioni di stallo nei sistemi flessibili di produzione"* (1995), responsible Ing. Maria Pia Fanti, Politecnico di Bari

3.3 Organization of national and international events

- Member of the *National Organizing Committee*, *IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI)*, Bari, Italy, 18-20 Sett. 2017
- Member of the *National Organizing Committee* dell'*International Conference on Fractional Differentiation and Its Applications ICFDA 2014*, 23-25 June 2014, Catania, Italy, see http://www.icfda14.dieei.unict.it/committees.html
- Member of the *National Organizing Committee*, *2nd IFAC Workshop on Dependable Control of Discrete Systems DCDS'09*, Bari, Italy, 10-12 June 2009, see http://dcds09.poliba.it/Committees.html
- Member of the *National Organizing Committee*, *International Conference on Life System Modeling and Simulation LSMS 2007*, Shanghai, China, 14-17 Sept. 2007, see http://www.lsms-icsee-2010.org/lsms2007/index.php?page=Content/organization
- 2001 national meeting of CIRA (Professors, Lecturers, Researchers, Ph.D. Students with interests in Automatics), ex Monastero degli Olivetani, Lecce, Italy, 12-14 Sept. 2001
- *European Symposium on Intelligent Techniques ERUDIT '97*, Villa Romanazzi-Carducci, Bari, Italy, 20-22 March 1997
- *IEEE/AEI MELECON '96 (the 8th Mediterranean Electrotechnical Conference)*, Villa Romanazzi-Carducci, Bari, Italy, 13-16 May 1996

3.4 Editorial activity and contribution to international events

- Associate Editor, *Transactions of the Institute of Measurement and Control*
- Guest Editor dello *Special Issue "Fractional Order Systems and Controllers"*, *Control Engineering Practice*, Editorial "Fractional-order control: A new approach for industrial applications", Control Engineering Practice, vol. 56, 2016, pp. 157-158, ISSN 0967-0661, DOI: http://dx.doi.org/10.1016/j.conengprac.2016.09.008

- Lead Guest Editor of the *Special Issue "New Challenges in Fractional Systems 2014"*, *Mathematical Problems in Engineering*, Vol. 2014, Article ID 870841, 17 Nov. 2014, ISSN: 1024-123X (Print), ISSN: 1563-5147 (Online)
- Guest Editor of the *Special Issue "Recent Advances on Modeling, Control, and Optimization for Complex Engineering Systems"*, *Mathematical Problems in Engineering*, Vol. 2014, Article ID 746729, 21 Dec. 2014, ISSN: 1024-123X (Print), ISSN: 1563-5147 (Online)
- Member of the Editorial Board of the book *Swarm Intelligence for Electric and Electronic Engineering*, IGI Global, 2012, L. Mescia, G. Fornarelli (Eds.), ISBN: 978-1-4666-2666-9, DOI: 10.4018/978-1-4666-2666-9
- Guest Editor of the *Special Issue "Bio-inspired Computing and Applications (LSMS-ICSEE 2010)", Neurocomputing*, vol. 98, dicembre 2012, pp. 1-3, 2012, Digital Object Identifier: http://dx.doi.org/10.1016/j.neucom.2012.05.014 (online: 5 June 2012), with K. Li, X. Hong, Q. Niu, ISSN 0925-2312, Impact Factor ISI-JCR 1.429
- Guest Editor of the *Special Issue on Automatic Control & Information, International Journal of Information Technology*, vol. 11, no. 11, 2005, DOI: http://intjit.org/journal/volume/11/11/editorial.html, Singapore Computer Society, ISSN 0218-7957, with T.X. Mei, K. Li, Q. Zhao
- Member of the *International Program Committee* of the *2017 European Conference on Circuit Theory and Design (ECCTD)*, Catania, Italy, 4-6 Sept. 2017
- Member of the *International Program Committee* of the Conference *Control 2016: 11th UKACC International Conference on Control (UKACC 2016)*, Belfast, UK, Aug. 31 – Sep. 2, 2016, cfr. https://www.qub.ac.uk/sites/Control2016/IPCMembers/
- Member of the *International Program Committee* of the *International Conference on Fractional Differentiation and Its Applications ICFDA 2016*, 18-20 luglio 2016, Novi Sad, Serbia, cfr. http://icfda16.com/public/committees.php
- Member of the *International Program Committee* della *2014 International Conference on Life System Modeling and Simulation (LSMS2014)* and of the *2014 International Conference on Intelligent Computing for Sustainable Energy and Environment (ICSEE2014)*, 20-23 Sept. 2014, Shanghai, China, see http://www.lsms-icsee-2014.org/?page=Content/organization
- Member of the *International Program Committee* dell'*International Conference on Fractional Differentiation and Its Applications ICFDA'14* (23-25 June 2014, Catania, Italy), see http://www.icfda14.dieei.unict.it/committees.html
- Member of the *International Program Committee*, *2nd International Conference on Intelligent Computing for Sustainable Energy and Development ICSEE 2012*, 12-13 Sept. 2012, Shanghai, China, see http://icsee2012.sjtu.edu.cn/pcom.html
- Member of the *International Program Committee*, *5th IFAC Symposium on Fractional Differentiation and Its Applications FDA 2012*, 14-17 May 2012, Hohai University, Nanjing, China, see http://em.hhu.edu.cn/fda12/Committees1.html
- Member of the *International Program Committee*, *2010 International Conference on Life System Modeling and Simulation & 2010 International Conference on Intelligent Computing for Sustainable Energy and Environment*, 17-20 Sept. 2010, Wuxi, China, cfr. http://www.lsms-icsee-2010.org/?page=Content/organization
- Member of the *International Program Committee*, *International Conference on Intelligent Computing ICIC 2007*, 21-24 Aug. 2007, Quingdao, China, see http://www.ic-ic.org/2007/index.htm (Organization)
- *Chairman* in international conferences:
  - Invited Session on Advances in Fractional Calculus – Theory and Applications (12 July 2017), *20th IFAC World Congress*, Toulouse, France, 9-14 July 2017

- Control Session (18 July 2016), *International Conference on Fractional Differentiation and Its Applications ICFDA 2016*, 18-20 July 2016, Novi Sad, Serbia
- Invited Minisymposium "Engineering Applications of Fractional Derivatives" (19 Feb. 2015), *Mathmod 2015 – 8th Vienna International Conference on Mathematical Modelling*, Vienna University of Technology, Vienna, Austria, 18-20 Feb. 2015
- Invited Session "Fractional Order Systems and Controllers: Control Design, Estimation Schemes, and Applications" (25 June 2014), *2014 International Conference on Fractional Differentiation and Its Applications (ICFDA'14)*, Catania, Italy, 23-25 June 2014
- Invited Session "Fractional Order Modeling and Control: Theoretical Approaches, Design Techniques, and Tuning Methods" (25 June 2014), *2014 International Conference on Fractional Differentiation and Its Applications (ICFDA'14)*, Catania, Italy, 23-25 June 2014
- Invited Session "Fractional Order Models: Theoretical Developments and Applications to Modeling of Signals and Systems" (23 June 2014), *2014 International Conference on Fractional Differentiation and Its Applications (ICFDA'14)*, Catania, Italy, 23-25 June 2014
- Invited Session "Advances in Fractional Order Estimation and Control" (6 Feb. 2013), *First IFAC Joint Conference on System Structure and Control, Time-Delay Systems and Fractional Differentiation (2013 IFAC Joint Conference SSSC-TDS-FDA) – Track FDA: Sixth Workshop on Fractional Differentiation and Its Applications*, Grenoble, France, 4-6 Feb. 2013
- Minisymposium MS-06 "Fractional Derivatives" (26 July 2011), *7th European Nonlinear Dynamics Conference (ENOC 2011)*, Rome, Italy, 24-29 July 2011 – organized by Prof. J. A. Tenreiro Machado
- Session "Numerical Methods and Approximations 1 (NMA1)" (18 Oct. 2010), *The 4th IFAC Workshop on Fractional Differentiation and Its Applications (FDA'10)*, University of Extremadura, Badajoz, Spain, 18-20 Oct. 2010
- Session CSA-8 "Emerging Control Issues" (7 July 2010), *2010 IEEE International Symposium on Industrial Electronics (ISIE 2010)*, Bari, Italy, 4-7 July 2010
- Sessione CSA-3 "Sliding Mode Control" (5 July 2010), *2010 IEEE International Symposium on Industrial Electronics (ISIE 2010)*, Bari, Italy, 4-7 July 2010
- Sessione WeC18 "Mechatronics" (30 June 2010), *2010 American Control Conference (ACC 2010)*, Baltimore Marriott Waterfront, Baltimore, Maryland, USA, 30 June - 2 July 2010
- Session 10 "Signal Processing, Systems Modeling and Control" (4 July 2009), *6th International Conference on Informatics in Control, Automation and Robotics (ICINCO 2009)*, Milan, Italy, 2-5 July 2009
- Session 5 "Signal Processing, Systems Modeling and Control" (13 May 2008), *5th International Conference on Informatics in Control, Automation and Robotics (ICINCO 2008)*, Funchal, Madeira, Portugal, 11-15 May 2008.
- Session 10 "Intelligent Control Systems and Optimization" (12 May 2007), *4th International Conference on Informatics in Control, Automation and Robotics (ICINCO 2007)*, Angers, France, 9-12 May 2007.
- Session "Discrete Event Systems – Theory and Applications I" (11 Oct. 2004), *2004 IEEE International Conference on Systems, Man and Cybernetics (IEEE SMC'04)*, The Hague, NL, 10-13 Oct. 2004.
- Sessions T5.1 "Simulation Methodologies applied to Automated Manufacturing Systems" (17/09/2003), T5.3 "Synthesis Methodologies for Manufacturing Systems' Controllers"

