

SIMONE FORMENTIN'S CURRICULUM VITAE

UPDATED: OCTOBER 28, 2019

PERSONAL DATA

Name: Simone Formentin

Date of birth: February 23, 1984

Place of birth: Legnano (MI), Italy

Address: Via Tortona, 2 - 21052 Busto Arsizio (VA), Italy

Family status: Married, father of Luna (born June 16, 2014) and Andrea (born January 8, 2016)

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Web: <http://home.deib.polimi.it/formentin/>

CURRENT POSITION

October 2019 – Today

Associate Professor

DIPARTIMENTO DI ELETTRONICA, INFORMAZIONE E BIOINGEGNERIA, POLITECNICO DI MILANO, ITALY

PREVIOUS POSITIONS

March 2014 – September 2019

Assistant Professor. Tenure-track since October 2016. Italian qualification for associate professorship, section 09/G1 (Automatica) obtained on April 2017.

DIPARTIMENTO DI ELETTRONICA, INFORMAZIONE E BIOINGEGNERIA, POLITECNICO DI MILANO, ITALY

September–November 2015, May–July 2016

Adjoint Lecturer

DIPARTIMENTO DI SCIENZE E METODI DELL'INGEGNERIA, UNIVERSITY OF MODENA AND REGGIO EMILIA, ITALY

September 2012 – February 2014

Post-doctoral Fellow

DIPARTIMENTO DI INGEGNERIA GESTIONALE, DELL'INFORMAZIONE E DELLA PRODUZIONE, UNIVERSITÀ DEGLI STUDI DI BERGAMO, ITALY

December 2011 – August 2012

Post-doctoral Fellow

LABORATOIRE D'AUTOMATIQUE, EPFL LAUSANNE, SWITZERLAND

EDUCATION

Ph.D. in Information Technology (with Doctor Europæus certification) February 2012

POLITECNICO DI MILANO, ITALY

Thesis title: “Direct data-driven control system design: theory and applications” (in English)

Advisor: Prof. Sergio M. Savaresi, Grade: A *summa cum laude*

Reviewers: Prof. Michel Verhaegen (TU Delft), Prof. Lars Eriksson (Linköping University)

Qualifier exam to practice the profession of ICT engineering September 2009

POLITECNICO DI MILANO, ITALY

Master of Science in Automation Engineering December 2008

POLITECNICO DI MILANO, ITALY

Thesis title: “Analisi e sviluppo di un sistema di controllo trazione per veicoli a due ruote” (in Italian)

Advisor: Prof. Sergio M. Savaresi (with Aprilia S.p.A.), Grade: 110/110 *summa cum laude*

Bachelor of Science in Automation Engineering September 2006

POLITECNICO DI MILANO, ITALY

Thesis title: “Dimensionamento e controllo di un microgeneratore ad energia alternativa” (in Italian)

Advisor: Prof. Marco Mauri, Grade: 110/110 *summa cum laude*

Diploma di Maturità Scientifica July 2003

High-school diploma specializing in scientific studies

LICEO SCIENTIFICO GALILEO GALILEI, LEGNANO (MILANO), ITALY, Grade: 100/100 *with honors*

VISITING APPOINTMENTS

May 2019

Visiting researcher at Department of Engineering Cybernetics, NTNU Trondheim, Norway (host: Prof. D. Varagnolo)

May 2018

Visiting researcher at Department of Electrical and Electronic Engineering, Imperial College London, UK (host: Prof. A. Astolfi)

April 2018

Visiting researcher at Institute for Systems Theory and Automatic Control, University of Stuttgart, Germany (host: Prof. F. Allgöwer)

February 2018, August 2018, February 2019

Visiting researcher at Department of Information Engineering, University of Padova, Italy (host: Prof. A. Chiuso)

June 2017

Visiting professor at ELEC, Vrije Universiteit Brussels, Belgium (host: Prof. I. Markovsky)

April–May 2017

Visiting professor at GIPSA-Lab, Université Grenoble Alpes, France (host: Prof. O. Sename)

May 2015, June 2016

Visiting researcher at Department of Automatic Control, KTH Stockholm, Sweden (host: Prof. C. Rojas)

November 2012, September 2013

Visiting researcher at the Department of Electrical Engineering, TU Eindhoven, The Netherlands (host: Prof. R. Tóth)

June 2012, April 2015

Visiting researcher at the Laboratoire d'Analyse et d'Architecture des Systèmes, CNRS Toulouse, France (host: Prof. L. Zaccarian)

July 2010, January 2011, August 2011

Visiting scholar at the Laboratoire d'Automatique, EPFL Lausanne, Switzerland (host: Dr. A. Karimi)

March 2010

Visiting scholar at the Delft Center for Systems and Control, TU Delft, The Netherlands (host: Prof. M. Corno)

January 2009–December 2011

Adjoint scholar at the Institute for Design and Control of Mechatronical Systems, JKU Linz, Austria (host: Prof. L. Del Re)

RESEARCH ACTIVITY

1. Data-driven control system design

For many industrial applications, finding a model from physical laws that is both simple and reliable for control design is a tough undertaking. When a set of measurements is available, the control law can be computed from data without relying on knowledge of the underlying physics. Specifically, in “indirect” data-driven approaches, a model of the system is first derived from data and then a controller is computed based on such a model. In “direct” data-driven approaches, the controller is directly derived from experimental data, such that process dynamics are automatically considered relevant or not, depending only on their weight on the final control index. The main advantages of such techniques are that they are insensitive to modeling errors and less time-consuming.

The first aim of this research work is to develop mathematical tools so as to extend existing data-driven methods to a larger class of industrially relevant problems. These methodological extensions include

- extensions to system identification and control-oriented optimization and estimation methods [C64, CS1, C69, CS2, J38, C68, C61, C33, C62, C77, C76, J32, J33, C83, JS3, J24, C27, C36, B7]
- direct data-driven control of time-delay systems [J1, C1];
- mixed-sensitivity loop-shaping control design [J7, C11, C70];
- data-driven control in the frequency domain [C58, C63];
- controller identification using closed-loop experiments [C19];
- one-shot tuning of cascade schemes [C10];
- data-driven control via moment matching [C79];
- PID tuning using deterministic VRFT [C34];
- data-driven control of MIMO plants [J2, C7, C40];
- data-driven control of LPV systems [J17, C12, C18, C28, C41];
- data-driven control of switching systems [J39];
- direct data-driven feed-forward linearization [J4, C6].
- robustification of data-driven tuning [J30, C51];
- data-driven control of nonlinear systems [C39, C44, J21, C56, J26].

Furthermore, since it is common belief that finding a good model of the plant is always the best way towards controller design, a secondary goal of this activity is to provide a quantitative assessment of direct data-driven techniques and show whether - and in which cases - they might be preferable (see [J14, C23]).

Finally, since it can be proven that the weak point of direct data-driven methods is their statistical performance, a third aim of this activity is to find mathematical solutions to improve the overall efficiency of the controller estimate. From this perspective, two directions are addressed, namely

- optimal experiment design [J6, C2, C17, B2, C75];
- L_2 regularization [J10, C20, C47].

Some rigorous comparative analyses among different methods are also proposed, like [C50] or [C67].

