

Matteo Corno

PERSONAL DATA

Matteo Corno
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CURRENT POSITION

Associate Professor

Politecnico di Milano
Milan, Italy
Jan. 16th, 2015 – Present

Associate Professor at the Dipartimento di Elettronica, Informazione e Bioingegneria. I leads a group of post-docs, PhD students and Master Students in projects in the fields of vehicle dynamics control, electric vehicles, battery management systems.

RESEARCH STATEMENT

My research has revolved around finding methodologically sound solutions to relevant control engineering problems in a variety of fields. During my academic career, I focused on three main topics 1) wheeled vehicles dynamics control, 2) battery state estimation and 3) modeling and control of human powered electric hybrid vehicles.

I started working on wheeled vehicles dynamics control during my PhD and I developed this direction in close collaboration with the leading industries in the field: Maserati, Ferrari, Aprilia, Piaggio, FIAT Group, Harley-Davidson, Ducati, and MV Agusta. My work considers both four wheeled vehicles and powered two wheelers. My publications on these topics are representative on my balance between applications and theory; from the scientific point of view papers [J.29, J.24, J.19, J.11, J.9, J.6, J.4] are worth of mention. [J.2] received a best paper award. In those papers, each application problem is modeled, analyzed and solved, formally proving the performance of the proposed control law. Most problems are solved using nonlinear control techniques, mainly Linear Parameter Varying systems [J.6, J.15], and Lyapunov based analysis [J.12]. In 2014, the expertise and scientific network build over the years brought to the publication of an edited book [EB.1] with two colleagues. The industrial relevance of my work is proven by several patents. In particular, the result of my research are being employed in the APRC (Aprilia Performance Ride Control) [P.1, P.2, P.4, P.6], unanimously referred to by the technical press as the best and most complete traction control system for sport motorcycles available on the market. My work on motorcycle dynamics and control also lead to the design of several mechatronics systems to be employed on motorcycles: semi-active steering dampers, electronic-throttle body, and braking actuators. . At this time, two colleagues and I are finalizing a book on powered two wheelers dynamics control to be published in 2018 by Springer. Since 2015, I am leading a multi-year collaboration with Magneti-Marelli aimed at developing vehicle dynamic control algorithms form autonomous driving; with specific focus on highly dynamic driving: obstacle avoidance, race track driving and low friction

driving.

While assistant professor at TU Delft, I independently developed my research line on lithium ion battery state estimation. During my two years at Delft, I was able to get my research funded with three projects: a Honda Initiation Grant (for which I was principal investigator), an industrial partnership with a TU Delft spin-off, Epyon (now ABB). My main contribution in this field is the application of the Semi-Separable Structure matrix algebra to battery state estimation. The use of this efficient algebra [J.27, C.50, C.34, C.28] enables the real time use of electrochemical models; which is advantageous in terms of accuracy as the diffusion dynamics is better accounted for. [J.26] proves the feasibility of the method for State of Charge estimation; I am now working on the extension of the method to state of health estimation. Starting from 2015, I am the principal investigator of a 300.000 euros project (funded by the Italian Ministry of Scientific Research) on li-ion battery estimation.

Upon returning to Politecnico di Milano, beside working on battery state estimation, I pushed forward the research on vehicle dynamics and control starting to explicitly consider the role of the human in a genuine and innovative human-in-the-loop approach. This idea is embodied in two directions; in the first direction the classical vehicle dynamics control algorithms are re-designed accounting for the role of the driver [J.24, J.21, J.16, J.13]. In particular in [J.21], I developed, tested, and validated a haptic based traction control system. The study of this system asked for the extension of the passivity framework to systems with delays. The second direction focuses on human-powered electric hybrid vehicles (mainly bicycles) [J.28, J.33, J.34, J.38, C.51, C.43, C.42, C.37, C.26]. The rationale of this research is that of applying the ICE-electric hybrid paradigms to human powered vehicles. This calls for new models (to account for the human factors from a dynamical point of view), new cost functions (as the concept of equivalent fuel consumption cannot be directly applied to human fatigue) and of course new optimization control strategies. [C.36] presents the first charge sustaining electric bicycle. The results of our team have lead to the creation of two start-up compainies: a) zeHus (www.zehus.it) a Politecnico di Milano spin-off (of which I am one of the founding partners) that is commercially exploiting the concept of charge sustaining electrically power assisted bicycles and to the creation. b) blubrake (www.blubrake.it) another Politecnico di Milano spin-off company whose goal is the industrialization of mechatronics-based braking support and control systems for the bicycle industry.