(18/09/2003), *9th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA'03)*, Lisbon, Portugal, 16-19 Sept. 2003.

- Referee for several international journals like:
  - *Abstract and Applied Analysis*
  - *Asian Journal of Control*
  - *ASME Journal of Computational and Nonlinear Dynamics*
  - *Automatica*
  - *Chaos, Solitons & Fractals*
  - *Communications in Nonlinear Science and Numerical Simulation*
  - *Computers and Mathematics with Applications*
  - *Computers in Industry*
  - *Control Engineering Practice*
  - *Electrochemical Acta*
  - *Entropy*
  - *European Journal of Control*
  - *European Physical Journal*
  - *IEE Video, Image and Signal Processing*
  - *IEEE Signal Processing Letters*
  - *IEEE Transactions on Automatic Control*
  - *IEEE Transactions on Automation Science and Engineering*
  - *IEEE Transactions on Circuits and Systems I*
  - *IEEE Transactions on Circuits and Systems II*
  - *IEEE Transactions on Control Systems Technology*
  - *IEEE Transactions on Intelligent Transport Systems*
  - *IEEE Transactions on Signal Processing*
  - *IEEE Transactions on Systems, Man, and Cybernetics: Part A*
  - *IET Control Theory & Applications*
  - *International Journal of Adaptive Control and Signal Processing*
  - *International Journal of Control*
  - *International Journal of Control, Automation, and Systems*
  - *International Journal of Dynamics and Control*
  - *International Journal of Information Technology*
  - *International Journal of Production Research*
  - *International Journal of Robust and Nonlinear Control*
  - *ISA Transactions*
  - *Journal of the Franklin Institute*
  - *Journal of Vibration and Control*
  - *Mathematical and Computer Modelling of Dynamical Systems*
  - *Mathematical Problems in Engineering*
  - *Nonlinear Dynamics*
  - *Signal, Image and Video Processing*
  - *Signal Processing*
  - *Signal Processing*
  - *Systems and Control Letters*
  - *Transactions of the Institute of Measurement and Control*

- Referee of book *Deadlock Resolution in Computer-Integrated Systems* (edited by M.-C. Zhou and M.P. Fanti, Taylor and Francis/CRC Press, Marcel Dekker, New York, 2005).
- Referee and Program Committee Member for several international conferences and congresses (IEEE, IFAC, etc.)

3.5 International recognition

- IEEE Senior Member, Sept. 2016
- The chapter "Discrete-Event Dynamic Systems Modelling Distributed Multi-Agent Control of Intermodal Container Terminals", in *Robotics, Automation and Control*, InTech Book Chapter, Vienna, Austria, March 2008 had more than 6000 accesses and downloads (July 2014)
- Funding of Research Project PRIN 2009 (Italian national project of relevant interest) *"High-performance robust fractional controllers for applications in industry and mechatronics"*
- Triennial research quality evaluation (**VQR**) for years **2004-2010**: the 3 following papers were evaluated of **excellent level**:
  - ✓ MAIONE G (2006). A Rational Discrete Approximation to the Operator s^0.5. IEEE SIGNAL PROCESSING LETTERS, vol. 13 (3), p. 141-144, ISSN: 1070-9908, doi: 10.1109/LSP.2005.862615
  - ✓ MAIONE G (2008). Continued Fractions Approximation of the Impulse Response of Fractional Order Dynamic Systems. IET CONTROL THEORY & APPLICATIONS, vol. 2 (7), p. 564-572, ISSN: 1751-8644, doi: 10.1049/iet-cta:20070205
  - ✓ MAIONE G, LINO P (2007). New Tuning Rules for Fractional PI^alfa Controllers. NONLINEAR DYNAMICS, vol. 49 (1-2), p. 251-257, ISSN: 0924-090X, doi: 10.1007/s11071-006-9125-x
- Invited chapter "Pressure Control of CNG Engines by Noninteger Order Controllers: A New Trend in Application of Fractional Calculus to Automotive Systems", co-author Paolo Lino, in *Fractional Calculus: History, Theory and Applications*, R. Daou, X. Moreau (Eds.)
- Invited chapter "Discrete-Event Dynamic Systems Modelling Distributed Multi-Agent Control of Intermodal Container Terminals" in *Robotics, Automation and Control*, I-Tech Book Chapter, Vienna, Austria, March 2008
- "A Genetic Approach for Adaptive Multi-Agent Control in Heterachical Manufacturing Systems", *IEEE Transactions on Systems, Man, and Cybernetics: Part A: Special Issue on Collective Intelligence in Multi-Agent Systems*, vol. 33, no. 5, Sept. 2003, pp. 573-588, ISSN 1083-4427: paper selected between the **excellence-level scientific products** of **Politecnico di Bari**, CIVR ("Comitato di Indirizzo per la Valutazione della Ricerca") triennial research evaluation for years 2001-2003.
- "A Soft Computing Approach for Task Contracting in Multi-Agent Manufacturing Control", *Computers in Industry*, vol. 52, no. 3, Dec. 2003, pp. 199-219, ISSN 0166-3615: paper selected between the **good-level scientific products** of **Politecnico di Bari**, CIVR ("Comitato di Indirizzo per la Valutazione della Ricerca") triennial research evaluation for years 2001-2003.
- "Digraph-based Techniques for Deadlock Resolution in Automated Manufacturing Systems": invited chapter in *Deadlock Resolution in Computer-Integrated Systems*, Eds. M.-C. Zhou and M.P. Fanti, Marcel Dekker/CRC Press, New York, 2005, chap. 5, pp. 131-154
- "Modeling Adaptive Multi-Agent Manufacturing Control with Discrete-Event System Formalism": paper selected for the official *SME Emerging Technologies Monitor*, *Electronic Newsletter*, Society of Manufacturing Engineers, winter 2005.
- "Using A Discrete-Event System Formalism for the Multi-Agent Control of Manufacturing Systems", paper selected as ***Best Paper*** from the *1st International Conference on Informatics in Control, Automation and Robotics (ICINCO'04)*, Setubal, Portugal, 25-28 Aug. 2004.

