

# Dario Piga: curriculum vitæ

Date and place of birth: 11th December, 1982, Alghero, Italy

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## Short Bio

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Dario Piga received his Ph.D. in Systems Engineering from the Politecnico di Torino (Italy) in 2012. He was Assistant Professor at the IMT School for Advanced Studies Lucca (Italy) and since March 2017 he has been Senior Researcher at the IDSIA Dalle Molle Institute for Artificial Intelligence in Lugano (Switzerland), founder and head of the “learning and control group” at IDSIA, and Adjunct Professor at the SUPSI University of Applied Sciences and Arts of Southern Switzerland. He has co-authored more than 100 peer-reviewed scientific papers in leading international journals and conferences in the fields of system identification, control theory, machine learning, and nonlinear optimization. He has collaborated with international companies and coordinated several research projects for the development of innovative AI-based systems in the manufacturing, transportation, biomedical and chemical industry. Since 2021 he has been Associate Editor for the IFAC journal Automatica.

## Qualifications

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Italian National Scientific **Habilitation as Full Professor in Automatic Control** (since 2021).

## Current position

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*February 2017 - today*    **Senior Researcher** at the IDSIA - Dalle Molle Institute for Artificial Intelligence, Scuola Universitaria Professionale della Svizzera Italiana, Lugano, Switzerland.

## Previous positions

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*January 2015 - January 2017*    **Assistant Professor** at the IMT School for Advanced Studies Lucca, Lucca, Italy.

*April 2014 - December 2014*    **Postdoc** at the Dalle Molle Institute for Artificial Intelligence, Scuola Universitaria Professionale della Svizzera Italiana, Lugano, Switzerland.

*March 2013 - February 2014*    **Postdoc** at the Department of Electrical Engineering, Eindhoven University of Technology, Eindhoven, The Netherlands.

*February 2012 - February 2013*    **Postdoc** at the Delft Center for Systems and Control (DCSC), Delft University of Technology, Delft, The Netherlands.

*January 2009 – December 2011*    **PhD student** at the Dipartimento di Informatica e Automatica, Politecnico di Torino, Torino, Italy.

May 2008 - December 2008 **Assistant researcher** at the Dipartimento di Informatica e Automatica, Politecnico di Torino, Torino, Italy.

May 2004 - July 2004 **Internship at RSI Sistemi society, Altran Group**, Torino, Italy.

## Visiting positions

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November 2017 **Visiting Researcher** at the IMT School for Advanced Studies, Lucca, Italy. Hosted by Prof. Marco Paggi.

October 2012 - February 2013 **Visiting Researcher** at the Control Systems Group, Department of Electrical Engineering, Eindhoven University of Technology, The Netherlands. Hosted by Prof. Paul Van den Hof.

June 2010 - July 2010 **Visiting PhD student** at the Department of Fundamental Electricity and Instrumentation, Vrije Universiteit Brussel, Brussels, Belgium. Hosted by Prof. Johan Schoukens.

## Education

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**Ph.D in Systems and Control Engineering**, Politecnico di Torino, January 2009 – December 2011. Date of the PhD degree: 16/04/2012. Dissertation title: “A convex relaxation approach to set-membership identification”. Advisor: Prof. Vito Cerone.

**Master of Science Degree in Mechatronics Engineering**, Politecnico di Torino, April 2008. Thesis title: “Performance analysis of KiteGen system: high-altitude wind power generation”. Final grade: 110/110 *summa cum laude*. Advisor: Prof. Mario Milanese.

**Bachelor of Science Degree in Electronics Engineering**, Politecnico di Torino, September 2004. Thesis developed in collaboration with RSI Sistemi society, Altran Group, titled “Nonlinear system modeling from experimental data”. Final grade: 110/110 *summa cum laude*. Advisor: Prof. Mario Milanese.