My track record shows a research approach that is very connected to the industrial substrate. My industrial network serves at the same time as an inspiration for new research directions and the crucible where research results are put to the experimental test.

Matteo Corno

PROFESSIONAL
EXPERIENCE

Founding Partner

Yape srl
Milan, Italy
Oct, 2018 – Present

YAPE is a self-driving robot for last-mile delivery able to carry food and goods in record time and at low cost, whilst simultaneously avoiding traffic and producing zero emissions.

*Founding Partner and Board of
Directors Member*

blubrake srl
Milan, Italy
Oct, 2015 – Present

Founding partner and board member of blubrake, an innovative start up company (Politecnico di Milano Spin off). The company designs, manufactures and markets mechatronics-based braking support and control systems for bicycles (www.blubrake.it).

Founding Partner

zeHus srl
Milan, Italy
Apr, 2013 – 2018

Founding partner of zeHus - Zero Emission Human Synergy - an innovative start up company (Politecnico di Milano Spin off). The company designs, manufactures and markets Bike+, an innovative concept in electrical power assisted bicycles. The concept is the result of the research activities I carried out and supervised at the Dipartimento di Elettronica, Informazione e Bioingegneria (www.zehus.it).

Founding Partner

e-Novia srl
Milan, Italy
Apr, 2012 – Present

e-Novia spin-off companies that transform our intellectual property into new business focused on developing and selling new products and services. (www.e-novia.it)

Assistant Professor

Politecnico di Milano
Milan, Italy
Oct. 1st, 2011 – Jan. 16th, 2015

Assistant Professor at the Dipartimento di Elettronica, Informazione e Bioingegneria. Full time member of MoVE research group leading projects in the fields of electric vehicles, battery management systems, and vehicle dynamics control.

Assistant Professor

Delft University of Technology
Delft, the Netherlands
Oct. 15th, 2009 – Nov. 31st, 2011

Assistant Professor at the Delft Center for Systems and Control in the Faculty of Mechanical, Maritime and Materials Engineering, under the chair of Intelligent Automotive System held by prof. Edward Holweg. During my period at TU Delft, my research was mainly focused on battery state estimation and load

based vehicle dynamics control.

PostDoc Researcher

Politecnico di Milano

Milan, Italy

Feb. 1st, 2009 – Jul. 31st, 2009

Lead and carried out individual research on the project named “Design of control systems for two-wheeled vehicles”. In particular focus has been given to the traction control problem, and steering instabilities.

PostDoc Researcher

Johannes Kepler Universitat

Linz, Austria

Jan. 1st, 2009 – Jun. 31st, 2009

Studied control techniques for emission optimization for automotive Diesel Engines; research carried out in the Institut fur Design und Regelung Mechatronischer Systeme. Original appointment was scheduled to end in December 2009; resigned earlier to accept position at TU Delft.

Research Specialist

University of Minnesota

Minneapolis, MN, USA

Jul. 1st, 2007 – Nov. 15th, 2007

Studied control techniques for Linear Parameter Varying systems and their application to two wheeled vehicle traction control. Research carried out at the Department of Aerospace and Mechanical Engineering.

Intern

Thales Alenia Space srl

Torino, Italy

Oct. 1st, 2006 – Apr. 30th, 2007

Feasibility study and preliminary development of the attitude control system of an orbiting particle detector.