- "A Hybrid Petri Net and Digraph Approach for Deadlock Prevention in Automated Manufacturing Systems", paper cited in *CSA Mechanical & Transportation Engineering Abstracts* database (CSA Illumina - Guide to Discovery)
- "A Hybrid Petri Net and Digraph Approach for Deadlock Prevention in Automated Manufacturing Systems", paper cited in *CSA/ASCE Civil Engineering Abstracts* database (CSA Illumina - Guide to Discovery)
- "A Hybrid Petri Net and Digraph Approach for Deadlock Prevention in Automated Manufacturing Systems", paper cited in *CSA Computer & Information Systems Abstracts* database (CSA Illumina - Guide to Discovery)
- "A Hybrid Petri Net and Digraph Approach for Deadlock Prevention in Automated Manufacturing Systems", paper cited in *CSA Solid State & Superconductivity Abstracts* database (CSA Illumina - Guide to Discovery)
- *Scopus* indicators for 86 reported documents: *h*-index = 14, 587 citations
- *Google Scholar* indicators for 129 reported documents: *h*-index = 17, 904 citations

3.6 Links with academic institutions, private companies and industries

- Electronic and Information & Measuring Technology Department, *Kazan National Research Technical University (KNRTU)*, Kazan, Tatarstan, Russian Federation (Prof. Raoul R. Nigmatullin, Dr. T. Aiupov)
- Department of Telecommunications, Faculty of Electrical Engineering and Communication, *Brno University of Technology*, Brno, Czech Republic (Prof. Jaroslav Koton)
- Faculty of Technical Sciences, University of Novi Sad, Serbia (Prof. Zoran Jeličić, Prof. Milan R. Rapaić, Dr. Boris Jakovljević)
- Dpto. de Ing. Eléctrica, Electrónica y Automática, Escuela de Ingenierías Industriales, *Universidad de Extremadura*, Badajoz, Spain (Prof. Blas M. Vinagre)
- Escuela Técnica Superior de Ingenieros Industriales, *Universidad de Castilla-La Mancha*, Ciudad Real, Spain (Prof. Vicente Feliu-Battle)
- Department of Electrical Engineering, Institute of Engineering (ISEP), *Polytechnic of Porto*, Portugal (Prof. Josè A. Tenreiro Machado)
- IMS Laboratory, *Bordeaux 1 University*, Bordeaux, France (Prof. Jocelyn Sabatier)
- School of Electronics, Electrical Engineering and Computer Science, *Queens' University of Belfast*, Belfast, UK (Proff. George W. Irwin, Kang Li)
- Electrical and Computer Systems Engineering Department, *Rensselaer Polytechnic Institute*, Troy, NY, USA (Proff. Frank DiCesare, Alan A. Desrochers)
- Department of Mathematics, *Chuvash State University*, Cheboksary, Russian Federation (Prof. Vyacheslav A. Toboev)
- Department of Electric, Electronics and Systems Engineering, School of Engineering, *University of Catania*, Catania, Italy (Proff. Luigi Fortuna, Riccardo Caponetto)
- Department of Electrical and Electronic Engineering, *University of Cagliari*, Cagliari, Italy (Proff. Elio Usai, Alessandro Pisano)
- Scuola di Scienze, *Università degli Studi di Bologna*, Bologna, Italy (Prof. Francesco Mainardi)
- Dipartimento di Matematica, University of Bari, Bari (Prof. Luciano Galeone, Roberto Garrappa)

- *Centro Studi Componenti per Veicoli S.p.A. (CVIT)*, Bosch Group, Modugno (Bari)
- *Centro Ricerche Fiat*, Tecnopolis, Valenzano (Bari), Italy
- *Robotronix*, Taranto, Italy
- *Gruppo S.M.A.-Intini*, Noci (Bari), Italy
- *Saicaf S.p.A.*, Bari, Italy
- *Comes S.p.A.*, Taranto, Italy
- *Tema Safety & Training s.r.l.*, Taranto, Italy

3.7 Affiliation to scientific societies

- IEEE (the Institute of Electrical and Electronics Engineers, Inc.): 1996-today (Student Member: 1996; Member: 1997-Sept. 2016, Senior Member: Sept. 2016-today)
- IEEE *Control Systems Society* member: 1996-today
- IEEE *Computer Society* member: 1996-1997
- IFAC (the International Federation of Automatic Control) affiliate member
- Member of the IEEE-IES (IEEE *Industrial Electronics Society*) Technical Committee on Factory Automation
- Member of IEEE *Robotics and Automation Society* Technical Committee on Marine Robotics
- Member of Italian SIDRA ("Società Italiana dei Docenti e Ricercatori in Automatica"), new Italian Society of Professors, Lecturers, Researchers, Ph.D. Students with interests in Control Systems Engineering: 2007-today
- Member of Italian CIRA ("Consorzio Interuniversitario dei Ricercatori in Automatica"), Italian Group of Professors, Lecturers, Researchers, Ph.D. Students with interests in Control Systems Engineering: 1993-2006
- Member of Italian COMES (*COntrol and Models of Event Systems*) group: 1993-today
- Founder and *ad interim* president of the IEEE *Student Branch* at Politecnico di Bari (1996)

4. Publications

Below I present a list of my scientific publications. Synthetically, they are 134 publications divided in: 43 journal papers (J), 8 book chapters (B), 69 conference papers (C), 1book chapter in Italian (BN), 13 papers in Italian conferences, some written in English some in Italian (CN).

4.1 Papers in international journals

J1 R. R. Nigmatullin, Wei Zhang, Renhuan Yang, Yaosheng Lu, G. Maione, “"Universal" Fitting Function for Quantitative Description of Quasi-Reproducible Measurements”, *Computer Communication & Collaboration*, Vol. 5, Issue 2, pp. 8-34, 2017, ISSN 2292-1028 (Print) 2292-1036 (Online), DOIC: 2292-1036-2017-02-002-83.

J2 P. Lino, **G. Maione**, S. Stasi, F. Padula, A. Visioli, “Synthesis of fractional-order PI controllers and fractional-order filters for industrial electrical drives”, *IEEE/CAA Journal of Automatica Sinica*, vol. 4, no. 1, pp. 43–54, Jan. 2017, ISSN 2329-9266.

J3 R. Garrappa, F. Mainardi, **G. Maione**, “Models of dielectric relaxation based on completely monotone functions”, *Fractional Calculus and Applied Analysis*, vol. 19, no. 5 (2016), pp. 1105-1160, ISSN 1311-0454, DOI: 10.1515/fca-2016-0060, 1 Oct. 2016.

J4 R. Caponetto, F. Sapuppo, V. Tomasello, **G. Maione**, P. Lino, “Fractional-Order Identification and Control of Heating Processes with Non-Continuous Materials”, *Entropy*, 2016, 18 (11), 398, ISSN 1099-4300, EISSN 1099-4300, DOI: 10.3390/e18110398, Impact Factor 1.743.

J5 R. Caponetto, **G. Maione**, J. Sabatier, Editorial, “Fractional-order control: A new approach for industrial applications”, *Control Engineering Practice*, vol. 56, 2016, pp. 157-158, ISSN 0967-0661, DOI: http://dx.doi.org/10.1016/j.conengprac.2016.09.008.

J6 R. R. Nigmatullin, P. Lino, **G. Maione**, F. Saponaro, W. Zhang, “The General Theory of the Quasi-Reproducible Experiments: How to Describe the Measured Data of Complex Systems?”, *Communications in Nonlinear Science and Numerical Simulation*, Volume 42, January 2017, pp. 324–341, DOI: 10.1016/j.cnsns.2016.05.019 (Available online 18 May 2016), ISSN 1007-5704, Impact Factor 2.834.

J7 **G. Maione**, A. M. Mangini, M. Ottomanelli, “A Generalized Stochastic Petri Net Approach for Modelling Activities of Human Operators in Intermodal Container Terminals”, *IEEE Transactions on Automation Science and Engineering*, Vol. 13, No. 4, Oct. 2016, pp. 1504-1516, DOI: 10.1109/TASE.2016.2553439 (10 May 2016), ISSN 1545-5955, Impact Factor 2.696.

J8 P. Lino, **G. Maione**, F. Saponato, K. Li, “Evolutionary Optimization of Model Parameters for Electro-injectors in Common Rail Diesel Engines”, *Journal of Dynamic Systems, Measurement and Control*, *Transactions of the ASME*, Vol. 138, Issue 4, 2016, pp. …-…, Paper No: DS-15-1250, DOI: 10.1115/1.4032481 (online Feb. 03, 2016), http://dynamicsystems.asmedigitalcollection.asme.org/article.aspx?articleid=2482745, ISSN 0022-0434, Impact Factor ISI-JCR 1.078.