## Acquisition of research funds and participation to research projects

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### Research funds acquired in competitive calls

- *ARES: AI for fluoREscence Spectroscopy in oil*, **Hasler Foundation**, Local coordinator. April 2021 - October 2021 (local budget: 22'600 CHF, total budget: 50'000 CHF).
- *HYPER: HYbrid Physical-based and data-driven modelling for least-costly tuning in lasER cutting*, **Innosuisse project**, Swiss Innovation Agency. Project coordinator, Investigator. February 2021 - January 2023 (local budget: 465'901 CHF, total budget: 921'906 CHF).
- *ARTISTIC: ARTificial Intelligence for real-time quality eSTimation and Control in laser cutting*, **Innosuisse project**, Swiss Innovation Agency. Project coordinator, Investigator, September 2020 - August 2022 (local budget: 568'118 CHF, total budget: 1'175'206 CHF).
- *VIOLA-II: Transfer learning in self-optimisation*, **Innosuisse project**, Swiss Innovation Agency. Local coordinator. July 2020 - June 2021 (local budget: 203'315 CHF, total budget: 414'075 CHF).
- *VIRTUOUS: Virtual tongue to predict the organoleptic profile of mediterranean ingredients and their effect on human homeostasis by means of an integrated computational multiphysics platform*, **EU H2020 Marie Curie RISE project**. Local coordinator at SUPSI. December 2019 - November 2023 (local budget: 165'000 EUR, total budget: 1'108'000 EUR).
- *SLAM 4.0: Smart LAser Manufacturing for precision industry 4.0*, **Innosuisse project**, Swiss Innovation Agency. Local coordinator at SUPSI. May 2019 - October 2020 (local budget: 419'000 CHF, total budget: 2'661'140 CHF).
- *ADMITTED: Advanced Data Methods for Improved Tiltrotor Test and Design*, **EU H2020-CS2 project**. Local coordinator at SUPSI. Co-investigated at IDSIA with G. Corani and M. Zaffalon. February 2019 - December 2023 (local budget: 482'000 EUR, total budget: 1'718'000 EUR).
- *AI-CARES: A remote engineering service for smart monitoring of ammonia synthesis plants using artificial intelligence*, **CTI project**, Swiss Commission for Technology and Innovation. Local coordinator at SUPSI. April 2018 - September 2019 (local budget: 431'194 CHF, total budget: 807'666 CHF).
- *Data-Driven Modeling of High Complexity Nonlinear Systems*, **Van Gogh Grant**, France/Netherlands academy, 2013, renewed for 2014 (5'000 EUR).

### Participation to other research projects

- EU H2020 project DAEDALUS. From March 2017 to September 2019.
- EU H2020 project DISIRE. From January 2015 to January 2017.
- EU FP7 project SmarH2O. From April 2014 to December 2014. Work Package leader.
- EU FP7 project AUTOPROFIT. From February 2013 to February 2014.

- National project “High power laser in nano-structured fibres”, funded by Piedmont Region. From March 2009 to December 2010.
- National project “Power kites for naval propulsion”, funded by Piedmont Region. From May 2008 to December 2008.

## **Awards**

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Italian engineering, architectural and technical economic consulting association (OICE) Studentship as **best Master thesis on renewable energy** for the year 2008.

## Technical association memberships and editorial activities

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Associate Editor for “Automatica”, Journal of IFAC - International Federation of Automatic Control, Elsevier (since 2021).

Associate Editor for the IFAC World Congress (since 2020).

Associate Editor for the Conference Editorial Board of the European Control Association (since 2019).

Associate Editor for the Conference Editorial Board of the IEEE Control Systems Society (since 2018).

Associate Editor for the Editorial Board of the journal “Mathematical Problems in Engineering” (since 2016).

Member of the IFAC Technical Committee on Modelling, Identification, and Signal Processing (since 2017).

Member of the IEEE-CSS Technical Committee on Medical and Healthcare Systems (since 2013).

Member of the IEEE-CSS Technical Committee on System Identification and Adaptive Control (since 2013).

Guest Editor (with Prof. A. Bemporad) of the **Special Issue** “*New trends in modelling and control of hybrid systems*” for the International Journal of Robust and Nonlinear Control.