Research Assistant

University of Illinois

Chicago, IL, USA

Jan. 1st, 2004 – May 31st, 2005

Developed and formally analyzed haptic devices and controllers to be used in training tasks. Obtained “Investigator Education Certification” to work with human subjects.

EDUCATION

January 2006 - March 2009

PhD, Information Engineering.

Politecnico di Milano, Milano, Italy.

Major Research Topic: “*Active Stability Control Systems Design for Road Vehicles*”

Advisor: Prof. Sergio M. Savaresi

Minor Research Topic: “*Spacecraft Attitude Estimation and Control*”

Advisor: Prof. Marco Lovera

Final grade: **Laude**

Matteo Corno

January 2004 - August 2005

M.S., Electrical and Computer Engineering.

University of Illinois, Chicago, IL, USA.

GPA: **3.87/4**

September 1999 - October 2005

Laurea (Master's Equivalent), Computer Engineering.

Politecnico di Milano, Milano, Italy.

Dissertation title: "*Haptic Playback: a New Approach to Teaching of Sensorimotor Skills*"

Final grade: **100/100 cum Laude**

PRIZES/AWARDS Honorable Mention as a finalist for the Interactive Paper Prize at the 20th IFACT World Congress in Toulouse, France (2017)

Guglielmo Marconi prize awarded by Accademia dei Lincei (world's oldest scientific academy) in 2015 for a work on industrial innovation (Hybrid human powered - electric vehicles)

IFAC Congress Interactive Paper Prize for the outstanding paper "Road Slope Estimation in Bicycles without Torque Measurements" for "clarity and originality of the paper, for elegance of the poster, and for a convincing oral presentation".

Best Papers published in Control Engineering Practice for the period 2008-2010 for the paper M. Corno, S. M. Savaresi, M. Tanelli, L. Fabbri. (2008) *On Optimal Motorcycle Braking*. Control Engineering Practice. Vol. 16, No. 6, pp. 644-657. doi:10.1016/j.conengprac.2007.08.001. ISSN: 0967-0661.

"General Chairs' Recognition Award for Interactive Papers" for the paper Advanced Yaw Control of Four-wheeled Vehicles via Rear Active Differential Braking in interactive session in The Combined 48th IEEE Conference on Decision and Control and 28th Chinese Control Conference.

Awarded a M.Sc Fellowship for two consecutive years at the University of Illinois to work on my project "Haptic Playback: a innovative approach to teaching of sensorimotor skills"

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FUNDED RESEARCH (PI) I am and have been Principal Investigator of the following funded research projects:

ADAS for Racing Applications **Ferrari**
September 2018 – Present
Design of advanced human-machine interfaces for racing applications.

Advanced Vehicle Dynamics Control **Huawei**
January 2019 – January 2021
Design of a full suite of vehicle dynamics control systems for an electric vehicle.

Full Vehicle Body Control Based on Magneto-Rheological Suspensions **Lamborghini SpA**
January 2017 – Present
Design of a control system for the electronic suspensions of super car.

Online Accurate Battery State Estimation via Electrochemical Modelling **SIR - MIUR**
August 2015 – September 2018
Design of electrochemical based estimation algorithm for Lithium-ion batteries. (300.000 euros)

Design of Braking Assistance Systems for Bicycles **Blubrake srl**
December 2016 – Present
Design, development and testing of innovative braking assistance systems for bicycles.

Design of an ABS system for snowmobiles **HB Performance Systems, USA**
January 2016 – July 2016
Design and development of an ABS system for snowmobiles

Design of a Kinematic-based Side-slip Angle Estimator **Maserati**
August 2014 – November 2015
Development, implementation and validation of a fail-safe kinematic based side slip angle estimation for a four-wheeled vehicle. The kinematic based approach allows for a higher level of robustness compared to other dynamical based approaches, commonly available in the published literature.