J9 R. Caponetto, V. Tomasello, P. Lino, **G. Maione**, “Design and Efficient Implementation of Digital Non-integer Order Controllers for Electro-mechanical Systems”, *Journal of Vibration and Control*, Special Issue: Challenges in Fractional Dynamics and Control Theory, vol. 22, no. 9, May 2016, pp. 2196-2210, DOI: 10.1177/1077546315614120 (online Nov. 1, 2015), ISSN 1077-5463, Impact Factor ISI-JCR 1.966.

J10 R.R. Nigmatullin, V.A. Toboev, P. Lino, **G. Maione**, "Reduced Fractal Model for Quantitative Analysis of Averaged Micromotions in Mesoscale: Characterization of Blow-Like Signals", *Chaos, Solitons & Fractals*, Vol. 76, 2015, pp. 166-181, http://dx.doi.org/10.1016/j.chaos.2015.03.022, ISSN 0960-0779, Impact Factor 1.503.

J11 K. Li, **G. Maione**, M. Fei, X. Gu, *Editorial for Special Issue "Recent Advances on Modeling, Control, and Optimization for Complex Engineering Systems"*, *Mathematical Problems in Engineering*, Vol. 2015, Article ID 746729, http://dx.doi.org/10.1155/2015/746729 (21 Dec. 2014), ISSN: 1024-123X (Print), ISSN: 1563-5147 (Online), Impact Factor 1.082.

J12 **G. Maione**, R.R. Nigmatullin, J.A. Tenreiro Machado, J. Sabatier, *Editorial for Special Issue "New Challenges in Fractional Systems 2014"*, *Mathematical Problems in Engineering*, Vol. 2015, Article ID 870841, http://dx.doi.org/10.1155/2015/870841 (17 Nov. 2014), ISSN: 1024-123X (Print), ISSN: 1563-5147 (Online), Impact Factor 1.082.

J13 R.R. Nigmatullin, C. Ceglie, **G. Maione**, D. Striccoli, "Reduced Fractional Modeling of 3D Video Streams: the FERMA Approach", *Nonlinear Dynamics*, June 2015, Vol. 80, Issue 4, pp. 1869-1882, DOI: 10.1007/s11071-014-1792-4 (12 Nov. 2014), ISSN 0924-090X, Online ISSN 1573-269X.

J14 P. Bia, D. Carratelli, L. Mescia, R. Cicchetti, **G. Maione**, F. Prudenzano, "A novel FDTD formulation based on fractional derivatives for dispersive Havriliak–Negami media", *Signal Processing*, Vol. 107, Feb. 2015, pp. 312-318, Impact Factor: 1.85, DOI:10.1016/j.sigpro.2014.05.031, Available online 1 June 2014, ISSN 0165-1684.

J15 **G. Maione**, "Erratum: Correction to *"Closed-Form Rational Approximations of Fractional, Analog and Digital Differentiators/Integrators"*", *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, vol. 3, no. 4, p. 654, DOI: 10.1109/JETCAS.2013.2293911, Dec. 2013.

J16 R. Caponetto, G. Dongola, **G. Maione**, A. Pisano, "Integrated technology fractional order proportional-integral-derivative design", *Journal of Vibration and Control*, vol. 20, no. 7, May 2014, pp. 1066-1075, DOI:10.1177/1077546313487939 (online July 8, 2013), ISSN 1077-5463, Impact Factor ISI-JCR 1.966.

J17 **G. Maione**, "Closed-form rational approximations of fractional, analog and digital differentiators/integrators", *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, special issue on Fractional-Order Circuits and Systems (Eds. A. Elwakil, B. Maundy, L. Fortuna, G. Chen), vol. 3, no. 3, Sept. 2013, pp. 322-329, DOI: 10.1109/JETCAS.2013.2268949 (online June 26, 2013), ISSN 2156-3357.

J18 **G. Maione**, R. Caponetto, A. Pisano, "Optimization of Zero-Pole Interlacing for Indirect Discrete Approximations of Noninteger Order Operators", *Computers and Mathematics with Apllications*, DOI: http://dx.doi.org/10.1016/j.camwa.2013.01.007 (online 4 Feb. 2013), ISSN 0898-1221, Impact Factor ISI-JCR 1.747.

J19 R. Caponetto, **G. Maione**, A. Pisano, M. R. Rapaić, E. Usai, "Analysis and shaping of the self-sustained oscillations in relay controlled fractional-order systems", *Fractional Calculus & Applied Analysis*, vol. 16, no. 1, 2013, pp. 93-108, DOI: 10.2478/s13540-013-0007-x, Print ISSN 1311-0454, Electronic ISSN 1314-2224.

J20 **G. Maione**, A. Punzi, "Combining Differential Evolution and Particle Swarm Optimization to Tune and Realize Fractional Order Controllers", *Mathematical and Computer Modelling of Dynamical Systems*, vol. 19, no. 3, 2013, pp. 277-299, DOI:10.1080/13873954.2012.745006 (online 19 Nov. 2012), ISSN 1387-3954 (Print), 1744-5051 (Online), Impact Factor ISI-JCR 0.406.

J21 **G. Maione**, "On the Laguerre Rational Approximation to Fractional Discrete Derivative and Integral Operators", *IEEE Transactions on Automatic Control*, vol. 58, no. 6, June 2013, pp. 1579-1585, DOI: 10.1109/TAC.2013.2244273 (online 2012), ISSN 0018-9286, Impact Factor ISI-JCR 2.56 (2.110 in 2011).

J22 **G. Maione**, D. Striccoli, "Transmission control of Variable-Bit-Rate video streaming in UMTS networks", *Control Engineering Practice*, vol. 20, no. 12, Dec. 2012, pp. 1366-1373, DOI: http://dx.doi.org/10.1016/j.conengprac.2012.08.003 (online 11 Oct. 2012,), ISSN 0967-0661, Impact Factor ISI-JCR 1.481 (in 2011).

J23 P. Lino, **G. Maione**, "Loop-Shaping and Easy Tuning of Fractional-Order Proportional Integral Controllers for Position Servo Systems", *Asian Journal of Control, Special Issue on "Advances in Fractional Order Control and Estimation"*, vol. 15, no. 3, pp. 1-10, May 2013, DOI: 10.1002/asjc.556 (Date of Publication: 25 June 2012), ISSN: 1561-8625 (Online ISSN: 1934-6093), Impact Factor ISI-JCR 1.034 (in 2011).

J24 K. Li, X. Hong, **G. Maione**, Q. Niu, Editorial dello *Special Issue "Bio-inspired Computing and Applications (LSMS-ICSEE 2010)"*, *Neurocomputing*, 2012, vol. 98, pp. 1-3, 2012, DOI: http://dx.doi.org/10.1016/j.neucom.2012.05.014 (online 6 June 2012), ISSN 0925-2312, Impact Factor ISI-JCR 1.580 (in 2011).

J25 **G. Maione**, "Thiele's continued fractions in digital implementation of noninteger differintegrators", *Signal, Image and Video Processing, Special Issue: Fractional signals and systems* (Eds.: C. M. Ionescu, J. Sabatier, J. A. Tenreiro Machado), vol. 6, no. 3, Sept. 2012, pp. 401-410, ISSN 1863-1703 (ISSN online 1863-1711), DOI: 10.1007/s11760-012-0319-z (Date of Publication: 8 May 2012), Impact Factor ISI-JCR 0.617 in 2010 and 0.560 in 2011.

J26 **G. Maione**, "High-Speed Digital Realizations of Fractional Operators in the Delta Domain", *IEEE Transactions on Automatic Control*, vol. 56, no. 3, March 2011, pp. 697-702, ISSN 0018-9286, DOI: 10.1109/TAC.2010.2101134 (Date of Publication: 20 Dec. 2010), Impact Factor ISI-JCR 2.56 (2.110 in 2011).

J27 **G. Maione**, "Continued Fractions Approximation of the Impulse Response of Fractional Order Dynamic Systems", *IET Control Theory and Applications*, vol. 2, no. 7, pp. 564-572, July 2008, ISSN 1751-8644, Impact Factor ISI-JCR 0.927 (0.990 in 2011).

J28 **G. Maione**, "Reply to Comments on "A Rational Discrete Approximation to the Operator $s^{0.5}$"", *IEEE Signal Processing Letters*, vol. 14, no. 8, p. 573, Aug. 2007, ISSN 1070-9908, Impact Factor ISI-JCR 1.388 (in 2011).