2. Intelligent vehicles and transportation systems

Nowadays, vehicle systems are definitely among the most challenging platforms for research in automatic control. As a matter of fact, almost all categories of vehicles are now equipped with sophisticated sensors and electronic control units able to process the available information on engine and vehicle dynamics. It follows that this information can be exploited to act on the vehicle, *e.g.*, to increase the level of safety, decrease the fuel consumption, deal with environmental constraints. Moreover, “smart vehicles” can be used to communicate among each other towards the establishment of “smart cities” with sustainable transports and optimized traffic flows. In this interesting field, the research activity is specifically focused on:

- NO_x and exhaust manifold pressure estimation via in-cylinder pressure measurement [J9, J15, J3, J5, C16];
- estimation and classification of performance and safety-critical parameters [C73, CS4, C82, JS1, P6];
- vehicle dynamics, *e.g.* traction, braking and stability control [P1, B1, C9, C3, C13, C30, CS9];
- Diesel engine control [J15, J11, C14];
- design of electric and hybrid powertrains [CS3, C72, C81, JS2, C15, C5, C4, J19, J23, C32, C43, C42, C55, C37, JS4, CS8];
- vehicle sharing systems and green mobility [J12, C26, C38, C54, CS6, C65, P4, P2];
- advanced driver assistance systems [C80, J36, C46, J34];
- design and control of braking actuators [J20, C30, P5, C74, CS5];
- Control of unmanned rotorcrafts [C8, C24, C45, C48];
- Marine vehicle technology [J8, C22, J18];

3. Other research activities (with at least one publication)

- Robotics and mechatronics [C35, J13, C25, C29, C31, J22, C52, C53, C59, J28, J37]
- Computing Systems [C66]
- Business analytics and finance [C57, C71, C78, CS7]

TEACHING ACTIVITY

Lecturer

- Course: Nonlinear system identification (in English, co-taught with L. Fagiano, S. Garatti, G. Panzani, L. Piroddi)
Ph.D. course
- Academic Year: 2018/2019
Class Hours per Year: 6
University: Politecnico di Milano
- Course: Dynamical system identification (in English, co-taught with G. Panzani)
Ph.D. course
- Academic Year: 2017/2018
Class Hours per Year: 3
University: University of Trento
- Course: Control-oriented identification (in English)
Ph.D. course
- Academic Year: 2016/2017
Class Hours per Year: 8
University: Vrije Universiteit Brussels
- Course: Identification for control (in English)
Ph.D. course
- Academic Year: 2016/2017
Class Hours per Year: 6
University: Université Grenoble Alpes
- Course: Data-driven control system design (in English)
Ph.D. course
- Academic Year: 2014/2015 - 2016/2017
Class Hours per Year: 20 - 20
University: Politecnico di Milano
- Course: Optimal filtering and data analysis: from Kolmogorov-Wiener to Kalman (in English, co-taught with S. Bittanti, P. Bolzern, M. Farina, S. Garatti, G. De Nicolao, M. Prandini, S.M. Savaresi)
Ph.D. course
- Academic Year: 2015/2016
Class Hours per Year: 3
University: Politecnico di Milano
- Course: Advanced data-driven methods for modeling and control (in English)
Ph.D. course
- Academic Year: 2014/2015
Class Hours per Year: 20
University: Università degli studi di Bergamo
- Course: Control prerequisites (in English)
Post-graduate Master program in Powertrain Engineering
- Academic Year: 2017/2018 - 2018/2019
Class Hours per Year: 12 - 12
University: IFP School, France

Course: Modeling, Identification and Simulation (in Italian)
Post-graduate Master program in Adaptive Manufacturing

Academic Year: 2014/2015 - 2015/2016

Class Hours per Year: 30 - 50

University: Università di Modena e Reggio Emilia (UNIMORE)

Course: Data-driven control system design (in English)
M.Sc. course

Academic Year: 2018/2019

Class Hours per Year: 15

University: Université Grenoble Alpes

Course: Statistical Learning for Automation Systems (in English)
M.Sc. course

Academic Year: 2018/2019 - 2019/2020

Class Hours per Year: 40 - 40

University: Politecnico di Milano

Course: Model Identification and Data Analysis (in Italian)
M.Sc. course

Academic Year: 2012/2013 - 2013/2014 - 2014/2015 - 2015/2016 - 2016/2017

Class Hours per Year: 60 - 60 - 48 - 48 - 48

University: Università degli studi di Bergamo

Course: Model Identification and Data Analysis (in English)
M.Sc. course

Academic Year: 2013/2014 - 2014/2015 - 2015/2016 - 2016/2017 - 2017/2018

Class Hours per Year: 32 - 32 - 30 - 30 - 30

University: Politecnico di Milano

Course: Model Identification and Adaptive Systems (in English)
M.Sc. course

Academic Year: 2012/2013

Class Hours per Year: 30

University: Politecnico di Milano

Course: Fundamentals of Automatic Control (in Italian)
B.Sc. course

Academic Year: 2016/2017 - 2017/2018 - 2018/2019 - 2019/2020

Class Hours per Year: 42 - 42 - 42 - 42

University: Politecnico di Milano

Tutorial Classes

Course: Fundamentals of Automatic Control (in Italian)
B.Sc. Course – Teacher: Prof. P. Bolzern

Academic Year: 2015/2016

Class Hours per Year: 6

University: Politecnico di Milano

Course: Model Identification and Data Analysis II (in Italian)
M.Sc. course – Teacher: Prof. S. Bittanti

Academic Year: 2013/2014

Class Hours per Year: 20

University: Politecnico di Milano

Course: Model Identification and Data Analysis (in Italian)
M.Sc. Course – Teacher: Prof. S. Bittanti

Academic Year: 2012/2013 - 2014/2015 - 2015/2016

Class Hours per Year: 20 - 20 - 20

University: Politecnico di Milano

Course: Model Identification and Data Analysis (in English)
M.Sc. Course – Teacher: Prof. S.M. Savaresi

Academic Year: 2012/2013

Class Hours per Year: 20

University: Politecnico di Milano

Course: Automatic Control (in Italian)
M.Sc. Course – Teacher: Prof. N. Schiavoni

Academic Year: 2009/2010 - 2010/2011

Class Hours per Year: 37 - 34

University: Politecnico di Milano

Course: Model Identification and Data Mining (for Biomedical Engineering, in Italian)
M.Sc. Course – Teacher: Prof. S.M. Savaresi

Academic Year: 2009/2010 - 2010/2011 - 2014/2015

Class Hours per Year: 28 - 12 - 28

University: Politecnico di Milano

Course: Advanced process control (in Italian until 2014/2015, then in English)
M.Sc. Course – Teacher: Prof. F. Casella

Academic Year: 2008/2009 - 2009/2010 - 2010/2011 - 2012/2013 - 2014/2015 - 2015/2016

Class Hours per Year: 8 - 6 - 6 - 8 - 6 - 4

University: Politecnico di Milano

Industrial courses

Course: Data analytics (in Italian, co-taught with S.C. Strada and M. Tanelli)

Academic Year: 2018/2019

Class Hours: 12

Company: Italtel Spa

Ph.D. Theses Advisor or Co-Advisor

- *Regularized kernel-based learning for system identification* - Ph.D. program in Engineering and Applied Sciences, Università degli studi di Bergamo. Student: M. Scandella. Università degli studi di Bergamo, November 2019.
- *Optimal asset allocation: a data-driven feedback control approach* - Ph.D. program in Engineering and Applied Sciences, Università degli studi di Bergamo. Student: G. Maroni. Università degli studi di Bergamo, November 2019.
- *Innovative approaches to the lateral control problem in cars* - Ph.D. program in Information Technology, Politecnico di Milano. Student: O. Galluppi. Politecnico di Milano, February 2019.
- *Automatic systems for unsafe lane change detection and avoidance* - Ph.D. program in Information Technology, Politecnico di Milano. Student: A. Amodio. Politecnico di Milano, February 2019.
- *Learning meets control: data analytics for dynamical systems* - Ph.D. program in Engineering and Applied Sciences, Università degli studi di Bergamo. Student: M. Mazzoleni. Università degli studi di Bergamo, November 2017.