Organizer (with Prof. S. Formentin and Dr. Marco Forgione) of the **invited session** “*Data-driven linear modelling and control for nonlinear systems*” for the 19th IFAC Symposium on System Identification, Padova, Italy, 2021.

Organizer (with Prof. A. Bemporad) of the **invited session** “*Hybrid models: challenges and applications*” for the IEEE Conference on Decision and Control, Miami Beach, Florida, 2018.

Organizer (with Prof. R. Tóth) of the **invited session** “*Data-driven modeling and control of Linear Parameter-Varying systems*” for the 52nd IEEE Conference on Decision and Control, Florence, Italy, 2013.

Reviewer of about 150 papers submitted to international journals and conferences like: IEEE Transaction on Automatic Control, IEEE Transaction on Control Systems Technology, Automatica, IET Control Theory & Applications, Control Engineering Practice, International Journal of Control, IEEE Conference on Decision and Control, American Control Conference, IFAC World Congress, IFAC Symposium on System Identification.

Reviewer of 3 books (one for IEEE-Wiley and two for Springer).

## Invited talks and outreach activities

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*An artificial sommelier to replicate the magic of taste* (in italian), Magazine OggiScienza, Interview edited by Michela Perrone. Link: <https://oggiscienza.it/2021/04/12/virtuous-marie-curie/>

*Partnership between industry and university: the Swiss case*, Phyd Events, Manufacturing: towards the factory of the future, February 2021. Link: <https://www.phyd.com/Hub/Event/Search>

*VIRTUOUS: una ricerca gustosa*, Podcast produced by Clara Caverzasio, December 2020. Link: <https://www.supsi.ch/home/comunica/podcast.html>

*Artificial Intelligence: challenges and opportunities*, Visionary Day 2020, Lugano, Switzerland, October 2020. Presentation on YouTube: <https://www.youtube.com/watch?v=M5PUUBHFKaU>

*Automated calibration of Model Predictive Controllers*, Universität zu Lübeck, Germany, September 2020.

*Artificial intelligence solves real problems for industry and business*, **Keynote speech**, Workshop on Artificial Intelligence in Photonics, organizers: SwissMEM and Swissphotonics, Brugg Windisch, Switzerland, September 2019.

*Maximum-likelihood for regression and classification: an overview*, IMT School for Advanced Studies Lucca, Lucca, Italy, November 2017.

*Pitfalls and best practices in parametric identification*, IMT School for Advanced Studies Lucca, Lucca, Italy, November 2017.

*Model-free design of linear parameter-varying controllers: a direct data-driven approach*, IMT School for Advanced Studies Lucca, Lucca, Italy, June 2017.

*A hierarchical approach for model-free design of Linear Parameter-Varying controllers*, Università degli Studi di Bergamo, Dalmine, Italy, November 2016.

*Robust and probabilistic  $\mathcal{D}$ -stability analysis of uncertain polynomial matrices*, Università degli Studi di L'Aquila, L'Aquila, Italy, May 2016.

*Encounters between machine learning and Linear Parameter-Varying systems*, IMT School for Advanced Studies Lucca, Lucca, Italy, June 2014.

*LPV model order selection in an LS-SVM setting*, Politecnico di Milano, Milano, Italy, March 2014.

*Advancing LPV data-driven modeling and control via LS-SVM*, Katholieke Universiteit Leuven, Leuven, Belgium, October 2013.

*Bounded-error identification of dynamical systems*, Vrije Universiteit Brussel, Brussels, Belgium, June 2010.



## Teaching Activities

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**Vertical Domain Application in Key Areas**, Bachelor in Data Science and Artificial Intelligence, Scuola Universitaria Professionale della Svizzera Italiana (SUPSI), from 2021. Responsible and Lecturer.

**Applied Case Studies of Machine Learning and Deep Learning in Key Areas I - II**, Bachelor in Data Science and Artificial Intelligence, Scuola Universitaria Professionale della Svizzera Italiana (SUPSI), from 2022. Responsible.

