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A. PERSONAL DATA



Born: Florence, July 14th, 1960
Citizenship: Italian
Family name Giarré
Name Laura
Email laura.giarre@unipa.it

A.1. EDUCATION

1992 Ph.D. in Systems Engineer - Univ. of Bologna (associated Univ. of Padova and Univ. Of Florence)
1996 Master degree in Electronic Engineer - Univ. of Florence

A.2. WORKING CAREER

2008-Today Associate Professor at University of Palermo - Electric, Electronic, Communication, Control, and Mathematical Engineering Dept.
1993-1998 Assistant Professor at Politecnico di Torino, Computer and Control Engineering Dept.
1992-1993 Technical Staff, Univ. Of Florence
1989-1992 Ph. D. Fellow at Univ. of Florence, Computer and Systems Dept.
1988 Fellowship on robotics, Univ. of Florence and AXIS
1987-1988 Researcher at Autostrade Spa.

A.3. MAIN RESEARCH TOPICS

Laura Giarré has developed a comprehensive methodology for the robust identification and modeling of systems under unknown but bounded disturbances and model uncertainty. Her innovative work in the H_∞ approach to identification for robust control and model selection is well known and it is widely recognized. Such results are powerful because of the generality and simplicity of the derived methodology. Model selection is based on the quality of the model, measured in terms of prediction capability, and on the size of the uncertainty set ([Giarre1997-1],[Giarre1997], [Giarre1997-2]). She has applied the set membership identification framework and the analysis and modeling of

uncertainty to various innovative application fields, e.g. the Atomic Force Microscope ([Basso2000]). Laura Giarré expanded the identification theory also to time-varying systems and nonlinear systems. She has solved the problem of Linear Parameter Varying (LPV) identification. This contribution is one of the first available in the literature. It has been employed by researchers in aeronautic, power systems, jet-turbine and also communication applications ([BG02],[Bau+06]). She extended classical and robust identification also to a particular class of nonlinear systems such as Hammerstein and Wiener, i.e. cascade systems of static nonlinearities and linear parts applied also to Systems Biology ([GGZ02],[Basso2005], [Falugi2005],[Falugi2009]).

A second fundamental contribute of Laura Giarré is in the area of networks and consensus protocols, where she developed distributed linear and nonlinear algorithms for switching networks with noise ([BGP06]). Showing her broad and interdisciplinary interests she has applied these results to inventory systems, congestion games and sensor networks ([BGP08],[BGP09b], [BGP10]). Her innovative contribution stands in the reformulation of the problem according to a game theoretic approach and in solving the consensus problem in presence of UBB noise ([BGP09a]) and also in modeling the dissensus paradigm ([Bauso2011]). In the area of networks, she applied the game theoretical approach also to communication problem and WiFi networks ([Tinnirello2011], [GNT09]).

The most cited papers are: [BG02] with 184 citations and [BGP06] with 111 citations.

Citations number: total number - 964, h index - 15, g index- 29, h_c index 10. (Font: Google Scholar)

— B. INDIVIDUAL SCIENTIFIC ACTIVITIES

— B.1. AWARDS AND RECOGNITIONS

Professional society fellowship	Senior Member IEEE (from 1999)
Professional society fellowship	Member of the IEEE CSS Technical committee on System Biology (from 2007)
Professional society fellowship	Member of the IEEE CSS Technical committee on Identification and Adaptive Control, (from 2006)