J29 **G. Maione**, P. Lino, "New Tuning Rules for Fractional PI$^{\alpha}$ Controllers", *Nonlinear Dynamics*, vol. 49, no. 1-2, pp. 251-257, July 2007, ISSN 0924-090X, Impact Factor ISI-JCR 1.247 (in 2011).

J30 **G. Maione**, "A Digital, Noninteger Order, Differentiator using Laguerre Orthogonal Sequences", *The International Journal of Intelligent Control and Systems*, vol. 11, no. 2, pp. 77-81, June 2006, ISSN 0218-7956, Wesing Publishing Co., Fremont, CA, USA.

J31 **G. Maione**, "Concerning Continued Fractions Representation of Noninteger Order Digital Differentiators", *IEEE Signal Processing Letters*, vol. 13, no. 12, pp. 725-728, Dec. 2006, ISSN 1070-9908, Impact Factor ISI-JCR 1.388 (in 2011).

J32 **G. Maione**, "A Rational Discrete Approximation to the Operator $s^{0.5}$", *IEEE Signal Processing Letters*, vol. 13, no. 3, pp. 141-144, Mar. 2006, ISSN 1070-9908, Impact Factor ISI-JCR 1.388 (in 2011).

J33 **G. Maione**, F. DiCesare, "Hybrid Petri Net and Digraph Approach for Deadlock Prevention in Automated Manufacturing Systems", *International Journal of Production Research*, vol. 43, no. 24, pp. 5131-5159, Dec. 2005, ISSN 0020-7543, Impact Factor ISI-JCR 1.115 (in 2011).

J34 T.X. Mei, K. Li, Q. Zhao, **G. Maione**, Guest Editorial dello *Special Issue on Automatic Control and Information*, *International Journal of Information Technology*, vol. 11, n. 11, 2005, DOI: http://intjit.org/journal/volume/11/11/editorial.html, ISSN 0218-7957, Singapore Computer Society.

J35 **G. Maione**, D. Naso, "Modeling Adaptive Multi-Agent Manufacturing Control with Discrete-Event System Formalism", *International Journal of Systems Science*, vol. 35, no. 10, pp. 591-614, 2004, ISSN 0020-7721, Impact Factor ISI-JCR 0.991 (in 2011).

J36 **G. Maione**, "Inverting Fractional Order Transfer Functions through Laguerre Approximation", *Systems & Control Letters*, vol. 52, no. 5, pp. 387-393, 16 Aug. 2004, ISSN 0167-6911, Impact Factor ISI-JCR 1.683 in 2006 and 1.222 in 2011.

J37 **G. Maione**, D. Naso, "A Soft Computing Approach for Task Contracting in Multi-Agent Manufacturing Control", *Computers in Industry*, vol. 52, no. 3, Dec. 2003, pp. 199-219, ISSN 0166-3615, Impact Factor ISI-JCR 1.529 (in 2011).

J38 **G. Maione**, D. Naso, "A Genetic Approach for Adaptive Multi-Agent Control in Heterachical Manufacturing Systems", *IEEE Transactions on Systems, Man, and Cybernetics: Part A: Special Issue on Collective Intelligence in Multi-Agent Systems*, vol. 33, no. 5, Sept. 2003, pp. 573-588, ISSN 1083-4427, Impact Factor ISI-JCR 2.123 (in 2011).

J39 **G. Maione**, "Laguerre Approximation of Fractional Systems", *Electronics Letters*, vol. 38, no. 20, Sept. 2002, pp. 1234-1236, ISSN 0013-5194, Impact Factor ISI-JCR 1.072 in 2002 and 0.965 in 2011.

J40 M.P. Fanti, **G. Maione**, B. Turchiano, "Design of Supervisors to Avoid Deadlock in Flexible Assembly Systems", *The International Journal of Flexible Manufacturing Systems*, vol. 14, no. 2, Apr. 2002, pp. 157-175, ISSN 0920-6299, Impact Factor ISI-JCR 0.735 in 2003 and 0.250 in 2011.

J41 M.P. Fanti, **G. Maione**, B. Turchiano, "Distributed Event-Control for Deadlock Avoidance in Automated Manufacturing Systems", *International Journal of Productions Research*, vol. 39, no. 9, 2001, pp. 1993-2021, ISSN 0020-7543, Impact Factor ISI-JCR 1.115 (in 2011).

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C60 **G. Maione**, D. Naso, "Adaptation of Multi-Agent Manufacturing Control by means of Genetic Algorithms and Discrete Event Simulation", *2002 IEEE International Conference on Systems, Man and Cybernetics (IEEE SMC'02)*, Yasmine-Hammamet, Tunisia, Oct. 6-9, 2002, vol. 4, pp. 529-534, ISBN 0780374371, DOI: 10.1109/ICSMC.2002.1173342.

C61 **G. Maione**, D. Naso, "Recent Developments in the Application of Computational Intelligence to Multi-Agent Manufacturing Control", *10th IEEE International Conference on Fuzzy Systems*, Melbourne, Australia, Dec. 2–5, 2001, vol. 3, pp. 990-994, ISBN 0-7803-7294-X, DOI: 10.1109/FUZZ.2001.1009126.

C62 **G. Maione**, D. Naso, "A discrete-event formalism to model adaptive multi-agent manufacturing control", *MIM 2001 – IFAC Workshop on Manufacturing, Modelling, Management and Control*, Prague, Czech Republic, Aug. 2–4, 2001, pp. 98–104, ISBN 0-08-043962-4.

C63 **G. Maione**, D. Naso, "Modeling Evolutionary Supervisors for Multi-Agent Manufacturing Control with Discrete Event Formalism", *SMCia/01 IEEE Mountain Workshop on Soft Computing in Industrial Applications*, Virginia Tech, Blacksburg, Virginia (USA), June 25–27, 2001, pp. 99–104, ISBN 0-7803-7154-2.

C64 M. Dotoli, **G. Maione**, D. Naso, B. Turchiano, "Genetic Identification of Dynamical Systems with Static Nonlinearities", *SMCia/01 IEEE Mountain Workshop on Soft Computing in Industrial Applications*, Virginia Tech, Blacksburg, Virginia (USA), June 25–27, 2001, pp. 65–70, ISBN 0-7803-7154-2, DOI: 10.1109/SMCIA.2001.936730.

C65 M.P. Fanti, **G. Maione**, B. Turchiano, "Supervisors Avoiding Deadlock in Flexible Manufacturing Systems with Co-operating Machines", *5th European Control Conference ECC'99*, Karlsruhe, Germania, 31 Aug. - 3 Sept., 1999, Session AP6 (Hybrid Systems II: Control).

C66 M.P. Fanti, **G. Maione**, B. Turchiano, "Deadlock Avoidance in Manufacturing Systems Modeled by Petri Nets", *14th Triennial World Congress of IFAC*, Beijing, China, July 5-9, 1999, vol. J, 3c-05-3, pp. 157-162, ISBN 0-08-043248-4.

C67 **G. Maione**, F. DiCesare, "A Petri Net and Digraph-Theoretic Approach for Deadlock Avoidance in Flexible Manufacturing Systems", *1998 IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC'98)*, Hyatt La Jolla, San Diego, California, USA, Oct. 11-14, 1998, pp. 605-610, ISBN 0-7803-4778-1, DOI: 10.1109/ICSMC.1998.725479.

C68 M.P. Fanti, **G. Maione**, B. Turchiano, "Design and Implementation of Supervisors Avoiding Deadlocks in Flexible Assembly Systems", *2nd IMACS International Multiconference on Computational Engineering in Systems Applications (CESA'98)*, Nabeul-Hammamet, Tunisia, Apr. 1-4, 1998, pp. 667-672, ISBN 2-9512309-0-7.

C69 M.P. Fanti, **G. Maione**, B. Turchiano, "Deadlock Detection and Recovery in Flexible Production Systems with Multiple Capacity Resources", *IEEE/AEI MELECON '96 (the 8th Mediterranean Electrotechnical Conference)*, Villa Romanazzi-Carducci, Bari, Italy, May 13-16, 1996, vol. I, pp. 237-241, ISBN 0-7803-3109-5, DOI: 10.1109/MELCON.1996.550998.