**Introduction to Machine Learning** External Course for Casale S.A. ([www.casale.ch](http://www.casale.ch)), Scuola Universitaria Professionale della Svizzera Italiana (SUPSI), 2019.

**Data Science** Bachelor course, Scuola Universitaria Professionale della Svizzera Italiana (SUPSI), 2018/2019 (in Italian).

**Identification, Analysis and Control of Dynamical Systems** Doctoral course, IMT School for Advanced Studies, 2015/2016, 2016/2017, 2017/2018 (in English).

**Robust Control** Course for Master's degree, Eindhoven University of Technology, 2013/2014 (in English).

**Dynamic programming and model predictive control** Course for 2nd level specializing Master in Automatica and Control Technologies, Politecnico di Torino. 2010/2011, 2011/2012 (in English).

**Advanced control applications** Course for 2nd level specializing Master in Automatica and Control Technologies, Politecnico di Torino, 2010/2011, 2011/2012 (in English).

**Model Predictive Control: theory and practice** Doctoral course, Politecnico di Torino, 2010/2011 (in English).

**Principles of Automatic control** Course for Bachelor's degree in Automotive Engineering, Politecnico di Torino, 2010/2011 (in English).

**Automatic control** Course for Master's degree in Biomedical Engineering, Politecnico di Torino, 2010/2011 (in Italian).

**Automatic control** Course for Bachelor's degree in Electronics and Informatics Engineering, Politecnico di Torino, 2009/2010, 2010/2011, 2011/2012 (in Italian).



## Responsibility of other researchers' activities and students

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### Leadership of Research Group

Head of the "Learning for decision and control" group at IDSIA-SUPSI.

Current members of the group:

- Marco Forgione, Researcher with PhD
- Loris Roveda, Researcher with PhD
- Manas Mejari, Researcher with PhD
- Bojan Mavkov, Researcher with PhD
- Loris Cannelli, Researcher with PhD
- Filippo Pura, Researcher with Master
- Marco Maccarini, Researcher with Master

### Supervised PhD students

- Manas D. Mejari, **PhD student**, IMT School for Advanced Studies Lucca. Co-supervised with Prof. Alberto Bemporad. Graduated on July 2018.
- Valentina Breschi, **PhD student**, IMT School for Advanced Studies Lucca. Co-supervised with Prof. Alberto Bemporad. Graduated on February 2018.

### Supervised Master students

- Luca Scibona, **Master's Thesis**: "Learning Jump Box-Jenkins models for financial time-series clustering", USI, Lugano, Switzerland, Period of supervision: March 2019 - September 2019. Co-Supervised with Prof. Luca Maria Gambardella.
- Denis Broggin, **Master's student**, IDSIA-SUPSI, Lugano, Switzerland, Period of supervision: April 2018 - September 2019. Supervised under CTI project AI-CARES.
- Andrea Vescovi, **Master's Thesis**: "Online processing of energy and water consumption data to deliver end use characterization", SUPSI, Lugano, Switzerland, Period of supervision: June 2014 - January 2016. Co-supervised with Prof. Andrea Emilio Rizzoli. Winner of the **Argor-Heraeus prize 2016 for best Master's Thesis at SUPSI on environmental sustainability**.
- Nick van der Sanden, **Master's degree Internship**: "Sparse identification in an Instrumental Variable setting", Eindhoven University of Technology, Period of supervision: September 2013 - November 2013. Main supervisor: Dr. Roland Tóth.
- René Duijkers, **Master's degree Internship**: "Kernel Variable Selection in Least-Squares Support Vector Machines: Application in LPV system identification", Eindhoven University of Technology, Period of supervision: May 2013 - July 2013. Main supervisor: Dr. Roland Tóth.

- Margherita Merio, **Bachelor's Thesis**: "Modeling of the Kitegen system", Politecnico di Torino, Period of supervision: January 2009 - June 2009. Main supervisor: Prof. Carlo Novara.

## Institutional activities

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**Member of the Academic Council** at the IMT School for Advanced Studies, Lucca, as a representative of Researchers and Assistant Professors (January 2016 - February 2017).