— B.2. RESEARCH PERIODS ABROAD

From (mm/yyyy)	To (mm/yyyy)	Institution/University	Role
08/1996	9/1996	UCSB, Santa Barbara, CA, US	Visiting Professor
01/1999	07/1999	UCSB, Santa Barbara, CA, US	Visiting Professor
11/1999	12/1999	UCSB, Santa Barbara, CA, US	Visiting Professor
02/2006	06/2006	UCSB, Santa Barbara, CA, US	Visiting Professor
02/1997	02/1997	UCSB, Santa Barbara, CA, US	Invited Researcher
7/2000	7/2000	UCSB, Santa Barbara, CA, US	Invited Researcher
10/2001	10/2001	UCSB, Santa Barbara, CA, US	Invited Researcher
12/2003	12/2003	UCSB, Santa Barbara, CA, US	Invited Researcher
2/2002	2/2002	UCSB, Santa Barbara, CA, US	Invited Researcher
06/2011	06/2011	UCSB, Santa Barbara, CA, US	Invited researcher
11/2002	11/2002	MIT,Cambridge, MA, US	Invited Researcher
10/2003	10/2003	MIT,Cambridge, MA, US	Invited Researcher
10/2005	10/2005	MIT,Cambridge, MA, US	Invited Researcher
11/2007	11/2007	MIT,Cambridge, MA, US	Invited Researcher
11/2009	11/2009	MIT,Cambridge, MA, US	Invited Researcher
12/2010	12/2010	MIT,Cambridge, MA, US	Invited Researcher
12/2011	12/2011	MIT,Cambridge, MA, US	Invited Researcher
1/2007	1/2007	NTNU,Trondheim, NO	Invited Researcher
9/2008	9/2008	NTNU,Trondheim, NO	Invited Researcher
9/2009	9/2009	NTNU,Trondheim, NO	Invited Researcher
10/2012	10/2012	NTNU,Trondheim, NO	Invited Researcher
04/2009	04/2009	Inria, Paris, F	Invited Researcher

11/2010	11/2010	Imperial College, London, UK	Invited Researcher
11/2013	12/2013	MIT, Cambridge, MA, US	Invited Researcher
11/2014	12/2104	UCSB, Santa Barbara, CA, US	Invited Researcher
2/2015	5/2015	MIT, Cambridge, MA, US	Visiting Researcher

C. COMMON INTEREST SCIENTIFIC ACTIVITIES

C.1. RESEARCH PROJECTS IN CHARGE

FP7, PRIN, etc. N.B.: no industrial contracts (see C.5.). Specify only the projects where you have been Project coordinator, Research Unit coordinator or research unit member- Last 10 academic years

Nome del Progetto (Sponsor)	Tipo L: Locale N: Nazionale E: Europeo O: Altro	Periodo (aaaa/aaaa)	Progetto coordinatore	Unitá coordinatore
ESTIA-EARTH (European Commission)	E	2008/2011		X
ESTIA-NET (European Commission)	E	2005/2007		X
CORI (Univ. Palermo- MIT)	L	2003/2005	X	
CORI (Univ. Palermo- UCSB)	L	2000/2002	X	
KKK (Norwegian Research Council)	O	2007/2009		X
KKK (Cultural Council of Norway)	O	2007/2009		X
KKK (Norwegian Research Council)	O	2007/2009		X
FLAVIA (European Commission)	E	2010/2012		
POR TTB (Regional European funds)	N	2012/2014		
PON 04 I-NEXT (MIUR)	N	2012-2014		
PON 04 smart FSE (MIUR)	N	2012-2014		
PRIN2006 (MIUR)	N	2006-2008		
PRIN2004 (MIUR)	N	2004-2002		

PRIN2002
(MIUR)

N

2002-2004

C.2. MEMBERSHIP IN BOARDS/COMMITTEES/RESEARCH CENTERS ETC.

Tipo	Nome	Ruolo	Periodo (aaaa/aaaa)
Board	Systems and Control Letters	Editorial Board	1999-Today
Board	IEEE Transaction on Automatic Control	Editorial Board	2012-Today
Board	Andrea Bocelli Foundation	Advisory Board	2011-Today
Committee	Mediterranean Conference on Control and Automation, Palermo	General Chair and Organizer	2014
Committe	ABF Challenges workshop, Cambridge	General Chair and Organizer	2013
Committee	IEEE Conference on Decision and Control, Florence	Registration Co-chair	2013