4.4 Books chapters with national diffusion (in Italian)

BN1 **G. Maione**, M. Ottomanelli, M.F. Giampietro, D. Sassanelli, "Modellizzazione delle risorse umane nelle operazioni carico/scarico di container mediante Reti di Petri: analisi del terminal container di Taranto", In: V. Astarita, S. d'Elia, D.C. Festa (Eds.), *Interventi e Metodologie di Progetto per una Mobilità Sostenibile*, FrancoAngeli, Milan, Italy, 2009, pp. 415-430, ISBN 978-88-568-1230-5.

4.5 Papers in proceedings of national conferences, symposia, congresses and workshops

CN1 L. Afferrante, B. Turchiano, L. M. Galantucci, F. Cupertino, B. Fortunato, G. Pascazio, M. D. De Tullio, G. Mantriota, G. Carbone, L. Dambrosio, S. M. Camporeale, P. De Palma, A. D. Ludovico, S. Stasi, C. Pappalettere, M. Torresi, L. A. C. De Filippis, F. Bottiglione, C. Casavola, D. Sorgente, L. Lamberti, **G. Maione**, P. Lino, "Advanced technologies for reduction of polluting emissions, fuel consumption and operating costs of Heavy Duty engines, INNOVHEAD", *First WORKSHOP on the State of the art and Challenges Of Research Efforts @ POLIBA (SCORE@POLIBA 2014)*, Bari, Italy, 3-5 Dec. 2014.

CN2 P. Lino, **G. Maione**, "Non-integer Modeling and Control: Fractional-Order Systems and Controllers", *First WORKSHOP on the State of the art and Challenges Of Research Efforts @ POLIBA (SCORE@POLIBA 2014)*, Bari, Italy, 3-5 Dec. 2014.

CN3 P. Lino, **G. Maione**, F. Saponaro, "Innovative Modeling and Control Techniques for Automotive and Mechatronic Systems", *First WORKSHOP on the State of the art and Challenges Of Research Efforts @ POLIBA (SCORE@POLIBA 2014)*, Bari, Italy, 3-5 Dec. 2014, ISBN 978-88-492-2967-7, Gangemi Editore, pp. 227-231.

CN4 M. Ottomanelli, G. Iannucci, **G. Maione**, "A discrete events approach for the microsimulation of unsignalized pedestrian crossings", Società Italiana Docenti Trasporti, Scientific Seminar "External Costs of Transport Systems: Theory and Application", Rome, Italy, 18 June 2010.

CN5 P. Lino, B. Maione, **G. Maione**, "Simulazione ad eventi discreti della dinamica di evacuazione delle folle dai grandi edifici in ambiente MATLAB/Simulink", *Convegno Scientifico Nazionale "Sicurezza nei Sistemi Complessi" - V edizione*, Politecnico di Bari, Bari, Italy, Oct. 14-16, 2009.

CN6 P. Lino, B. Maione, **G. Maione**, "Un modello a rete di code della dinamica di evacuazione dai grandi edifici", *Convegno Scientifico Nazionale "Sicurezza nei Sistemi Complessi" - V edizione*, Politecnico di Bari, Bari, Italy, Oct. 14-16, 2009.

CN7 **G. Maione**, M. Ottomanelli, M.F. Giampietro, D. Sassanelli, "Modellizzazione delle risorse umane nelle operazioni carico/scarico di container mediante reti di Petri", *XV Convegno Nazionale - Società Italiana dei Docenti di Trasporti*, Università degli Studi della Calabria, Rende (CS), Italy, June 9-10, 2008, Session D, pp. 363-367.

CN8 **G. Maione**, C. Meloni, "A new approach to deadlock prevention in manufacturing systems", *AIRO 2004*, Lecce, Italy, Sept. 7-10, 2004, *Invited Session: Graph applications*, abstract at pp. 125-126.

CN9 M.P. Fanti, **G. Maione**, B. Turchiano, "Strategie di controllo del traffico di veicoli guidati automaticamente", *Convegno Nazionale ANIPLA – "Automazione 2001"*, Ancona, Italy, Nov. 21–23, 2001, pp. 439-444.

CN10 **G. Maione**, G. Piscitelli, "Scheduling dinamico di multiprocessori ad accoppiamento stretto", *39° Convegno Nazionale Annuale ANIPLA – "Automazione 1995"*, Tecnopolis, Valenzano (BA), Italia, 8-10 novembre 1995, pagg. 107-112.

CN11 **G. Maione**, G. Piscitelli, "Progetto orientato agli oggetti del software di controllo di un sistema flessibile di produzione", *39° Convegno Nazionale Annuale ANIPLA – "Automazione 1995"*, Tecnopolis, Valenzano (BA), Italia, 8-10 novembre 1995, pagg. 75-80.

CN12 M.P. Fanti, **G. Maione**, B. Turchiano, "Nuove politiche per evitare condizioni di stallo nel controllo di celle robotizzate", *39° Convegno Nazionale Annuale ANIPLA – "Automazione 1995"*, Tecnopolis, Valenzano (BA), Italia, 8-10 novembre 1995, pagg. 69-74.

CN13 M. Bronzini, **G. Maione**, G. Piscitelli, "Deadlock prevention and avoidance in Flexible Manufacturing Systems", *37° Convegno Nazionale Annuale ANIPLA – "Automazione 1993" – BIAS 1993*, Milano, Italia, 23-25 novembre 1993.

5. Teaching

5.1 Teaching in the Italian engineering education system

5.1.1 Official academic courses

- ***Control Sistems*** (9 ECTS credits), 1st level degree 3-years program in *Electrical Engineering*, Politecnico di Bari: 2013/2014, 2014/2015, 2015/2016, 2016/2017
- ***State Feedback Control for Dynamic Sistems*** (6 ECTS credits), 2nd level degree 2-years program in *Electronic Engineering*, Politecnico di Bari, Taranto: 2012/2013
- ***Fundamentals of Automatic Control I*** (9 ECTS credits – 3rd year of program), 1st level degree 3-years program in *Industrial and Electronic Systems Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2011/2012
- ***Fundamentals of Automatic Control II*** (9 ECTS credits – 1st year of program), 2nd level degree 2-years program in *Electronic Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2010/2011
- ***Dynamical Systems Theory*** (6 ECTS credits - 2nd year of program), 1st level degree 3-years program in *Electronic and Information Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010
- ***Introduction to Control Systems I*** (6 ECTS credits - 2nd or 3rd year of program), 1st level degree 3-years program in *Electronic and Information Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010
- ***Introduction to Control Systems II*** (6 ECTS credits - 1st year of program), 2nd level degree 2-years program in *Electronic and Information Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010
- ***Elements of Dynamical Systems Theory*** (3 ECTS credits - 3rd year of program), 1st level degree 3-years program in *Industrial Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2003/2004
- ***Dynamical Systems Theory*** (9 ECTS credits - 5th year of program), 2nd level degree 5-years 'old' program in *Environmental and Regional Planning Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2003/2004, 2004/2005
- ***Dynamical Systems Theory*** (7 ECTS credits - 2nd year of program), 1st level degree 3-years programs in *Information Engineering* and *Control Systems Engineering*, School of Engineering, University of Lecce, Lecce: 2001/2002, 2002/2003.
- ***Control Systems*** (7 ECTS credits - 3rd year of program), 1st level degree 3-years program in *Control Systems Engineering*, School of Engineering, University of Lecce, Lecce: 2002/2003
- ***Fundamentals of Automatic Control*** (5 ECTS credits - 2nd year of program), 1st level degree 3-years program in *Management Engineering* (Logistics and Manufacturing), School of Engineering, University of Lecce, Brindisi: 2001/2002
- ***Dynamical Systems Theory*** (2nd year of program), 1st level degree 3-years NETTUNO old program in *Information Engineering*, School of Engineering, University of Lecce, Lecce: 2001/2002
- ***Control Systems*** (3rd year of program), 1st level degree 3-years NETTUNO 'old' program in *Information Engineering*, School of Engineering, University of Lecce, Lecce: 2000/2001