**PhD thesis committee member**, University of L'Aquila, Italy, April 2020, Student: Francesco Cesarone.

**PhD thesis's external reviewer**, Università degli Studi di Bergamo, Dalmine, Italy, January 2020, Student: Matteo Scandella.

**PhD thesis's committee member**, Politecnico di Milano, Italy, February 2020, Student: Federico Bianchi.

**PhD thesis committee member** (Computer Science) at the IMT School for Advanced Studies, Lucca, July 2018, Student: Manas D. Mehari.

**PhD thesis committee member** (Computer Science) at the IMT School for Advanced Studies, Lucca, February 2018, Student: Valentina Breschi.

**PhD thesis committee member** (Computer Science) at the IMT School for Advanced Studies, Lucca, February 2018, Student: Mogens Graff Plessen.

**PhD thesis committee member** (Mathematics) at the GSSI Gran Sasso Science Institute, L'Aquila, February 2017, Student: Mutti Ur Rehman.

## Peer-reviewed publications

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### Journal papers

- [J1] A. Benavoli, D. Azzimonti, D. Piga, "A unified framework for closed-form nonparametric regression, classification, preference and mixed problems with Skew Gaussian Processes", *Machine Learning*, In press. ISSN 1877-1902.
- [J2] L. Roveda, A. A. Shahid, N. Iannacci, D. Piga, "Sensorless Optimal Interaction Control Exploiting Environment Stiffness Estimation", *IEEE Transactions on Control Systems Technology*, In press. ISSN 1063-6536.
- [J3] L. Roveda, B. Maggioni, E. Marescotti, A. Shahid, A. M. Zanchettin, A. Bemporad, D. Piga, "Pairwise Preferences-Based Optimization of a Path-Based Velocity Planner in Robotic Sealing Tasks", *IEEE Robotics and Automation Letters*, In press. ISSN 2377-3766.
- [J4] G. Halasz, M. Sperti, M. Villani, U. Michelucci, P. Agostoni, A. Biagi, L. Rossi, A. Botti, C. Mari, M. Maccarini, F. Pura, L. Roveda, A. Nardecchia, E. Mottola, M. Nolli, E. Salvioni, M. Mapelli, M. A. Deriu, D. Piga, M. Piepoli, "Predicting outcomes in the Machine Learning era: The Piacenza score a purely data driven approach for mortality prediction in COVID-19 Pneumonia", *Journal of Medical Internet Research*, In press. ISSN 1438-8871.
- [J5] M. Forgione, D. Piga, "Continuous-time system identification with neural networks: model structures and fitting criteria", *European Journal of Control*, In press. ISSN 0947-3580.
- [J6] L. Roveda, D. Piga, "Robust State Dependent Riccati Equation Variable Impedance Control for Robotic Force-Tracking Tasks", *International Journal of Intelligent Robotics and Applications*, In press. ISSN 2366-5971.
- [J7] D. Selvi, D. Piga, G. Battistelli, A. Bemporad, "Optimal direct data-driven control with stability guarantees", *European Journal of Control*, In press. ISSN 0947-3580.
- [J8] M. Mejari, D. Piga, "Maximum-a-posteriori estimation of LTI state-space models via efficient Monte-Carlo sampling", *ASME Letters in Dynamic Systems and Control*, In press. ISSN 2689-6117.
- [J9] F. Bianchi, V. Breschi, D. Piga, L. Piroddi, "Model structure selection for switched NARX system identification: a randomized approach", *Automatica*, Vol. 125, 2021. ISSN 0005-1098.
- [J10] M. Forgione, D. Piga, "dynoNet: a neural network architecture for learning dynamical systems", *International Journal of Adaptive Control and Signal Processing*, Vol. 35, No. 4, 2021. ISSN 1099-1115.
- [J11] L. Roveda, M. Magni, M. Cantoni, D. Piga, G. Bucca, "Human-Robot Collaboration in Sensorless Assembly Task Learning Enhanced by Uncertainties Adaptation via Bayesian Optimization", *Robotics and Autonomous Systems*, Vol. 136, 2021. ISSN 0921-8890.
- [J12] L. Roveda, D. Piga, "Sensorless environment stiffness and interaction force estimation for impedance control tuning in robotized interaction tasks", *Autonomous Robots*, 2021. ISSN 0929-5593.