Control of an Electrostatic Hydraulic Power Steering System **HB Performance Systems, USA**
August 2013 – March 2014
Analysis and development of a control system for an electrostatic hydraulic

Power steering system. (co-Principal Investigator)

Data-driven battery state of health Estimation

Epyon Power

January 2010 – January 2012

Development of a real time data-driven battery state of health estimator for fast charging management and control. (Principal Investigator)

DR.AGE: Data dRiven battery AGing modEling

Honda R&D Europe

March 2011 – March 2012

Honda Initiation Grant 2011. Development of a black-box aging model of lithium-ion batteries. (30.000 euros)

E-SURF, Enhancing vehicles active safety & handling via actively controlled aerodynamic SURFaces

Honda R&D Europe

March 2011 – March 2012

Honda Initiation Grant 2011. Development of an active aerodynamic surface control system to improve vehicle ride and comfort. (30.000 euros)

OTHER
INDUSTRIAL
COLLABORATIONS

Beside the above mentioned projects, for which I served as a Principal Investigator, I actively participated to other projects with industrial partners (National and International). Here is a summary of the most important ones.

Autonomous driving

Magneti-Marelli

February 2015 – Present

Design, implementation and testing of control algorithms for autonomous driving. The multi year project involved: design of a trajectory tracking controller for highly dynamics driving (obstacle avoidance and race track driving), friction estimation, trajectory planning.

Vehicle State Estimation

Ferrari

November 2016 – Present

Development, implementation and validation of vehicle state estimation algorithms for a four wheeled steered sport vehicle.

Engine power request prediction

Maserati

January 2014 – December 2014

Development of an engine power predictor and control algorithm for a 6 cylinders engine. The predictor and control algorithm switch on and off 3 cylinders to optimize fuel consumption without affecting performance and drivability. The system is based on a Markov Chain approach.

Design of Active Control Systems for Motorbikes

Ducati Motor

January 2014 – January 2017

This research is taking place in a 3-year research agreement between the MoVE

research group and Ducati Motor Holding. Some of the topics are Traction Control, Racing ABS, Lateral and roll vehicle stabilization.

Control of a Central Clutch for a Tractor

SAME Deutz-Fahr

January 2013 – December 2013

A hydraulic clutch is controlled to actively modulate between 4WD and 2WD. The system enables optimal traction on rough terrain while avoiding excessive understeering.

Design of a Traction Control System for Motorbikes

**Aprilia Brand, Piaggio Group
Noale (VE), Italy**

April 2008 – November 2009

Nonlinear systems identification and modeling techniques are employed to design a robust traction control system. The system is designed to track a slip target which is computed from the driver request on the throttle. In this way the system can provide performance and safety at the same time as the driver retains control of the vehicle. The system has been developed in collaboration with professional test riders and includes three modules: a wheel slip control, a launch control and an anti-wheelie control. The results of this research are incorporated in the Aprilia APRC system.

Design of a Semi-active Steering Damper for Sport Motorcycles

**Aprilia Brand, Piaggio Group
Noale (VE), Italy**

April 2008 – April 2009

Two-wheeled vehicles exhibit two oscillatory modes (wobble and weave) that can become unstable; the research carried out shows that by actively controlling the steering damping coefficient, vehicle stability and handling qualities can be improved. A first principle model has been derived, validated against real data and used to design the steering damper control law which is experimentally validated. An LPV observer reduces the set of needed sensors.

Electronic Redefinition of Four-wheeled Vehicle Lateral Dynamics

**FIAT Group
Torino (TO), Italy**

May 2008 – December 2009

The research is aimed at electronically redefining the behavior of the vehicle by acting through individual rear wheel braking. The problem can be formulated as a genuine closed loop control problem. Once the adequate set point is chosen the relevant lateral dynamics is identified from the data via a black-box approach and a robust controller designed via μ -synthesis techniques. Experimental validations shows that the approach is successful in improving agility while cornering.