- *Robustness in data-driven control: theory and automotive applications* - Ph.D. program in Information Technology, Politecnico di Milano. Student: G. Rallo. Politecnico di Milano, November 2017.
- *Optimal energy management of series hybrid electric vehicles* - Ph.D. program in Information Technology, Politecnico di Milano. Student: J. Guanetti. Politecnico di Milano, December 2015.

M.Sc. Theses Advisor or Co-Advisor

- *Extended Kalman filtering with switched covariance matrices: an application to roll angle estimation (in English)* - M.Sc. program in Computer Science and Engineering, Politecnico di Milano. Student: A. Castiglioni. Academic Year 2018-2019.
- *MPC-based Torque Vectoring Control for High Performance Electric Vehicles: a Bayesian Optimization Approach (in English)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: A. Lucchini. Academic Year 2018-2019.
- *Braking Pressure Control Design of a Brake-by-Wire Actuator for a Formula E (in English)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: S. Radrizzani. Academic Year 2018-2019.
- *Needs and locations of charging stations for electric mobility: a car-telematics data analysis (in English)* - M.Sc. program in Computer Science and Engineering, Politecnico di Milano. Student: F. Zinnari. Academic Year 2018-2019.
- *Identification and robust control of a brake-by-wire actuator: a randomized approach (in English)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: G. Riva. Academic Year 2018-2019.
- *Sviluppo e validazione di algoritmi per la stima della pressione pneumatici in motoveicoli (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: S. Imbesi. Academic Year 2017-2018.
- *Data-driven center of gravity estimation in road vehicles (in English)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Students: M. Falchi, G. Cavalieri. Academic Year 2017-2018.
- *Analisi, sviluppo e sperimentazione di metodi per la stima real-time della massa in veicoli a due ruote (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Students: D. Isgrò, G. Mantegazza. Academic Year 2017-2018.
- *Analysis and comparison of model-based and model-free side-slip angle estimators (in English)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Students: L. Callegaro, P. Sanfelice. Academic Year 2017-2018.
- *Optimal Energy Management of a Range-Extended Electric Bus (in English)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: Daniele D'Orto. Academic Year 2017-2018.
- *Identificazione semi-supervisionata per modelli NARX (in Italian)* - M.Sc. program in Computer Science and Engineering, Università degli Studi di Bergamo. Student: G. Bergamelli. Academic Year 2016-2017.
- *Analisi e sviluppo di un metodo di approssimazione stocastica delle matrici di covarianza del rumore nel filtraggio alla Kalman (in Italian)* - M.Sc. program in Computer Science and Engineering, Politecnico di Milano. Student: A. Meazzi. Academic Year 2016-2017.

- *A Kalman Filtering approach for traffic matrix estimation in computer networks (in English)* - M.Sc. program in Computer Science and Engineering, Politecnico di Milano. Student: G. Pozzi. Academic Year 2016-2017.
- *Direct data-driven control of cavity tuners in particle accelerators (in English)* - M.Sc. program in Engineering Physics, Politecnico di Milano. Student: R. Loddo. Academic Year 2016-2017.
- *Stock trading via feedback control: an extremum seeking approach (in English)* - M.Sc. program in Management Engineering, Politecnico di Milano. Student: C. Cantaro. **Unique advisor.** Academic Year 2015-2016.
- *Identificazione semi-supervisionata di modelli NFIR (in Italian)* - M.Sc. program in Computer Science and Engineering, Università degli Studi di Bergamo. Student: M. Scandella. Academic Year 2015-2016.
- *Analisi e sviluppo di un sistema di monitoraggio della pressione pneumatici per veicoli a due ruote (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: S. Della Pietra. Academic Year 2015-2016.
- *Il filtro particellare per la diagnostica dei guasti in ambito aerospaziale (in Italian)* - M.Sc. program in Computer Science and Engineering, Università degli Studi di Bergamo. Student: G. Maroni. Academic Year 2014-2015.
- *Analisi e sviluppo di un sensore virtuale della pressione dei pneumatici per veicoli stradali (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: L. Onesto. Academic Year 2014-2015.
- *Analisi e sviluppo di un sistema per la valutazione dello stile di guida nei trattori agricoli (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: R. Tassetti. Academic Year 2014-2015.
- *Controllo MIMO D^2 -IBC: teoria e applicazione al controllo di stabilità di un autoveicolo a guida autonoma (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: O. Galluppi. Academic Year 2014-2015.
- *Modelli dinamici per l'interpretazione e la predizione di dati di ascolto televisivo (in Italian)* - M.Sc. program in Computer Science and Engineering, Politecnico di Milano. Student: A. Mosconi. Academic Year 2013-2014.
- *Approcci data-based diretti per il progetto di controllori robusti con applicazione in ambito automotive (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: M. Vanoncini. Academic Year 2013-2014.
- *Algoritmi real-time per l'ottimizzazione della velocità di una barca a vela (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: A. Testa. Academic Year 2013-2014.
- *Analisi dinamica di devices di rete: modellistica e predizione (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Students: P. Giambi and E. Zappella. Academic Year 2012-2013.
- *Modellistica di un electric power steering e sviluppo di algoritmi per la riduzione della coppia di cogging (in Italian)* - M.Sc. program in Automation and Control Engineering, Politecnico di Milano. Student: M. Martines. Academic Year 2011-2012.

- *Analisi, sviluppo e ottimizzazione energetica del sistema elettronico di controllo di uno scooter elettrico (in Italian)* - M.Sc. program in Electronic Engineering, Politecnico di Milano. Students: M. Bongiorno, C. Rainato. Academic Year 2009-2010.
- *Progetto e analisi di efficienza di un azionamento per motore brushless di una bicicletta a pedalata assistita (in Italian)* - M.Sc. program in Electronic Engineering, Politecnico di Milano. Student: L. Visconti. Academic Year 2008-2009.