- [J13] A. Bemporad, D. Piga, “Global optimization based on active preference learning with radial basis functions”, *Machine Learning*, 2021. ISSN 1877–1902.
- [J14] D. Piga, V. Breschi, A. Bemporad, “Estimation of Jump Box-Jenkins Models”, *Automatica*, Vol. 120, 2020. ISSN 0005-1098.
- [J15] D. Piga, A. Bemporad, A. Benavoli, “Rao-Blackwellized Sampling for Batch and Recursive Bayesian Inference of Piecewise Affine Models”, *Automatica*, Vol. 117, 2020. ISSN 0005-1098.
- [J16] L. Roveda, M. Forgione, D. Piga, “Robot Control Parameters Auto-Tuning in Trajectory Tracking Applications”, *Control Engineering Practice*, Vol. 101, 2020. ISSN 0967-0661.
- [J17] M. Mejari, V. Breschi, D. Piga, “Recursive Bias-Correction Method for Identification of Piecewise Affine Output-Error Models”, *IEEE Control Systems Letters*, Vol. 4, No. 4, pp. 970-975, 2020. ISSN 2475-1456.
- [J18] B. Mavkov, M. Forgione, D. Piga, “Integrated Neural Networks for Nonlinear Continuous-Time System Identification”, *IEEE Control Systems Letters*, Vol. 4, No. 4, 2020. ISSN 2475-1456.
- [J19] A. Benavoli, D. Azzimonti, D. Piga, “Skew Gaussian Processes for Classification”, *Machine Learning*, Vol. 109, 2020. ISSN 1877–1902. (also presented at the European Conference on Machine Learning 2020).
- [J20] L. Roveda, A. Bussolan, F. Braghin, D. Piga, “6D Virtual Sensor for Wrench Estimation in Robotized Interaction Tasks Exploiting Extended Kalman Filter”, **Special issue**, *Machine Dynamics and Automation*, Vol. 8, No. 4, 2020. ISSN 2075-1702.
- [J21] M. Mejari, V. Naik, D. Piga, A. Bemporad, “Identification of Hybrid and LPV Models via Piecewise Affine Regression using Mixed Integer Programming”, **Special issue**, *International Journal of Robust and Nonlinear Control*, Vol. 30, 2020. ISSN 1099-1239.
- [J22] D. Piga, “Finite-horizon integration for continuous-time identification: bias analysis and application to variable stiffness actuators”, *International Journal of Control*, Vol. 93, No. 10, 2020. ISSN 0020-7179.
- [J23] V. Laurain, R. Tóth, D. Piga, M.A.H. Darwish, “Sparse RKHS Estimation via Globally Convex Optimization and its Application in LPV-IO Identification”, *Automatica*, Vol. 115, 2020. ISSN 0005-1098.
- [J24] A. Lucchini, S. Formentin, M. Corno, D. Piga, S. M. Savaresi “Torque vectoring for high-performance electric vehicles: an efficient MPC calibration”, **Special issue**, *IEEE Control Systems Letters*, Vol. 4, No. 3, 2020. ISSN 2475-1456.
- [J25] D. Piga, M. Forgione, S. Formentin, A. Bemporad, “Performance-oriented model learning for data-driven MPC design”, *IEEE Control Systems Letters*, 2019. ISSN 2475-1456. (also presented as an **invited paper** at the IEEE Conference on Decision and Control 2019).
- [J26] V. Breschi, D. Piga, A. Bemporad, “Online end-use energy disaggregation via jump linear models”, *Control Engineering Practice*, Vol. 89, 30–42, 2019. ISSN 0967-0661.