Date (mm/yyyy)	Type	Institution/University/Conference
04/2015	Seminar	MIT, Cambridge, US
10/2015	Seminar	MIT, Cambridge, US
06/2012	Lecture	MIT, Cambridge, US
04/2012	Seminar	Univ. Padova, Padova, I
12/2011	Seminar	MIT, Cambridge, US
06/2011	Lecture	Santa Barbara Workshop, UCSB, Santa Barbara, US
11/2010	Seminar	Imperial College, London, UK
04/2009	Seminar	INRIA, Paris, F
04/2009	Seminar	INRIA, Paris, F
01/2009	Seminar	Politecnico Torino, Torino, I
01/2007	Seminar	NTNU, Trondheim, No
12/2006	Seminar	UCSB, Santa Barbara, US
10/2006	Seminar	MIT, Cambridge, US
09/2006	Seminar	Iowa State University, Ames, Us
03/2006	Seminar	University of California at Berkeley, Berkeley, US
02/2006	Seminar	UCSB, Santa Barbara, US
04/2004	Lecture	Workshop Actra, Mondragone, I
05/2003	Seminar	Univ. Napoli, Napoli, I
04/2003	Seminar	Politecnico di Torino, Torino, I
10/2002	Seminar	MIT, Cambridge, US
07/2002	Lecture	Robust Control Worksgop, Cascais, P
11/1999	Seminar	Politecnico di Torino, Torino, I
09/1996	Seminar	UCSB, Santa Barabara, US

C.4. OR COMMUNITY ACTIVITIES

Tipo	Periodo (aaaa/aaaa)
CIRA Conference- organization of PH.D. Poster Session	2003–2005

C.5. TECHNOLOGY TRANSFER

*Industrial contracts (only if Project Leader), consultancy services, workshop/seminar for companies, etc.
- Last 5 academic years*

Tipo	Periodo (aaaa/aaaa)
<ul style="list-style-type: none">o She is the cofounder and CEO of the academic spinoff, innovative Startup, IN.SIGHT to enhance senses through technology since 2014 (www.insightx.it). They produce ARIANNA, a system helping blind people in indoor autonomous navigation. They won Startup Palermo 2014 and UK trade and Investment award 2015.o Collaboration with eHealthtech, Florence (eHealthTech is a start-up in the Healthcare IT area. The project "Health Level Seven Version 3 Interoperability" (HL7v3i) was realized under the EU grant FSE POR Regione Toscana 2000-2006 Mis. D3 - Provincia di Firenze D.D. n. 2836 dated 12/18/2007). The project HL7v3Enabler was financed by Regione Toscana "Docup Ob2 2000-2006 - Misura 1.8 Azione 1.8.1 - Aiuti alla ricerca industriale e precompetitiva". Active collaboration since 2006.o Collaboration with TELECOM (sponsor of 4 Ph.D grants) on e-Health problems (detection of Parkinson diseases through signal processing and identification of speech data) since 2012.o Collaboration with ItalTBS, Trieste (a leading group in e-health and clinical engineering). Active Collaboration since 2012.o Collaboration with Concast, Udine on localization and sensor networks. Friuli Venezia Giulia Region D.P.R 0260-2007 Grant: 'Magazzino intelligente a logica integrata per lo stoccaggio di materiali siderurgici' Active collaboration since 2012.o Collaboration with Italtel and participation to the FAR project NAIN (Nomadic Access in IP Networks) - 2006-2008	

D. TEACHING ACTIVITIES

D.1. TEACHING IN CHARGE

Number of credits (CFU) per academic year, level, scientific sector (S.S.D.), and language - Last 10 academic years

Academic Year (yyyy/yyyy)	Bachelor		Master		Ph.D.		Specializing Master		S.S.D.	Total
	Italian	English	Italian	English	Italian	English	Italian	English		
2013/2014	9		9						ING-INF/04	18
2012/2013	9		9		3				ING-INF/04	21
2011/2012	9		12						ING-INF/04	21
2010/2012			9		3				ING-INF/04	12
2009/2010	9		9						ING-INF/04	18
2008/2009	9		9						ING-INF/04	18
2007/2008	9		9						ING-INF/04	18
2006/2007	9		9						ING-INF/04	18
2005/2006										
2004/2005	12		9						ING-INF/04	21
2003/2005	12								ING-INF/04	12
Total	78		75		6					159

D.1. PH.D. SUPERVISION

Specify only the number of Ph.D. Laureates that you have supervised (last 10 years)

Academic Year	Ph.D. Laureates
2004/2005	1
2012/2013	1
2013/2014	1
Total	3

E. OTHER USEFUL INFORMATION

She is also very active in dissemination of technology for educational purpose; in sustaining women in engineering and academia, in art and technology as an educational tool, and, recently, she is getting interested in assistive technology for impaired people. Laura Giarré is also active in projects related to e-health ([CG12]) and assistive technologies.