Mathematics and Physics Tutor

- Individually tutored high school students in Mathematics and Physics - Period: 2002-2008

INDUSTRIAL COLLABORATIONS

- *Data-driven control design for brake-by-wire actuators*, within a research contract between Politecnico di Milano and Brembo Spa (Curno - BG, Italy) - 2019.
- *On-line prediction of salary costs in maintenance companies*, within a research contract between Politecnico di Milano and Rekeep Spa (Zola Predosa - BO, Italy) - 2019.
- *Randomized control of brake-by-wire actuators*, within a research contract between Politecnico di Milano and Brembo Spa (Curno - BG, Italy) - 2018.
- *Preliminary analysis of a modeling approach for prediction of salary costs in maintenance companies*, within a research contract between Politecnico di Milano and Rekeep Spa (Zola Predosa - BO, Italy) - 2018.
- *Black-box aging estimation in vehicle dampers*, within a research contract between Politecnico di Milano and Maserati Spa (Modena, Italy) - 2017.
- *Data-driven energy consumption estimation in steel furnaces*, within a research contract between Politecnico di Milano, E-Novia Spa and ORI Martin Spa (Brescia - Italy) - 2017.
- *Data-driven estimation of a vehicle COG via suspension and inertial measurements*, within a research contract between Politecnico di Milano and Maserati Spa (Modena, Italy) - 2017.
- *GPS and inertial measurement based speed and heading estimation in boats*, within a research contract between Politecnico di Milano and Astrayacht Srl (Monfalcone - GO, Italy) - 2017.
- *Mixed cost/noise optimization for extended range electric vehicles*, within a research contract between Politecnico di Milano and Steyr Motors GmbH (Steyr, Austria) - 2017.
- *Black-box vehicle modeling for sideslip angle estimation*, within a research contract between Politecnico di Milano and Ferrari Spa (Maranello - MO, Italy) - 2017.
- *Data-driven mass estimation in tilting vehicles*, within a research contract between Politecnico di Milano and Piaggio Spa (Pontedera - PI, Italy) - 2017.
- *Clamping force estimation in brake-by-wire actuators*, within a research contract between Politecnico di Milano and Brembo Spa (Curno - BG, Italy) - 2017.
- *Automatic calibration of power-meters for high performance bikes*, within a research contract between Politecnico di Milano and Favero Electronics Srl (Arcade - TV, Italy) - 2016.
- *Clamping force estimation in electric parking brakes*, within a research contract between Politecnico di Milano and Brembo Spa (Curno - BG, Italy) - 2016.
- *Indirect TPMS for two-wheeled vehicles*, within a research contract between Politecnico di Milano and Ducati Spa (Borgo Panigale - BO, Italy) - 2016.

- *Driving style estimation in tractors*, within a research contract between Politecnico di Milano, E-Novia Srl and Argo Tractors Spa (Fabbrico - RE, Italy) - 2015/2016.
- *Advanced business analytics with system identification techniques*, within a research contract between Politecnico di Milano, E-Novia Spa and Pastificio Rana Spa (Verona - Italy) - 2015.
- *Indirect and hybrid TPMS via advanced estimation techniques*, within a research contract between Politecnico di Milano and Maserati Spa (Modena, Italy) - 2014/2015.
- *Automatic MOB (Man On Board) recovery*, within a research contract between Politecnico di Milano and Blupassion Srl (Santa Maria la Longa - UD, Italy) - 2014.
- *Energy optimization for extended range electric vehicles*, within a research contract between Politecnico di Milano and EP Tender Sas (Poissy Cedex, France) - 2013/2014.
- *Feedback control of gravimetric blenders for polymer processes*, within a research contract between Università degli studi di Bergamo and Doteco Spa (Mirandola - MO, Italy) - 2013.
- *Data-driven corrections of wind sensor errors in sailboats*, within a research contract between Politecnico di Milano and Astrayacht Srl (Monfalcone - GO, Italy) - 2013.
- *Data-driven emission modeling for Diesel engines*, within a research contract between Johannes Kepler University of Linz and Liebherr GmbH (Linz, Austria) - 2011.
- *Innovative control algorithms for lightweight electric vehicles*, within a research contract between Politecnico di Milano and Italianimoto Srl (Osio Sopra - BG, Italy) - 2009/2010.
- *Traction control for drive-by-wire applications in racing motorbikes*, within a research contract between Politecnico di Milano and Aprilia Spa (Noale - VE, Italy) - 2008.

GRANTS AND CONTRACTS

- *Data-driven design of constrained control systems* (coordinator of the Milan unit), PRIN project funded by Italian Ministry of University and Research (MIUR), 420k€, 2019
- *Reactive trading strategies for oil&gas commodities*, joint project between Politecnico di Milano and ENEL Spa, 29.12k€, 2019
- *Advanced data analytics in manufacturing*, joint project between Politecnico di Milano and Tenaris Spa (Dalmine - BG, Italy), funded by Tenaris Spa, 30k€, 2018
- *Modeling and prediction of salary costs in maintenance companies*, joint project between Politecnico di Milano and Manutencoop Spa (Zola Predosa - BO, Italy), funded by Manutencoop Spa, 34.5k€, 2018
- *Finanziamento delle Attività Base di Ricerca (FFABR)*, funded by Italian Ministry of University and Research (MIUR), 3k€, 2017
- *Learning to Control (L2C)*, funded by Fondazione Cariplo and Lombardia Region (~ 18% acceptance rate), 99k€, 2017
- *GPS and inertial measurement based speed and heading estimation in boats*, joint project between Politecnico di Milano and Astrayacht Srl (Monfalcone - GO, Italy), funded by Astrayacht Srl, 15k€, 2017
- One-month visiting fellowship (1st ranked over 25 candidates) at Université Grenoble Alpes (UGA), France, funded by UGA, 2017

PARTICIPATION IN REGIONAL, NATIONAL AND INTERNATIONAL RESEARCH PROJECTS

- *Data-driven design of constrained control systems*
 Period: 4/2019-4/2022
 Partners: Politecnico di Milano, University of Padova, IMT Lucca
 Funded by: MIUR (Italian Ministry for University and Research)
- *Learning to Control (L2C)*
 Period: 2/2018-2/2020
 Partner: Politecnico di Milano
 Funded by: Fondazione Cariplo and Lombardia Region
- *i-Share*
 Period: 11/2016-4/2018
 Partners: E-novia Spa, Zed Milano Srl, Politecnico di Milano
 Funded by: Regione Lombardia
- *Adaptive Suspension Control for Bicycle*
 Period: 7/2016-12/2017
 Partners: E-shock Srl, Bertone Design Srl, Politecnico di Milano
 Funded by: Regione Lombardia (Smart Fashion and Design call)
- *New methods for Identification and Adaptive Control for Industrial Systems*
 Period: 1/2009-12/2011
 Partner: Politecnico di Milano
 Funded by: MIUR (Italian Ministry for University and Research)
- *Methods and tools of self-optimizing control of complex mechatronical systems*
 Period: 1/2009-12/2011
 Partners: Johannes Kepler University of Linz, Politecnico di Milano, Imperial College London, Katholieke Universiteit Leuven.
 Funded by: ACCM (Austrian Center of Competence in Mechatronics)

PARTECIPATION IN SCIENTIFIC EVENTS

Committees

- Member of the international program committees of the 21st IFAC World Congress 2020, to be held in Berlin, Germany, 2020.
- Member of the international program committees of the 3rd IFAC Workshop on Linear Parameter Varying Systems (LPVS), to be held in Eindhoven, The Netherlands, 2019.
- Member of the international program committee of the 18th IFAC Symposium on System Identification (SYSID), Stockholm, Sweden, July 9-11, 2018.
- Member of the international program committees of the 9th IFAC/IEEE Symposium on Robust Control Design (ROCOND) and the 2nd IFAC Workshop on Linear Parameter Varying Systems (LPVS), Florianópolis, Brasil, September 3-5, 2018.
- Member of the international program committee of the 1st IFAC workshop on Linear Parameter Varying Systems (LPVS), Grenoble, France, September 7-9, 2015.
- Member of the national program committee of the Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Bergamo, Italy, September 8-10, 2014.