- [J27] V. Carollo, D. Piga, C. Borri, M. Paggi, "Identification of elasto-plastic and nonlinear fracture mechanics parameters of silver-plated copper busbars for photovoltaics", *Engineering Fracture Mechanics*, Vol. 205, 2019. ISSN 0013-7944.
- [J28] A. Benavoli, A. Facchini, D. Piga, M. Zaffalon, "Sum-Of-Squares for bounded rationality", *International Journal of Approximate Reasoning*, Vol. 105, 130-152, 2019. ISSN 0888-613X.
- [J29] A. Bemporad, V. Breschi, D. Piga, S. Boyd, "Fitting Jump Models", *Automatica*, Vol. 96, 11-21, 2018. ISSN 0005-1098.
- [J30] D. Piga, S. Formentin, A. Bemporad, "Direct data-driven control of constrained linear parameter-varying systems: A hierarchical approach", *IEEE Transactions on Control Systems Technology*, Vol. 26, No. 4, 1422-1429, 2018. ISSN 1063-6536.
- [J31] M. Mejari, D. Piga, A. Bemporad, "A bias-correction method for closed-loop identification of linear parameter-varying systems", *Automatica*, Vol. 87, 128-141, 2018. ISSN 0005-1098.
- [J32] D. Piga, A. Benavoli, "A unified framework for deterministic and probabilistic  $\mathcal{D}$ -stability analysis of uncertain polynomial matrices", *IEEE Transactions on Automatic Control*, Vol. 62, No. 10, 5437-5444, 2017. ISSN 0018-9286.
- [J33] J. Lataire, R. Pintelon, D. Piga, R. Tóth, "Continuous-time linear time-varying system identification with a frequency domain kernel based estimator", *IET Control Theory & Applications*, Vol. 11, 2017. ISSN 1751-8644.
- [J34] A. Cominola, M. Giuliani, D. Piga, A. Castelletti, A. E. Rizzoli, "A Hybrid Signature-based Iterative Disaggregation algorithm for Non-Intrusive Load Monitoring", *Applied Energy*, Vol. 185, 2017. ISSN 0306-2619.
- [J35] V. Breschi, D. Piga, A. Bemporad, "Piecewise Affine Regression via Recursive Multiple Least Squares and Multicategory Discrimination", *Automatica*, Vol. 73, pp. 155-162, 2016. ISSN 0005-1098.
- [J36] A. Benavoli, D. Piga, "A probabilistic interpretation of set-membership filtering: Application to polynomial systems through polytopic bounding", *Automatica*, Vol. 70, pp. 158-172, 2016. ISSN 0005-1098.
- [J37] S. Formentin, D. Piga, R. Tóth, S. M. Savaresi, "Direct learning of LPV controllers from data", *Automatica*, Vol. 65, pp. 98-110, 2016. ISSN 0005-1098.
- [J38] D. Piga, "Computation of the Structured Singular Value via Moment LMI Relaxations", *IEEE Transactions on Automatic Control*, Vol. 59, No. 11, pp. 2897-2909, 2016. ISSN 0018-9286.
- [J39] D. Piga, A. Cominola, M. Giuliani, A. Castelletti, A. E. Rizzoli, "Sparse optimization for automated energy end use disaggregation", *IEEE Transactions on Control Systems Technology*, Vol. 24, No. 3, pp. 1044-1051, 2016. ISSN 1063-6536.
- [J40] A. Cominola, M. Giuliani, D. Piga, A. Castelletti, A. E. Rizzoli, "Benefits and challenges of using smart meters for advancing residential water demand modeling and management: a review", *Environmental Modelling & Software*, Vol. 72, pp. 198-214, 2015. ISSN 1364-8152.