Identification of Engine-to-Slip Dynamics of a Superbike

**Yamaha Superbike Team
Lesmo (MI), Italy**

January 2008 – March 2008

The research considers the problem of modeling the engine-to-slip dynamics. Instead of using the classical approach of multi-body modeling, this work takes

the challenge of directly estimating the Input/Output slip dynamics by black-box identification, using the data collected with some experiments specifically designed for this purpose, and implemented on the real motorcycle. The proposed identification protocol allows to compare the effects of two different control variables: throttle position and spark-advance.

*Design of the Attitude Control
Sub-System for an Orbiting Particle
Detector*

**Thales Alenia Space srl.
Torino, Italy**

October 2006 – June 2007

The research is aimed at investigating the possibility of put into orbit a particle detector (AMS02) on an artificial satellite. A reconfigurable and object oriented simulator is developed in Modelica language while a simplified linear periodic model is formulated and used to design the control law. An attitude reference generator is devised. The proposed control system allows to save up to 40% of propellant with respect to classical three axis controllers.

*Modeling of a Common Rail for
Gasoline Engines*

**FIAT Powertrain srl.
Arese (MI), Italy**

June 2006 – February 2007

The research is aimed at illustrating how the co-design approach can be applied to the development of a gasoline engine. An analytical, object oriented simulator is developed; the model parameters are identified and the simulator is validated using real data. Using the validated simulator, an analysis of the system dynamics is developed. This analysis provides a deep insight in the trade-offs involved in the choice of some components of the injection system.

SAFEBIKE

**European Community Initiative
January 2006 – June 2006**

European Project REGINS, Interreg IIIC SafeBike . The aim was to explore the concept of active stability control for two-wheeler. I designed a motorcycle simulator and a curve-safe ABS controller. Partners: Johannes Kepler University, Linz (leader), Austria, Széchenyi István University Győr, Győr, Ungheria.

PhD Students Co-Advisor

**Politecnico di Milano and TU
Delft
September 2010 – Present**

(co)Advisor of the following PhD Theses:

- 2020 - Optimization techniques for Hybrid and Electric Powertrains. Alessandra Duz (main advisor - Politecnico di Milano on-going)
- 2020 - Autonomous driving of off-highway vehicles . Luca Onesto (main advisor - Politecnico di Milano on-going)
- 2019 - Innovative approaches to the lateral control problem in cars. Olga Galluppo (daily advisor - Politecnico di Milano)
- 2019 - Lithium ion cells electrochemical based state estimation. Stefano

Marelli (main advisor - Politecnico di Milano)

- 2019 - Design of braking control systems for bicycles. Luca D'avico (main advisor - Politecnico di Milano on-going)
- 2019 - Autonomous driving during aggressive maneuvers. Federico Roselli (daily advisor - Politecnico di Milano)
- 2017 - Design and control of human powered electric hybrid vehicles. Daniele Berretta (main advisor - Politecnico di Milano)
- 2016 - Load based vehicle dynamics control. Anil Kunnappillil Madhusudhanan (co-promotor - TU Delft)
- 2016 - Control of narrow-track tilting vehicles. Simone Fiorenti (daily advisor - Politecnico di Milano)
- 2016 - Overactuated vehicle dynamics control. Donald Selmanaj (daily advisor - Politecnico di Milano)
- 2015 - Design and control of Brake by wire actuators. Fabio Todeschini (daily advisor - Politecnico di Milano)
- 2013 - Energy management of full hybrid electric bikes: human and electric energy integrations. Pierfrancesco Spagnol. (daily advisor - Politecnico di Milano)
- 2013 - Analysis and Control of Gearbox Systems in Two-Wheeled Vehicles. Paolo Giani. (daily advisor - Politecnico di Milano)
- 2012 - Safety and performance slip control design for tilting vehicles. Giulio Panzani. (daily advisor - Politecnico di Milano).