As member of the Advisory board of the ABF she Organizes some of its scientific event and she supervises and checks the progress of the project MIT Fifth Sense Project - Providing the function of Sight to blind persons, which has been granted by the Foundation, to Find innovative solutions to help people to overcome the limits imposed by their disabilities.

F. PUBLICATIONS

RIVISTE INTERNAZIONALI

- [J30] D. Materassi, M. Salapaka, G. Innocenti, L. Giarré. Model Identification of a Network as Compressing Sensing, *Systems and Control Letters*, Volume 62, Issue 8, Pages 664-672, 2013.
- [J29] D. Bauso, F. Blanchini, L. Giarré, R. Pesenti, Decentralized solution for the constrained minimum norm flow, *Automatica*, Volume 49, Issue 7, Pages 2206-2212, 2013.
- [J28] R. Calamai, L. Giarré, Enabling Primary and Specialist Care Interoperability through HL7v3 CDA Rel.2 and Chronic Care Model: an Italian case study, submitted to *IEEE Trans on System Man and Cybernetics*, part A, vol 42, n.6, 1364-1384, ISSN: 1083-4427, doi: 10.1109/TSMCA.2012.2210205, 2012
- [J27] D. Bauso, L. Giarré, R. Pesenti, Quantized Dissensus in Switching Networks with death and duplication of nodes, *IEEE Transaction on Automatic Control*, vol. 57, p. 783-788, ISSN: 0018-9286, doi: 10.1109/TAC.2011.2167810, 2012
- [J26] I. Tinnirello, L. Giarré, G. Neglia. MAC design for WiFi infrastructure networks: a game theoretic approach. *IEEE Transaction on Wireless Communication*, vol. 10, p. 2510-2522, ISSN: 1536-1276, doi: 10.1109/TWC.2011.062011.100193, 2011.
- [J25] D. Bauso, L. Giarré, R. Pesenti, paper/IJC.pdf Robust control of uncertain multi-inventory systems

via Linear Matrix Inequality, *International Journal of Control*, August, 83(8), 1723-1740, ISSN: 0020-7179, doi: 10.1080/00207179.2010.491131, 2010.