Attendance to international conferences/workshops

- "27th ERNSI Workshop", Maastricht, The Netherlands, September 22-25, 2019.
- "18th European Control Conference", Napoli, Italy, June 24-28, 2019.
- "57th IEEE Conference on Decision and Control", Miami Beach, FL, USA, December 17-19, 2018.
- "26th ERNSI Workshop", Cambridge, UK, September 23-26, 2018.
- "18th IFAC Symposium on System Identification", Stockholm, Sweden, July 9-11, 2018.

- "31st Annual Conference on Learning Theory", Stockholm, Sweden, July 6-9, 2018.
- "17th European Control Conference", Limassol, Cyprus, June 13-15, 2018.
- "56th IEEE Conference on Decision and Control", Melbourne, Australia, December 12-15, 2017.
- "25th ERNSI Workshop", Lyon, France, September 24-27, 2017.
- "BITFEST: Perspectives on System Identification and Control Science", Como, Italy, July 17-18, 2017.
- "20th IFAC World Congress", Toulouse, France, July 9-14, 2017.
- "55th IEEE Conference on Decision and Control", Las Vegas, NV, USA, December 12-14, 2016.
- "24th ERNSI Workshop", Cison di Valmarino, Italy, September 25-28, 2016.
- "17th IFAC Symposium on System Identification", Beijing, China, October 19-21, 2015.
- "1st IFAC Workshop on Linear Parameter Varying Systems", Grenoble, France, October 7-9, 2015.
- "53rd IEEE Conference on Decision and Control", Los Angeles, CA, USA, December 15-17, 2014.
- "22nd ERNSI Workshop", Ostend, Belgium, September 21-24, 2014.
- "19th IFAC World Congress", Cape Town, South Africa, August 25-29, 2014.
- "52nd IEEE Conference on Decision and Control", Firenze, Italy, December 10-13, 2013.
- "ASME Dynamic Systems and Control Conference 2013", Stanford, CA, USA, October 21-23, 2013.
- "12th European Control Conference", Zurich, Switzerland, July 17-19, 2013.
- "16th IFAC Symposium on System Identification", Brussels, Belgium, July 11-13, 2012.
- "50th IEEE Conference on Decision and Control", Orlando, FL, USA, December 12-15, 2011.
- "18th IFAC World Congress", Milano, Italy, August 28 - September 2, 2011.
- "49th IEEE Conference on Decision and Control", Atlanta, GA, USA, December 13-15, 2010.
- "8th IFAC Symposium on Nonlinear Control Systems", Bologna, Italy, September 1-3, 2010.

Attendance to national conferences/workshops

- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Milan, Italy, September 11-13, 2017.
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Bergamo, Italy, September 8-10, 2014.
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Palermo, Italy, September 16-18, 2013.
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Benevento, Italy, September 12-14, 2012.
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), L'Aquila, Italy, September 13-15, 2010.

EDITORIAL ACTIVITY

Editorships

Since 2015, he is an Associate Editor of the Conference Editorial Board of the IEEE Control System Society.

Reviews

Since 2009, he has served as a reviewer for *Automatica*, *IEEE Transactions on Automatic Control*, *International Journal of Adaptive Control and Signal Processing*, *Control Engineering Practice*, *IEEE Transactions on Control Systems Technology* and for several IFAC/IEEE conferences.

Memberships

- Since 2020, he has been Chair of the IEEE CSS technical committee (TC) on System Identification and Adaptive Control.
- Since 2016, he has been the Social Media representative for the IFAC TC on Robust Control.
- He is a member of the Institute of Electrical and Electronics Engineers (IEEE) and the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.).
- He is a member of the following TCs: IEEE CSS TC on System Identification and Adaptive Control, IFAC TC on Modelling, Identification and Signal Processing, IFAC TC on Robust Control.

AWARDS

“Best Young Author Journal Paper Award” of the Italy Chapter of the IEEE Control Systems Society for the paper “Robust Linear Static Anti-Windup With Probabilistic Certificates”. Motivation: *“The paper proposes a novel and promising paradigm for approaching robust static anti-windup design and performance analysis for saturated linear closed loops in the presence of nonlinear probabilistic parameter uncertainties via randomized techniques”*. Milan, Italy **June 2017**

“Technical innovation Prize” for the driving style estimator developed with Argo Tractors Spa at EIMA International Exposition 2016, Bologna, Italy **November 2016**

Best oral presentation award at the Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Bergamo, Italy **September 2014**

“Famiglia Legnanese” award for best students in AltoMilanese funded by Quaglia & Colombo s.r.l., Legnano, MI (Italy) **December 2008**

INVITED TALKS

- *Direct data-driven design of constrained control systems.*
Department of Engineering Cybernetics, NTNU Trondheim, Norway, May 21, 2019.
- *Direct data-driven design of switching controllers.*
Dynamical Systems Control and Optimization (DYSCO) research unit, IMT Lucca, Italy, May 13, 2019.
- *Direct data-driven design of linear control systems with constraints.*
Institute for Systems Theory and Automatic Control, University of Stuttgart, Germany, April 18, 2018.
- *Robust anti-windup augmentation via randomized optimization.*
GIPSA-Lab, Université Grenoble Alpes, France, May 18, 2017.
- *Direct design of LPV controllers from data.*
Department of Automatic Control, Lund University, Sweden, August 26, 2015.
- *Direct data-driven control of linear parameter-varying systems.*
Dynamical Systems Control and Optimization (DYSCO) research unit, IMT Lucca, Italy, July 08, 2015.
- *Recent results and open issues in direct data-driven control system design*
Department of Automatic Control, KTH Stockholm, Sweden, May 04, 2015.
- *Direct control system design from data: overview and new challenges*
ONERA DCSD, Toulouse, France, April 16, 2015.
- *On robust static anti-windup augmentation with probabilistic certificates*
Laboratoire d'Analyse et d'Architecture des Systèmes, CNRS Toulouse, France, April 14, 2015.
- *Learning controllers from data: overview and new perspectives*
EECS, UC Berkeley, California (USA), October 24, 2013.
- *“To model or not to model”: an insight into control system design using experimental data*
Department of Electrical Engineering, TU Eindhoven, The Netherlands, September 11, 2013.
- *A comparison between model-based and data-driven control system design*
Laboratoire d'Automatique, EPFL Lausanne, Switzerland, April 12, 2013.
- *Tuning controllers from data: a statistical perspective*
Laboratoire d'Analyse et d'Architecture des Systèmes, CNRS Toulouse, France, June 12, 2012.