Master's Theses Co-Advisor

**Politecnico di Milano and TU
Delft
January 2006 – Present**

Advisor of the following Master of Science Theses (original titles are listed):

- 2018 - Analisi e Sviluppo di un Sistema di Rivelamento di Persone per un Battipista. Di Dedda (Politecnico di Milano)
- 2018 - A Perception System Development for the Autonomous Navigation in a Vineyard. Cucas (Politecnico di Milano)
- 2018 - Electronic Stability Control System for an Overactuated Electric Vehicle. De Francischi (Politecnico di Milano)
- 2018 - Design and Experimental Validation of a Backstepping State Observer for a Li-Ion Cell Electrochemical Model. Karaman. (Politecnico di Milano)
- 2018 - Autonomous Navigation in Pedestrian Urban Areas. Muscolino + Pizzocaro (Politecnico di Milano)
- 2018 - Modeling and Experimental Analysis of a Bicycle Equipped with an in-wheel Suspension System. Catenaro (Politecnico di Milano)
- 2018 - Analysis and Development of a Robust Sideslip Angle Estimator for Supercars. Carnier (Politecnico di Milano)

- 2018 - Analisi e Sviluppo di un Head-Up Display per Applicazioni di Guida Sportiva. Franceschetti (Politecnico di Milano)
- 2018 - Adaptive Observer for Automated Emergency Maneuvers. Van Beelen (TU Delft)
- 2018 - Analisi e Sviluppo di un Pianificatore di Velocità per un Veicolo Autonomo. Guarda (Politecnico di Milano)
- 2018 - Analisi e sviluppo di algoritmi per il controllo elettronico della cambiata in biciclette da corsa. Marchesi + Montanaro (Politecnico di Milano)
- 2018 - Analisi e sviluppo di algoritmi di fault detection per un sistema di assistenza alla frenata su bicicletta. Passarin (Politecnico di Milano)
- 2018 - Analysis and development of an ABS for mountain bikes. Vasile (Politecnico di Milano)
- 2017 - Sensing and Obstacle Avoidance for a Two-wheeled Autonomous Terrestrial Drone. Abbracciavento + Notaro (Politecnico di Milano)
- 2017 - Analisi e Sviluppo di un Algoritmo di Controllo per Sospensioni Adattative per Mountain Bike. Scarpetta + Bignotti (Politecnico di Milano)
- 2017 - Analisi e sviluppo di un sistema antiribaltamento e antibloccaggio della ruota anteriore per biciclette. Verzaglia (Politecnico di Milano)
- 2017 - Sviluppo di un algoritmo per la stima del profilo stradale e delle dinamiche del veicolo utilizzando un LIDAR allo stato solido. Gazzola (Politecnico di Milano)
- 2017 - Analisi e sviluppo di un sistema di stabilizzazione giroscopica per veicoli a due ruote. Dattilo + Savaresi (Politecnico di Milano)
- 2016 - Design of an electronically assisted stroller. Boni (Politecnico di Milano)
- 2016 - Analisi e sviluppo di un sistema di assistenza alla frenata per biciclette. Galli (Politecnico di Milano)
- 2016 - Design of inertial estimation algorithms for bicycles. Speziali (Politecnico di Milano)
- 2016 - Analisi e controllo della dinamica longitudinale di un veicolo autonomo. Cota (Politecnico di Milano)
- 2016 - Analisi e sviluppo di un sistema di controllo della dinamica laterale per un veicolo autonomo in condizioni di guida sportiva. Gimondi - Tiralongo (Politecnico di Milano)
- 2016 - Design of an autonomous vehicle's lateral controller for high speed and emergency maneuvers. Savaia (Politecnico di Milano)
- 2016 - Optimal Control Allocation on Over-Actuated Vehicles. E.H. van den Berg (TU Delft)
- 2015 - Modellazione e controllo di servopresse di grandi dimensioni. Zaffaroni (Politecnico di Milano)