- [J24] L. Giarré, G. Neglia, I. Tinnirello. paperi/TGN.pdf Medium Access in WiFi Networks: Strategies of Selfish Nodes. *IEEE Signal Processing Magazine (SPM)*, 26(5), 124-127, ISSN: 1053-5888, 2009.
- [J23] P. Falugi, L. Giarré, paperi/sclfa.pdf Set Membership Identification of nonlinear positive models for biological systems. *Systems and Control Letters*, 58(7), 529-539, ISSN: 0167-6911, doi: <http://dx.doi.org/10.1016/j.sysconle.2009.03.005> 2009.
- [J22] D. Bauso, L. Giarré, R. Pesenti, paperi/articolosiam.pdf Consensus for networks with unknown but bounded disturbances. *SIAM JOURNAL ON CONTROL AND OPTIMIZATION*, 48(3); 1756-1770, ISSN: 0363-0129, doi: 10.1137/060678786, 2009
- [J21] D. Bauso, L. Giarré, R. Pesenti. paperi/Ejor.pdf Distributed Consensus in Noncooperative Inventory Games. *EUROPEAN JOURNAL OF OPERATIONAL RESEARCH*; 192(3), 866-878, doi:10.1016/j.ejor.2007.10.012, 2009.
- [J20] D. Bauso, L. Giarré, R. Pesenti. paperi/tac.pdf Consensus in Noncooperative Dynamic Games: a Multi-Retailer Inventory Application. *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*, 53(4), 998-1003, ISSN: 0018-9286, doi: 10.1109/TAC.2008.919546, 2008.
- [J19] D. Bauso, L. Giarré, R. Pesenti. paperi/scl.pdf Nonlinear protocols for optimal distributed consensus in networks of dynamic agents. *Systems and Control Letters*, 915-928, 55(11), ISSN: 0167-6911, doi: 10.1016/j.sysconle.2006.06.005, 2006.
- [J18] L. Giarré, D. Bauso, P. Falugi and B. Bamieh. paperi/falugi.pdf LPV Model Identification for Gain Scheduling Control: an application to stall and surge control. *Control Engineering Practice*, 14 (4): 351-361, 2006.
- [J17] P. Falugi, L. Giarré and G. Zappa, paperi/zappa.pdf Approximation of the Feasible Parameter Set in worst-case identification of Hammerstein models. *Automatica*, 41(6), 1017-1024, 2005.
- [J16] M. Basso, L. Giarré, S. Groppi, G. Zappa. paperi/cstrev.pdf NARX Models of an Industrial Power Plant Gas Turbine *IEEE Trans on Control Technology*, 13(4), 599-605, 2005.
- [J15] A. Garulli, L. Giarré and G. Zappa. paperi/tac2002.pdf Identification of approximated Hammerstein models in a worst-case setting. *IEEE Trans. on Automatic Control*, 47(12), 2046-2050, 2002.
- [J14] B. Bamieh and L. Giarré. paperi/LPVbg.pdf Identification of Linear Parameter Varying Models. *International Journal of Robust and Nonlinear Control*, 12(9), 841-853, 2002.
- [J13] M. Basso, L. Giarré, M. Dahleh and I. Mezić. paperi/JDS00240.pdf Complex Dynamics in a Harmonically Excited Lennard-Jones Oscillator: Microcantilever-Sample Interaction in Scanning Probe Microscopes. *ASME Journal of Dynamic Systems, Measurement and Control*, 122(1), 240-245, 2000.
- [J12] L. Giarré and M. Milanese. paperi/inrnc.pdf SM identification of approximating models for H_∞ robust control. *International Journal of Robust and Nonlinear Control*, 9(6), 319-332, 1999.
- [J11] L. Giarré, B. Kacewicz, and M. Milanese. paperi/97auto.pdf Model quality evaluation in set membership identification. *Automatica*. 33(6), 1133-1139, 1997.
- [J10] L. Giarré and M. Milanese. paperi/97b.pdf Model quality evaluation in H_2 identification. *IEEE Transaction on Automatic Control*. 42(5), 691-698, 1997.
- [J9] L. Giarré, M. Milanese, and M. Taragna. paperi/97.pdf H_∞ identification and model quality evaluation. *IEEE Transaction on Automatic Control*. 42(2), 188-199, 1997.
- [J8] L. Giarré. Nominal optimal controller with enhanced performance via adaptive-Q feedback. *International Journal of Adaptive Control and Signal Processing*, 10(6), 635-648, 1996.
- [J7] L. Giarré and M. Milanese. H_∞ identification and model structure selection. *International Journal of Robust and Nonlinear Control*, 6(4), 367-377, 1996.
- [J6] L. Chisci, L. Giarré, and E. Mosca. paperi/chiscigiarremosca94.pdf Indirect and implicit adaptive predictive control of a benchmark plant. *Automatica*, 30(4), 577-584, 1994.
- [J5] L. Chisci, L. Giarré, and E. Mosca. paperi/chiscigiarremosca93.pdf Sidestepping the positive real condition in RELS via multiple RLS identifiers. *Automatica*, 29(4), 1145-1148, 1993.