UNIVERSITY SERVICES

September 2018 – Today

Member of the admissions committee to the M.Sc. program in Automation and Control Engineering at Politecnico di Milano

September 2018 – Today

Vice-President of the final examination committee for the M.Sc. program in Automation and Control Engineering at Politecnico di Milano

PERSONAL SKILLS, COMPETENCES AND ACTIVITIES

Languages

Italian (Mother tongue), English (C1 level, TOEFL iBT 2008), French (B1 level, DELF 2003)

Computer skills and competences

Operative systems: Windows, Mac OS
Software packages: Office, Matlab/Simulink, CarSim
Programming: C, Python

Sports

Judo (black belt I Dan), Karate (V kyu), Ninjitsu (I kyu), Swimming, Skiing

Artistic skills and competences

Bass-guitar, organ

Voluntary work

Fellow of the italian association of blood donors (AVIS) since 2002

Driving licence

Car licence (international)

PUBLICATIONS

International Journals*Published/accepted*

[J39] V. Breschi, S. FORMENTIN

Direct data-driven design of switching controllers.

International Journal of Robust and Nonlinear Control. Accepted.

[J38] F. Bianchi, S. FORMENTIN, L. Piroddi

Process noise covariance estimation via stochastic approximation.

International Journal of Adaptive Control and Signal Processing. Accepted. DOI: 10.1002/acs.3068.

[J37] M. Parigi Polverini, S. FORMENTIN, L. Merzagora, P. Rocco

Mixed data-driven and model-based robot implicit force control: a hierarchical approach.

IEEE Transactions on Control Systems Technology. Accepted. DOI: 10.1109/TCST.2019.2908899.

[J36] S. Gelmini, S. FORMENTIN, S.C. Strada, M. Tanelli, S.M. Savaresi

fierClass: a multi-signal, cepstrum-based, time series classifier.

IFAC Engineering Applications of Artificial Intelligence, vol. 87, pages 1–11, January 2020.

[J35] O. Galluppi, S. FORMENTIN, C. Novara, S.M. Savaresi

Multivariable D^2 -IBC and application to vehicle stability control.

ASME Journal of Dynamic Systems, Measurement and Control, vol. 141, no. 10, pages 1-12, October 2019.

- [J34] A. Amodio, M. Ermidoro, D. Maggi, S. FORMENTIN, S.M. Savaresi
Automatic detection of driver impairment based on pupillary light reflex.
IEEE Transactions on Intelligent Transportation Systems, vol. 20, no. 8, pages 3038–3048, August 2019.
- [J33] D. Piga, M. Forgione, S. FORMENTIN, A. Bemporad
Performance-oriented model learning for data-driven MPC design.
IEEE Control Systems Letters, vol. 3, no. 3, pages 577–582, July 2019.
- [J32] S. FORMENTIN, M. Mazzoleni, M. Scandella, F. Previdi
Nonlinear system identification via data augmentation.
Systems and Control Letters, vol. 128, pages 56–63, June 2019.
- [J31] S. FORMENTIN, M.C. Campi, A. Caré, S.M. Savaresi
Deterministic continuous-time Virtual Reference Feedback Tuning (VRFT) with application to PID design.
Systems and Control Letters, vol. 127, pages 25–34, May 2019.
- [J30] S. FORMENTIN, S. Garatti, G. Rallo, S.M. Savaresi
Robust direct data-driven controller tuning with an application to vehicle stability control.
International Journal of Robust and Nonlinear Control, vol. 28, no. 12, pages 3752–3765, August 2018.
- [J29] D. Piga, S. FORMENTIN, A. Bemporad
Direct data-driven control of constrained systems.
IEEE Transactions on Control Systems Technology, vol. 26, no. 4, pages 1422–1429, July 2018.
- [J28] G. Rallo, S. FORMENTIN, M. Corno, S.M. Savaresi
Real-time cycling cadence estimation via wheel speed measurement.
International Journal of Adaptive Control and Signal Processing, vol. 32, no. 7, pages 1052–1066, July 2018.
- [J27] G. Rallo, S. FORMENTIN, S.M. Savaresi
On-line model-based wheel speed filtering for geometrical error compensation.
IFAC Mechatronics, vol. 50, pages 189–195, April 2018.
- [J26] C. Novara, S. FORMENTIN
Data-driven inversion-based control of nonlinear systems with guaranteed closed-loop stability.
IEEE Transactions on Automatic Control, vol. 63, no. 4, pages 1147–1154, April 2018.
- [J25] J. Guanetti, S. FORMENTIN, M. Corno, S.M. Savaresi
Optimal energy management in series hybrid bicycles.
Automatica, vol. 81, pages 96–106, July 2017.
- [J24] S. FORMENTIN, F. Dabbene, R. Tempo, L. Zaccarian, S.M. Savaresi
Robust linear static anti-windup with probabilistic certificates.
IEEE Transactions on Automatic Control, vol. 62, no. 4, pages 1575–1589, April 2017 (**Best Young Author Journal Paper Award of the Italian Chapter of the IEEE CSS**).
- [J23] J. Guanetti, S. FORMENTIN, S.M. Savaresi
Energy management for an electric vehicle with a rental range extender: a least-costly approach.
IEEE Transactions on Intelligent Transportation Systems, vol. 17, no. 11, pages 3022–3034, November 2016.
- [J22] M. Ermidoro, A.L. Cologni, S. FORMENTIN, F. Previdi
Fixed-order gain-scheduling control of overhead bridge cranes.
IFAC Mechatronics, vol. 39, pages 237–247, November 2016.
- [J21] C. Novara, S. FORMENTIN, S. M. Savaresi, M. Milanese
Data-driven design of two degree-of-freedom nonlinear controllers: the D^2 -IBC approach.
Automatica, vol. 72, pages 19–27, October 2016.