5.1.2 Co-operation to official academic courses (set of lectures, seminars, assistance)

- ***Dynamical Systems Theory*** (9 ECTS credits - 3rd year of program), 2nd level degree 5-years 'old' program in *Information Engineering*, School of Engineering of University of Lecce, Lecce: 1996/97, 1997/98, 1998/99, 1999/2000, 2000/2001
- ***Control Systems*** (9 ECTS credits - 4th year of program), 2nd level degree 5-years 'old' program in *Information Engineering*, School of Engineering of University of Lecce, Lecce: 1996/97, 1997/98, 1998/99, 1999/2000, 2000/2001, 2001/2002
- ***Industrial Automation*** (5 ECTS credits - 2nd year of program), 1st level degree 3-years 'old' program in *Logistics and Manufacturing Engineering*, School of Engineering of University of Lecce, Brindisi: 1998/99, 1999/2000, 2000/2001
- 6 seminars (12 hours) for the course on ***Control Systems*** (9 ECTS credits - 4th year of program), 2nd level degree 5-years 'old' program in *Information Engineering*, School of Engineering of University of Lecce, Lecce: 13-20-27 April 1996, 4-9-11 May 1996
- 6 seminars (12 hours) for the course on ***Control Systems*** (9 ECTS credits - 4th year of program), 2nd level degree 5-years 'old' program in *Information Engineering*, School of Engineering of University of Lecce, Lecce: 22-29 April 1995, 4-13-15-18 May 1995

5.1.3 Supervision of students

- Supervision of thesis and projects by students in the 1st level degree 3-years 'new' program in *Electrical Engineering*, Politecnico di Bari
- Supervision of thesis and projects by students in the 2nd level degree 5-years 'old' program in *Environmental and Regional Planning Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto
- Supervision of thesis and projects by students in the 1st level degree 3-years program and in the 2nd level degree 2-years new program in *Electronic and Information Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto
- Supervision of thesis and projects by students in the 2nd level degree 5-years 'old' program in *Software Engineering*, School of Engineering, University of Lecce, Lecce
- Supervision of thesis and projects by students in the 2nd level degree 5-years 'old' programs in *Electrical Engineering* and *Industrial Engineering*, 1st School of Engineering, Politecnico di Bari, Bari
- Supervision of thesis projects by students in the 1st level degree 3-years new program in *Control Systems Engineering*, 1st School of Engineering, Politecnico di Bari, Bari

5.1.4 Examination boards and committees for 1st and 2nd level degree

- *Member of boards for final examination degree*
  - 2nd School of Engineering, Politecnico di Bari, Taranto: 2nd level degree n *Environmental and Regional Planning Engineering*, 1st and 2nd level degree in *Electronic and Information Engineering*, 1st level degree in *Industrial Engineering*, 1st level degree in *Industrial and Electronic Systems Engineering*, 2nd level degree in *Electronic Engineering*
  - School of Engineering, University of Lecce, Lecce: 2nd level degree in *Information Engineering*
  - School of Engineering of University of Lecce, Brindisi: 1st level degree in *Management Engineering*
- *Chair of examination committees for 1st and 2nd level degree courses*

  Politecnico di Bari, Bari

  - ***Control Systems*** (9 ECTS credits), 1st level degree in *Electrical Engineering*: 2013/2014, 2014/2015, 2015/2016, 2016/2017

2nd School of Engineering, Politecnico di Bari, Taranto

- ***State Feedback Control for Dynamic Sistems*** (6 ECTS credits), 2nd level degree in *Electronic Engineering*: 2012/2013
- ***Fundamentals of Automatic Control I*** (9 ECTS credits), 1st level degree in *Industrial and Electronic Systems Engineering*: 2011/2012
- ***Fundamentals of Automatic Control II*** (9 ECTS credits), 2nd level degree in *Electronic Engineering*: 2010/2011, 2011/2012, 2012/2013
- ***Dynamical Systems Theory*** (6 ECTS credits), 1st level degree in *Electronic and Information Engineering*: 2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010, 2010/2011, 2011/2012, 2012/2013
- ***Introduction to Control Systems I*** (6 ECTS credits), 1st level degree in *Electronic and Information Engineering*: 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010, 2010/2011, 2011/2012, 2012/2013
- ***Introduction to Control Systems II*** (6 ECTS credits), 2nd level degree in *Electronic and Information Engineering*: 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010, 2010/2011, 2011/2012, 2012/2013
- ***Dynamical Systems Theory*** (9 ECTS credits), 2nd level degree in *Environmental and Regional Planning Engineering*: 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010, 2010/2011, 2011/2012, 2012/2013
- ***Elements of Dynamical Systems Theory*** (3 ECTS credits), 1st level degree in *Industrial Engineering*: 2003/2004

School of Engineering, University of Lecce, Lecce

- ***Dynamical Systems Theory*** (7 ECTS credits), 1st level degree in *Information Engineering* and *Control Systems Engineering*, Lecce: 2001/2002, 2002/2003
- ***Control Systems*** (7 ECTS credits), 1st level degree in *Control Systems Engineering*, Lecce: 2002/2003
- ***Fundamentals of Automatic Control*** (5 ECTS credits), 1st level degree in *Management Engineering* (Logistics and Manufacturing), Brindisi: 2001/2002
- ***Dynamical Systems Theory*** (2nd year), 1st level degree (NETTUNO old program) in *Information Engineering*, Lecce: 2001/2002.
- ***Control Systems*** (3rd year), 1st level degree (NETTUNO old program) in *Information Engineering*, Lecce: 2000/2001

- *Member of examination committees for 1st and 2nd level degree courses*

2nd School of Engineering, Politecnico di Bari, Taranto

- ***Dynamical Systems Theory*** (9 ECTS credit), 2nd level degree in *Environmental and Regional Planning Engineering*: 2002/2003.
- Several courses, 1st and 2nd level degree in *Electronic and Information Engineering*: 2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010, 2010/2011, 2011/2012

School of Engineering, University of Lecce, Lecce

- ***Fundamentals of Automatic Control*** (5 ECTS credits), 1st level degree in *Management Engineering* (Logistics and Manufacturing), Brindisi: 2002/2003
- ***Fundamentals of Automatic Control*** (5 ECTS credits), 1st level degree in *Management Engineering* (Organization), Lecce: 2001/2002, 2002/2003
- ***Fundamentals of Automatic Control*** (7 ECTS credits), 1st level degree in *Information Engineering* and in *Control Systems Engineering*, Lecce: 2001/2002, 2002/2003
- ***Control Systems Technology*** (7 ECTS credits), 1st level degree in *Information Engineering* and in *Control Systems Engineering*, Lecce: 2002/2003

- ***Dynamical Systems Theory*** (Old Program), 2nd level degree in *Information Engineering*, Lecce: 1996/97, 1997/98, 1998/99, 1999/2000, 2000/2001, 2001/2002
- ***Control Systems*** (Old Program), 2nd level degree in *Information Engineering*, Lecce: 1996/97, 1997/98, 1998/99, 1999/2000, 2000/2001, 2001/2002, 2002/2003
- ***Industrial Automation***, 1st level degree in *Logistics and Manufacturing Engineering*, Brindisi: 1998/99, 1999/2000, 2000/2001
- ***Control Systems***, 1st level degree (NETTUNO old program) in *Information Engineering*, Lecce: 1998/99, 1999/2000, 2001/2002, 2002/2003
- ***Dynamical Systems Theory***, 1st level degree (NETTUNO old program) in *Information Engineering*, Lecce: 1998/99, 1999/2000, 2000/2001
- ***Fundamentals of Automatic Control***, 1st level degree (NETTUNO new program) in *Information Engineering*, Lecce: 2002/2003
- ***Mechatronics***, ***Operations Research***, ***Electric Circuits***, ***Digital Electronics***, ***Communication Systems***, 1st level degree in *Information Engineering* and *Industrial Engineering*: 1999/2000, 2000/2001, 2001/2002, 2002/2003

5.1.5 Boards of Doctoral Programs

- Program of research for 3rd level Doctoral (Ph.D.) degree in *Electrical and Information Engineering*, Politecnico di Bari, Bari, 2010-today
- Program of research for 3rd level Doctoral (Ph.D.) degree in *Environmental and Regional Planning Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto, 2005-2013
- Program of research for 3rd level Doctoral (Ph.D.) degree in *Information Engineering*, 1st School of Engineering, Politecnico di Bari, Bari, 2006-2013
- Program of research for 3rd level Doctoral (Ph.D.) degree in *Information Engineering*, School of Engineering, University of Lecce, Lecce, 1999-2003
- I am following the PhD student Fabrizio Saponaro, in a research program with *Centro Studi Componenti per Veicoli S.p.A. (CVIT)*, Bosch Group, Modugno (Bari)
- I followed some study and research activities of Dr. Eng. Barbara Pizzileo. She graduated at 2nd School of Engineering, Politecnico di Bari, Taranto, then qualified for a scholarship grant funded by the European Social Fund (FSE), at the *School of Electrical and Electronic Engineering*, *Queen's University of Belfast*, supervised by Prof. G. Irwin e il Dr. K. Li. She finally earned a Ph.D. degree in *Intelligent Systems and Control*, Department of Electronics, Electrical Engineering and Computer Science, Queen's University of Belfast (UK).