- [J4] L. Giarré and E. Mosca. [paperi/93.pdf](#)Implicit predictive adaptive controller with stochastic gradient identifiers. *IEEE Transaction on Automatic Control*, 38(7), 1135-1139, 1993.
- [J3] E. Mosca and L. Giarré. [paperi/moscagiarré.pdf](#)A polynomial approach to MIMO LQ servo and disturbance rejection problems. *Automatica*, 28(1), 209-213, 1992.
- [J2] E. Mosca, L. Giarré, and A. Casavola. [paperi/90.pdf](#)On the polynomial equations for the MIMO stochastic regulator. *IEEE Transactions on Automatic Control*, 35(3), 320-322, 1990.
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- [B1] L. Giarré, P. Falugi, R. Badalamenti, Hybrid LPV Modeling and Identification, in *LINEAR PARAMETER-VARYING SYSTEM IDENTIFICATION New Developments and Trends*, P. dos Santos, T. Perdicoulis, C. Novara, J. Ramos and D. Rivera, World Scientific, 2011.
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- [B3] D.Bauso, R. Pesenti, L. Giarré. Cooperative Inventory Control, *Current Trends in Nonlinear Systems and Control*, BirkHauser, Edited by L. Menini, L. Zaccarian and C.T.Abdallah, Boston, 2005.
- [B4] GIARRE' L, JACCHERI L. Learning research methods via experience sharing. In: G. CHIAZZESE, M. ALLEGRA, A. CHIFARI, AND S. OTTAVIANO EDS.. *Transactions on Information and Communication Technologies*. vol. 34, p. 270-275,2005
- [B5] P. Falugi, L. Giarré, L. Chisci, G. Zappa. LPV predictive control of the stall and surge for jet engine, *Periodic Control Systems-2001*, Elsevier, 2001. Edited by S. Bittanti.
- [B6] S. Salapaka, L. Giarré and M. Dahleh. On state-space reconstruction of the dynamics of microcantilever interactions *Mathematical Theory of Networks and Systems*, pagg. 863-867, Il Poligrafico, Padova, 1998, Edited by A. Beghi, L. Finesso, G. Picci.
- [B7] E. Mosca, L. Chisci, and L. Giarré. *Sidestepping the Certainty equivalence in 2DOF Adaptive Control via Multiple Implicit Identifiers*, pagg. 41-64. Plenum Press - London, 1993. Edited by M. Karny and K. Warwick.

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- [C3] L. Giarré and E. Mosca. Direct predictive adaptive control with stochastic gradient identifiers. In *Proc. 30th IEEE Conf. Decision and Control*, pagg. 1788-1789, Brighton (UK), 1991.
- [C4] E. Mosca, L. Chisci, and L. Giarré. Direct predictive adaptive control of a benchmark example: MUSMAR. In *Proc. of 1st European Control Conference*, pagg. 2368-2373, Grenoble (F), 1991.
- [C5] E. Mosca, L. Chisci, and L. Giarré. Sidestepping the certainty equivalence in 2DOF adaptive control via multiple implicit identifiers. In *IFAC Workshop on Mutual Impact of Computing Power and Control Theory*, Praga, pagg. 93-98, 1992.
- [C6] L. Chisci, L. Giarré, and E. Mosca. Improving RELS local convergence via long-range predictive identifiers. In *Proc. 31st IEEE Conf. Decision and Control*, pagg. 527-529, Tucson (USA), 1992.

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- [C8] L. Giarré. Adaptive-Q tuning to enhance performance of a nominally controlled plant. In *Proc. of 2nd European Control Conference*, pagg. 2216-2221, Groningen (NL), 1993.
- [C9] L. Chisci, L. Giarré, and E. Mosca. Indirect and implicit adaptive predictive control of a benchmark plant. In *Proc. of IFAC World congress*, volume 3, pagg. 169-172, Sidney (AUS), 1993.
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- [C11] L. Giarré and M. Milanese. H_∞ identification with mixed parametric and nonparametric models. In *10th IFAC Symposium on System Identification*, pagg. 255-259, 1994.
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- [C26] B. Bamieh and L. Giarré. Identification for a general class of LPV Models *SYSID*, Santa Barbara, 2000.
- [C27] B. Bamieh, L. Giarré, T. Raimondi, D. Bauso, M. Lodato and D. Rosa, LPV Model Identification and validation of the stall and surge control for jet engine. *15th IFAC Symposium on Automatic Control in Aerospace*, Forlì, 2001.
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