- [J20] F. Todeschini, S. FORMENTIN, G. Panzani, M. Corno, S. M. Savaresi, L. Zaccarian
Nonlinear pressure control for BBW systems via dead zone and anti-windup compensation.
IEEE Transactions on Control Systems Technology, vol. 24, no. 4, pages 1419–1431, July 2016.
- [J19] S. FORMENTIN, J. Guanetti, S. M. Savaresi
Least costly energy management for series hybrid electric vehicles.
Control Engineering Practice, vol. 48, pages 37–51, March 2016.
- [J18] M. Corno, S. FORMENTIN, S. M. Savaresi
Data-Driven online speed optimization in autonomous sailboats.
IEEE Transactions on Intelligent Transportation Systems, vol. 17, no. 3, pages 762–771, March 2016.
- [J17] S. FORMENTIN, D. Piga, R. Tóth, S. M. Savaresi
Direct learning of LPV controllers from data.
Automatica, vol. 65, no. 1, pages 98–110, March 2016.
- [J16] S. FORMENTIN, C. Novara, S. M. Savaresi, M. Milanese
Active braking control system design: the D^2 -IBC approach.
IEEE/ASME Transactions on Mechatronics, vol. 20, no. 4, pages 1573–1584, August 2015.
- [J15] C. Benatzky, S. Stadlbauer, S. FORMENTIN, A. Schilling and D. Alberer
Indicated Pressure-based Data Driven Diesel Engine NO_x Modeling.
International Journal of Engine Research, vol. 15, no. 8, pages 934–943, December 2014.
- [J14] S. FORMENTIN, K. van Heusden, A. Karimi
A comparison of model-based and data-driven controller tuning.
International Journal of Adaptive Control and Signal Processing, vol. 28, no. 10, pages 882–897, October 2014.
- [J13] S. FORMENTIN, A. L. Cologni, F. Previdi, S. M. Savaresi
A data-driven approach to control of batch processes with an application to a gravimetric blender.
IEEE Transactions on Industrial Electronics, vol. 61, no. 11, pages 6383–6390, November 2014.
- [J12] A. G. Bianchessi, G. Cugola, S. FORMENTIN, A. Morzenti, C. Ongini, E. Panigati, M. Rossi, S. M. Savaresi, F. Schreiber, L. Tanca, E. Vannutelli Depoli
Green Move: a platform for highly configurable, heterogeneous electric vehicle sharing.
IEEE Intelligent Transportation Systems Magazine. vol. 6, no. 3, pages 96–108, October 2014.
- [J11] T. E. Passenbrunner, S. FORMENTIN, S. M. Savaresi, L. Del Re
Direct multivariable controller tuning for internal combustion engine test benches.
Control Engineering Practice, vol. 29, pages 115–122, August 2014.
- [J10] S. FORMENTIN, A. Karimi
Enhancing statistical performance of data-driven controller tuning via L_2 -regularization.
Automatica, vol. 50, no. 5, pages 1514–1520, May 2014.
- [J9] S. FORMENTIN, M. Corno, D. Alberer, C. Benatzky, S. M. Savaresi
 NO_x -estimation in Diesel engines via in-cylinder pressure measurement.
IEEE Transactions on Control Systems Technology. vol. 22, no. 1, pages 396 – 403, January 2014.
- [J8] S. FORMENTIN, D. Berretta, N. Urbano, I. Boniolo, P. De Filippi, S. M. Savaresi
A parking assistance system for small-scale boats.
IEEE/ASME Transactions on Mechatronics. vol. 18, no. 6, pages 1844 – 1849, December 2013.
- [J7] S. FORMENTIN, A. Karimi
A data-driven approach to mixed-sensitivity control with application to an active suspension system.
IEEE Transactions on Industrial Informatics. vol. 9, no. 4, pages 2293 – 2300, November 2013.

- [J6] S. FORMENTIN, A. Karimi, S. M. Savaresi
Optimal input design for direct data-driven tuning of model-reference controllers.
Automatica, vol. 49, no. 6, pages 1874 – 1882, June 2013.
- [J5] S. Bottelli, H. Waschl, S. M. Savaresi, L. Del Re, S. FORMENTIN
Data-driven estimation of exhaust manifold pressure by use of in-cylinder pressure information.
SAE International Journal of Engines, vol. 6, no. 1, pages 659 – 668, May 2013.
- [J4] S. FORMENTIN, P. De Filippi, M. Corno, M. Tanelli, S. M. Savaresi
Data-driven design of braking control systems.
IEEE Transactions on Control Systems Technology, vol. 21, no. 1, pages 186 – 193, January 2013.
- [J3] S. Stadlbauer, D. Alberer, M. Hirsch, S. FORMENTIN, C. Benatzky, L. Del Re
Evaluation of virtual NO_x sensor models for off road heavy duty Diesel engines.
SAE International Journal of Commercial Vehicles, vol. 5, no. 1, pages 128 – 140, July 2012.
- [J2] S. FORMENTIN, S. M. Savaresi, L. Del Re
Noniterative direct data-driven tuning of multivariable controllers: theory and application.
IET Control Theory and Applications, vol. 6, no. 9, pages 1250 – 1257, June 2012.
- [J1] S. FORMENTIN, M. Corno, S. M. Savaresi, L. Del Re
Direct data-driven control of linear time-delay systems.
Asian Journal of Control, vol. 14, no. 3, pages 652 – 663, May 2012.

Submitted

- [JS4] G. Pozzato, M. Müller, S. FORMENTIN, S.M. Savaresi
Economic MPC for Online Least Costly Energy Management of Hybrid Electric Vehicles.
Control Engineering Practice.
- [JS3] S. FORMENTIN, A. Chiuso
Control-oriented regularization for linear system identification.
Automatica.
- [JS2] G. Pozzato, S. FORMENTIN, G. Panzani, S.M. Savaresi
Optimal Energy Management of Extended Range Electric Vehicles with Noise Emissions and Start-up Characterization.
European Journal of Control.
- [JS1] V. Breschi, S. FORMENTIN, G. Rallo, M. Corno, S.M. Savaresi
Vehicle sideslip estimation via kernel-based LPV identification: theory and experiments.
Automatica.

Book Chapters

- [B7] D. Arzelier, F. Dabbene, S. FORMENTIN, D. Peaucelle, L. Zaccarian
Robust Static Output Feedback Design with Deterministic and Probabilistic Certificates.
In: “Uncertainty in Complex Networked Systems”, T. Başar ed., Springer, 2018.
- [B6] S. FORMENTIN, C. Ongini, S.M. Savaresi
A smartphone-based energy-oriented driving assistance system.
In: “Electric Vehicle Sharing Services for Smarter Cities”, D.F. Bignami, A. Colorni Vitale, A. Lué, R. Nocerino, M. Rossi, S.M. Savaresi ed., Springer, 2017.
- [B5] S. FORMENTIN, A.G. Bianchessi, S.M. Savaresi
Automatic fleet balancing in one-way VSSs via closed-loop dynamic pricing.
In: “Electric Vehicle Sharing Services for Smarter Cities”, D.F. Bignami, A. Colorni Vitale, A. Lué, R. Nocerino, M. Rossi, S.M. Savaresi ed., Springer, 2017.

- [B4] A.G. Bianchessi, G. Cugola, S. FORMENTIN, A. Morzenti, C. Ongini, E. Panigati, M. Rossi, F.A. Schreiber, S.M. Savaresi, L. Tanca, E.G. Vannutelli Depoli
Architecture of the Green Move System.
In: “Electric Vehicle Sharing Services for Smarter Cities”, D.F. Bignami, A. Colomi Vitale, A. Lué, R. Nocerino, M. Rossi, S.M. Savaresi ed., Springer, 2017.
- [B3] S. FORMENTIN, G. Panzani, S. M. Savaresi
Virtual Reference Feedback Tuning (VRFT) for LPV systems: application to automotive control
In: “Robust and LPV methods : theory and applications to vehicle dynamics”, O. Sename, P. Gaspar and J. Bokor ed., Lecture Notes in Control and Information Sciences, Vol. 437, Springer. 2013.
- [B2] M. Hirsch, D. Alberer, L. Del Re, S. FORMENTIN, S.M. Savaresi
Direct and indirect methods for DoE of automotive systems.
In: “Design of Experiments (DoE) in Engine Development: Innovative Development Methods for Vehicle Engines”, Karsten Ropke ed., Expert-Verlag, 2011.
- [B1] S. FORMENTIN, S. M. Savaresi
An Overview on System-Identification Problems in Vehicle Chassis Control
In: “Identification for Automotive Systems”, D. Alberer, H. Hjalmarsson and L. Del Re ed., Springer-Verlag, 2011.