5.2 Other teaching activities

- "Modern techniques for Modeling and Control in Industrial Systems" (3 ECTS) for PhD students of the Faculty of Technical Sciences, University of Novi Sad, Serbia, July 2016, Key Action 107 Erasmus+ Program
- Short course for Master students, Dept. of Computing and Control Engineering, Faculty of Technical Sciences, University of Novi Sad, Serbia, July 2016, Key Action 107 Erasmus+ Program
- ***Invited Research Seminar***, ***Distinguished Scholar's Scheme***, *"Design and realization of high-performance and robust fractional order controllers: An application for automotive systems"*, School of Electronics, Electrical Engineering and Computer Science, Queen's University of Belfast, Belfast, UK, 20 Nov. 2013
- ***Invited Research Seminar***, ***Distinguished Scholar's Scheme***, *"Realization Methods of Stable and Minimum-Phase Fractional-Order Controllers Based on Continued-Fraction Expansion*

Approximation", School of Electronics, Electrical Engineering and Computer Science, Queen's University of Belfast, Belfast, UK, 26 June 2009

- ***Invited Research Seminar***, ***Distinguished Scholar's Scheme***, *"Non-integer (Fractional) Order Systems and Controllers"*, School of Electronics, Electrical Engineering and Computer Science, Queen's University of Belfast, Belfast, UK, 25 Sept. 2007
- 4 seminars (8 hours) for Teaching Unit 15.1 *"Analisi e controllo di sistemi descritti in variabili di stato" - Sistemi Meccatronici* in the Master Program named "Innovazione Tecnologica nella Meccatronica" (MIMEC), Politecnico di Bari, 2-4-12 July 2007
- 4 seminars (16 hours) for the graduate course named "*Qualificazione avanzata di n. 8 laureati e n. 12 diplomati in materie tecniche e scientifiche nel settore della progettazione, sperimentazione e controllo di sistemi/componenti elettronici di alimentazione di motori a combustione interna"*, in the project PON *"Sistema innovativo di iniezione per motori heavy duty"*, at Centro Ricerche Fiat, Tecnopolis, Valenzano (Bari - IT), Feb. 2004: the project was about a new injection system for heavy duty engines
- Seminar (2 hours) for students in the Doctoral programs in *Electrical Engineering* and in *Control Systems Engineering*, at Department of Electric, Electronics and Systems Engineering, School of Engineering, University of Catania, Catania, 24 Oct. 2000: *"Modelli ad Eventi Discreti per il Controllo di Sistemi Flessibili di Produzione"*
- 10 seminars (30 hours) for secondary school students in the teaching program named IFTS *Gestione di sistemi automatici per l'assemblaggio ad alte prestazioni*, at School ITIS "Sen. Onofrio Jannuzzi", Viale Gramsci 40, Andria, Bari: 12-13-14-17-21-24 Jan. 2000, 11-14 Feb. 2000 e 6-11 Apr. 2000

6. Other management and professional activities

6.1 Services for public, academic and research institutions

6.1.1 Evaluation of research project proposals

- Expert evaluator of PRIN (Project of Relevant National Interest) research projects.
- External evaluator of PhD Thesis

6.1.2 Participation to boards for national competitions to lecturer positions

- Board nominated by D.R. n. 58/05/Valcomp dated 25/10/2005, for the comparative evaluation procedure to one lecturer position at University of Catania, in the "Automatics" scientific field, issued by D.R. n. 30/05/Valcomp dated 02/05/2005. Board meetings: 28/11/2005 and 21-22/12/2005.
- Board nominated by D.R. n. 560 dated 26/02/2002, for the comparative evaluation procedure to one lecturer position at University of Naples "Federico II", in the "Automatics" scientific field, issued by D.R. n. 53 dated 14/01/2002. Board meetings: 12/04/2002 and 26-27/09/2002.
- Board nominated by D.R. n. 7675 dated 07/12/2001, for the selection of students for the research doctoral program in Electronics and Automatics Engineering (XVII cycle) at University of Catania, issued by D.R. n. 5405 dated 01/10/2001. Board meetings: 22/01/2002 at the Electric, Electronics and Systems Department, School of Engineering, University of Catania.
- Board nominated by resolution dated 04/10/2001 from the Faculty Committee of the School of Engineering of the University of Lecce, for the comparative evaluation procedure to one lecturer transferred position at the University of Lecce, in the "Electromagnetic Fields" scientific field, issued in date 23/09/2001.
- Board nominated by D.R. n. 1537 dated 16/08/2000, for the comparative evaluation procedure to one lecturer position at Università degli Studi di Bologna, in the "Automatics" scientific field, issued by D.R. n. 717 dated 04/04/2000. Board meetings: 21/10/2000 and 29-30/11/2000.

6.1.3 Academic services and roles

- Project Leader and Academic Responsible for Serbia and Russian Federation, exchange projects in the Erasmus+ Programme, Key Action 1, KA107 International Credit Mobility: years 2016-2017 e 2017-2018
- Project Leader and Academic Responsible for Serbia, exchange projects in the Erasmus+ Programme, Key Action 1, KA107 International Credit Mobility: years 2015-2016 and 2016-2017
- Member of the board for the academic development, 2nd School of Engineering, Politecnico di Bari, Taranto: 2003-2006, 2007-2009
- Member of the board for measuring and estimating the quality of the education system, 2nd School of Engineering, Politecnico di Bari, Taranto: 2003-2006, 2007-2008
- Secretary of the Faculty Committee: School of Engineering, University of Lecce, Lecce: 2000
- Member of the Department Committee, Department of Innovation Engineering (DII), University of Lecce, Lecce: 2002
- Secretary of the Class Committee of the program in *Electronic and Information Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2003, 2008

- Member of the board for the institution of the 2nd level degree program in *Electronic and Information Engineering*, 2nd School of Engineering, Politecnico di Bari, Taranto: 2003-2006
- Secretary of the committee for the old program in *Information Engineering*, School of Engineering, University of Lecce, Lecce: 1998, 1999
- Member of the education committee for the old program in *Information Engineering*, School of Engineering, University of Lecce, Lecce: 1997, 1998
- Member of the board for the engineering professional qualification, Politecnico di Bari: 2005-2006, 2012-2013.
- Scientific responsible for designing, equipping, activating and maintaining a teaching laboratory for Automatic Control, 2nd School of Engineering, Politecnico di Bari, Taranto: 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012
- Commissioned to design, equip, activate and maintain a teaching laboratory for Automatic Control, School of Engineering, University of Lecce, Lecce: 1996, 1997, 1998, 1999, 2000

6.2 Professional autonomous and occasional activity

- Member of the board judging a public contract: project "eI.S.LOG.", measure 6.2 action c) *"Sviluppo di un Sistema Logistico Distributivo legato alle più importanti direttrici internazionali che muove dagli investimenti in corso di realizzazione nell'area di Taranto"* (POR Puglia 2000-2006), Ufficio Unico PIT6, Provincia di Taranto, 30 July 2007 – 25 Febr. 2008.
- Member of the board judging a public contract: *"Gara per l'appalto dei lavori e forniture per la realizzazione di una rete di rilevamento e dei sistemi di analisi e monitoraggio dei livelli di inquinamento urbano"* (network of systems for monitoring and analysing levels of urban pollution), city of Francavilla Fontana, Brindisi (IT), 25 Febr. 2005 - 12 July 2005.
- Member of the professional register of licensed engineers, Bari district.