- [J41] D. Piga, P.B. Cox, R. Tóth, V. Laurain, “LPV system identification under noise corrupted scheduling and output signal observations”, *Automatica*, Vol. 53, pp. 329-338, 2015. ISSN 0005-1098.
- [J42] V. Laurain, R. Tóth, D. Piga, W. X. Zheng, “An Instrumental Least Squares Support Vector Machine for Nonlinear System Identification”, *Automatica*, Vol. 54, pp. 340-347, 2015. ISSN 0005-1098.
- [J43] V. Cerone, D. Piga, D. Regruto, “Characteristic polynomial assignment for plants with semialgebraic uncertainty: a robust diophantine equation approach”, *International Journal of Robust and Nonlinear Control*, Vol. 25, No. 16, pp. 2911–2921, 2015. ISSN 1099-1239. **In this paper the authors are listed in alphabetical order.**
- [J44] D. Piga, R. Tóth, “Bias-corrected estimators for nonlinear systems with output-error type model structures”, *Automatica*, Vol. 50, No. 9, pp. 2373-2380, 2014. ISSN 0005-1098.
- [J45] V. Cerone, J. B. Lasserre, D. Piga, D. Regruto, “A unified framework for solving a general class of conditional and robust set-membership estimation problems”, **Special issue**, *IEEE Transactions on Automatic Control*, Vol. 59, No. 11, pp. 2897-2909, 2014. ISSN 0018-9286. **In this paper the authors are listed in alphabetical order.**
- [J46] M. Canale, V. Cerone, D. Piga, D. Regruto, “Approximation of Model Predictive Control laws for polynomial systems”, *Asian Journal of Control*, Vol. 16, No. 5, pp. 1425-1436, 2014. ISSN 1561-8625. **In this paper the authors are listed in alphabetical order.**
- [J47] D. Piga, R. Tóth, “An SDP approach for  $\ell_0$ -minimization: application to ARX model segmentation”, *Automatica*, Vol. 49, No. 12, pp. 3646-3653, 2013. ISSN 0005-1098.
- [J48] V. Cerone, D. Piga, D. Regruto, “Fixed-order FIR approximation of linear systems from quantized input and output data”, *Systems & Control letters*, Vol. 62 No. 12, pp. 1136-1142, 2013. ISSN 0167-6911. **In this paper the authors are listed in alphabetical order.**
- [J49] V. Cerone, D. Piga, D. Regruto, “A convex relaxation approach to Set-membership identification of LPV systems”, *Automatica*, Vol. 49, No. 9, pp. 2853-2859, 2013. ISSN 0005-1098. **In this paper the authors are listed in alphabetical order.**
- [J50] V. Cerone, D. Piga, D. Regruto, “Computational load reduction in bounded error identification of Hammerstein systems”, *IEEE Transactions on Automatic Control*, Vol. 58, No. 5, pp. 1317-1322, 2013. ISSN 0018-9286. **In this paper the authors are listed in alphabetical order.**
- [J51] V. Cerone, D. Piga, D. Regruto, “Bounding the parameters of block-structured nonlinear feedback systems”, *International Journal of Robust and Nonlinear Control*, Vol. 23, No. 1, pp. 33-47, 2013. ISSN 1049-8923. **In this paper the authors are listed in alphabetical order.**
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## Conference papers

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- [C2] M. Zhu, A. Bemporad, D. Piga, “Preference-based MPC calibration”, *Proc. of the European Control Conference*, Rotterdam (virtual), The Netherlands, to be presented.
- [C3] A. Benavoli, D. Azzimonti, D. Piga, ‘Preferential Bayesian optimisation with Skew Gaussian Processes”, *Proc. of the Genetic and Evolutionary Computation Conference (GECCO)*, Lille (virtual), France, to be presented.
- [C4] M. Mejari, B. Mavkov, M. Forgiione, D. Piga, “An integral architecture for identification of continuous-time state-space LPV models”, *Proc. of the 4th IFAC Workshop on Linear Parameter Varying Systems*, Milan, Italy (virtual), to be presented.
- [C5] L. Roveda, D. Riva, G. Bucca, D. Piga, “External Joint Torques Estimation for a Position-Controlled Manipulator Employing an Extended Kalman Filter”, *Proc. of the 18th International Conference on Ubiquitous Robots*, Gangneung-si, Gangwon-do, Korea (virtual), to be presented.
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