International Conferences

Published/accepted

- [C83] A. Scampicchio, A. Chiuso, S. FORMENTIN, G. Pillonetto
Bayesian kernel-based linear control system design.
58th IEEE Conference on Decision and Control, Nice, France, 2019. Accepted.
- [C82] D. Savaresi, F. Favalli, S. FORMENTIN, S.M. Savaresi
On-line damping estimation in road vehicle semi-active suspension systems.
9th IFAC International Symposium on Advances in Automotive Control (AAC), Orléans, France, 2019. Accepted.
- [C81] G. Pozzato, S. FORMENTIN, G. Panzani, S.M. Savaresi
Least Costly Energy Management for Extended-Range Electric Vehicles with Noise Emissions Characterization.
9th IFAC International Symposium on Advances in Automotive Control (AAC), Orléans, France, 2019. Accepted.
- [C80] S. Gelmini, S. FORMENTIN, S.C. Strada, M. Tanelli, S.M. Savaresi
Automatic driver phone hand-usage detection: A cepstrum-based approach.
European Control Conference (ECC), Naples, Italy, 2019, pages 710–715.
- [C79] V. Breschi, S. FORMENTIN, G. Scarciotti, A. Astolfi
Simulation-driven fixed-order controller tuning via moment matching.
European Control Conference (ECC), Naples, Italy, 2019, pages 2307–2312.
- [C78] G. Maroni, S. FORMENTIN, F. Previdi
A robust design strategy for stock trading via feedback control.
European Control Conference (ECC), Naples, Italy, 2019, pages 477–482.
- [C77] S. FORMENTIN, A. Chiuso
CoRe: Control-oriented Regularization for System Identification.
57th IEEE Conference on Decision and Control, Miami Beach (FL), USA, 2018, pages 2253–2258.

- [C76] M. Mazzoleni, M. Scandella, S. FORMENTIN, F. Previdi
Classification of light charged particles via learning-based system identification.
57th IEEE Conference on Decision and Control, Miami Beach (FL), USA, 2018, pages 6053–6058.
- [C75] G. Rallo, S. FORMENTIN, C. Rojas, S.M. Savaresi
Robust Experiment Design for Virtual Reference Feedback Tuning.
57th IEEE Conference on Decision and Control, Miami Beach (FL), USA, 2018, pages 2271–2276.
- [C74] S. FORMENTIN, G. Rallo, S.M. Savaresi
Data-driven clamping force control for an Electric Parking Brake without speed measurement.
57th IEEE Conference on Decision and Control, Miami Beach (FL), USA, 2018, pages 5128–5133.
- [C73] D. Isgrò, G. Mantegazza, S. FORMENTIN, G. Panzani, S.M. Savaresi
On-line data-based load classification in narrow-track vehicles.
21st IEEE Conference on Intelligent Transportation Systems (ITSC), Maui, Hawaii, USA, 2018, pages 3724–3729.
- [C72] G. Pozzato, S. FORMENTIN, G. Panzani, S.M. Savaresi
Least Costly Energy Management for Extended Range Electric Vehicles with Start-up Characterization.
IEEE Conference on Control Technology and Applications, Copenhagen, Denmark, 2018, pages 1020–1025.
- [C71] S. FORMENTIN, F. Previdi, G. Maroni, C. Cantaro
Stock trading via feedback control: an extremum seeking approach.
26th Mediterranean Conference on Control and Automation, Zadar, Croatia, 2018, pages 523–528.
- [C70] A. Zanchettin, S. FORMENTIN, R. Loddo, R. Paparella
Direct Data-Driven Control of Cavity Tuners in Particle Accelerators.
IFAC Symposium on System Identification, Stockholm, Sweden, 2018, pages 138–143.
- [C69] G. Pozzi, S. FORMENTIN, P. Lluka, S. Bittanti
A Kalman filtering approach to traffic flow estimation in computer networks.
IFAC Symposium on System Identification, Stockholm, Sweden, 2018, pages 37–42.
- [C68] M. Mazzoleni, S. FORMENTIN, M. Scandella, F. Previdi
Identification of nonlinear dynamical system with synthetic data: a preliminary investigation.
IFAC Symposium on System Identification, Stockholm, Sweden, 2018, pages 622–627.
- [C67] S. FORMENTIN, I. Markovsky
A comparison between structured low-rank approximation and correlation approach for data-driven output tracking.
IFAC Symposium on System Identification, Stockholm, Sweden, 2018, pages 1068–1073.
- [C66] F. Reghenzani, S. FORMENTIN, G. Massari, W. Fornaciari
A constrained extremum-seeking control for CPU thermal management.
4th Workshop on design of Low Power Embedded Systems, Ischia, Italy, 2018, pages 320–325.
- [C65] D. Nava, S. FORMENTIN, S.M. Savaresi
Online power meter calibration for accurate cyclist power control.
European Control Conference (ECC), Limassol, Cyprus, 2018, pages 3038–3043.
- [C64] M. Mazzoleni, S. FORMENTIN, M. Scandella, F. Previdi
Semi-supervised learning of dynamical systems: a preliminary study.
European Control Conference (ECC), Limassol, Cyprus, 2018, pages 2824–2829.
- [C63] P. Kergus, S. FORMENTIN, C. Poussot-Vassal, F. Demourant
Data-driven control design in the Loewner framework: dealing with stability and noise.
European Control Conference (ECC), Limassol, Cyprus, 2018, pages 1704–1709.

- [C62] G. Rallo, S. FORMENTIN, C. Rojas, T. Oomen, S.M. Savaresi
Data-driven \mathcal{H}_∞ -norm estimation via expert advice.
56th IEEE Conference on Decision and Control, Melbourne, Australia, 2017, pages 1560–1565.
- [C61] S. FORMENTIN, S. Garatti, M.C. Campi, S.M. Savaresi
Tuning regularization via scenario optimization.
56th IEEE Conference on Decision and Control, Melbourne, Australia, 2017, pages 635–640.
- [C60] S. Sabatini, S. FORMENTIN, G. Panzani, J. de-J. Lozoya Santos, S.M. Savaresi
Motorcycle tire rolling radius estimation for TPMS applications via GPS sensing.
IEEE Conference on Control Technology and Applications, Kohala Coast, Hawaii, USA, 2017, pages 1892–1897.
- [C59] M. Mazzoleni, G. Maroni, Y. Maccarana, S. FORMENTIN, F. Previdi
Fault detection in airliner electro-mechanical actuators via hybrid particle filtering.
20th IFAC World Congress, Toulouse, France, 2017, pages 2915–2920.
- [C58] P. Kergus, C. Poussot-Vassal, F. Demourant, S. FORMENTIN
Frequency domain data-driven control design in the Loewner framework.
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Applicant: Brembo S.p.A. and Politecnico di Milano
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Applicant: Favero Electronics S.r.l. and Politecnico di Milano
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Applicant: Politecnico di Milano
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