- 2015 - Analisi e controllo della dinamica longitudinale di un veicolo autonomo. Alessio Cota (Politecnico di Milano)
- 2015 - Analisi e sviluppo di un sistema di controllo della dinamica laterale per un veicolo autonomo in condizioni di guida sportiva. Alex Gismondi and Bartolomeo Tiralongo (Politecnico di Milano)
- 2015 - Algoritmi di Controllo del battito cardiaco in una bicicletta elettrica senza catena. Eric de Marco (Politecnico di Milano)
- 2015 - Analisi e Sviluppo di una interfaccia macchina uomo per una bicicletta a pedalata assistita Enzo D'Anna (Politecnico di Milano)
- 2015 - Analisi e Sviluppo di un sistema di controllo per passeggio elettrico. Song Nam (Politecnico di Milano)
- 2014 - Analisi e Sviluppo di un sistema di antiribaltamento in un veicolo a carreggiata stretta tramite sospensioni semiattive e attuatore brake-by-wire. Alessandro Amodio (Politecnico di Milano)
- 2014 - Algoritmi di predizione della richiesta di coppia motore. Luca Davico (Politecnico di Milano)
- 2014 - Algoritmi di Controllo del battito cardiaco in una bicicletta elettrica senza catena. Luca Slavazza. (Politecnico di Milano)
- 2014 - Sviluppo, analisi e implementazione di un differenziale elettronico per un go-kart elettrico. Matteo Malara e Domenico Borghese (Politecnico di Milano) (on going)
- 2014 - Algoritmi real time per l'ottimizzazione della velocità di una barca a vela. Andrea Testa. (Politecnico di Milano)
- 2014 - Controllo della dinamica laterale e longitudinale di un veicolo radiocomandato da competizione. Fabio Galasso (Politecnico di Milano)
- 2013 - Analisi e sviluppo di un algoritmo di prevenzione del ribaltamento per il veicolo elettrico Volpe. Stefano Marelli (Politecnico di Milano)
- 2013 - Battery-aware robot motion control. Joseph Vitolla. (TU Delft)
- 2013 - Modellistica e Controllo della stabilità di un quadriciclo elettrico basculante. Carlo Mariani. (Politecnico di Milano)
- 2012 - Modellistica, Identificazione ed Ageing delle batterie agli ioni di Litio. Flavio de Laurentis (Politecnico di Milano)
- 2012 - Analisi della dinamica di veicoli terrestri sovra-attuati (in collaborazione con FASTOM). Donald Selmanaj. (Politecnico di Milano)
- 2012 - Design and implementation of a novel force and brake pressure based anti-lock braking system. S. Kerst (TU Delft)
- 2012 - A method for identification of a vehicle dynamics simulation model. (in collaborazione con Bosch). T.C. Hensing (TU Delft)
- 2012 - Analisi e sviluppo di un sistema di controllo della pedalata per una bicicletta senza catena (in collaborazione con e-Shock). Davide Rosa. (Politecnico di Milano)

- 2012 - Sviluppo di un algoritmo di predizione dell'autonomia residua di un veicolo elettrico (in collaborazione con eNovia). Massimo Luraschi. (Politecnico di Milano)
- 2012 - Control Development for Waste Heat Recovery System on Heavy Duty Trucks (in collaborazione con TNO). A. Indrajuana (TU Delft)
- 2012 - Analisi e sviluppo degli algoritmi di stima e controllo per la gestione di una bicicletta a pedalata assistita energeticamente autonoma. Roberto Mura (in collaborazione con SEMS e Bianchi). (Politecnico di Milano)
- 2011 - Design and vehicle implementation of an adaptive ABS. J.A.A. Tigerlaar (TU Delft)
- 2011 - Haptic feedback on gas pedal based on wheel slip measurements. J.H.C. van der Knaap (TU Delft)
- 2011 - Battery State of Health Determination for Electrical Vehicles with Subspace Identification Methods (in collaboration with Epyon). L.P. Bech (TU Delft)
- 2011 - Load-based active suspension control. H.G. Ohadi (TU Delft)
- 2011 - Model-based Estimation of State of Charge of Lithium Cells. N. Bhatt (TU Delft)
- 2011 - Integrated Vehicle Dynamics Control A State Dependent Riccati Equation Based Approach. A. Kunnappillil Madhusudhanan. (TU Delft)
- 2011 - Modellistica, analisi e controllo per la stabilita di un veicolo a due ruote. Valerio Turri (in collaborazione con Aprilia Piaggio Group). (Politecnico di Milano)
- 2010 - Analisi e sviluppo di un sistema di controllo della stabilita' per motociclette ad alte prestazioni. Barbara Prina (in collaborazione con Aprilia - Piaggio Group), (Politecnico di Milano)
- 2009 - Analisi e sviluppo di un sistema di controllo della trazione per motoveicoli ad alte prestazioni. Paolo Lisanti (in collaborazione con Aprilia - Piaggio Group),(Politecnico di Milano)
- 2009 - Analisi e sviluppo del sistema di controllo per un corpo farfallato a doppio stadio per motociclette ad alte prestazioni. Giorgio Maggio, Paolo Mazzocchi (in collaborazione con MV-Agusta). (Politecnico di Milano)
- 2008 - Analisi, modellistica e controllo delle dinamiche di sterzo per motociclette ad alte prestazioni. Pierpaolo De Filippi, Stefano Rossi (in collaborazione con Aprilia-Piaggio).(Politecnico di Milano)
- 2008 - Analisi e sviluppo di un sistema di controllo attivo della deriva laterale di un veicolo in frenata. Roberto Alberio (in collaborazione con FIAT). (Politecnico di Milano)
- 2008 - Analisi e sviluppo di un sistema di controllo trazione per veicoli a due ruote. Simone Formentin (in collaborazione con Aprilia-Piaggio). (Politecnico di Milano)

- 2007 - Analisi e sviluppo del sistema di controllo dell'acceleratore elettronico per applicazioni Drive-by-wire in ambito motociclistico - Michele Gadda, Matteo Zampini (in collaborazione con Aprilia). (Politecnico di Milano)
- 2006 - Simulazione e analisi del sistema di alimentazione a iniezione diretta di un motore a benzina - Roberto Palazzo (in collaborazione con FIAT-Powertrain). (Politecnico di Milano)

INVITED SPEECHES

- *Smart Bicycles: How to Improve Human Efficiency*. Plenary Lecture at Tecnológico de Monterrey. Mexico. January 30, 2019
- *Linear Parameter-Varying System Identification: the Subspace Approach*. 1st International Workshop on Identification in Automotive. Linz, Austria. July 15-16, 2010
- *Semi-active steering damper control in two-wheeled vehicles*. TU Delft. Delft, the Netherlands. February 2, 2009.
- *Closed loop identification of MIMO Hammerstein-Wiener models*. Opportunities for System Identification in Engine Modeling. KTH Stockholm, Sweden. March 17, 2010

TEACHING
EXPERIENCE

Responsible Instructor **Politecnico di Milano**
Milano, Italy **2016 – present**
Information and Communication Technologies for Control System Design - 5 ECTS

Responsible Instructor **Politecnico di Milano**
Milano, Italy **2012 – 2016**
Automatic Control for Management Engineers (lectures and recitations) - 10 ECTS

Responsible Instructor **Politecnico di Milano**
Milano, Italy **2014 – 2016**
Automatic Control for Electronic Engineers - Summer School for Visiting Students from Universidad de Monterrey: UDEM

Recitations **Politecnico di Milano**
Milano, Italy **2010 – 2011**
Model Identification and Adaptive Systems. Responsible Instructor: Prof. S.M. Savaresi - 20 hours

Responsible Instructor **Politecnico di Milano**
Delft, the Netherlands **2011 – Present**
Fundamentals of automatic control (lectures and recitations) - 10 ECTS

Responsible Instructor **Delft University of Technology**
Delft, the Netherlands **2010 – 2011**
Vehicle Mechatronics (lectures and recitations) - 4 ECTS

Responsible Instructor **Delft University of Technology**
Delft, the Netherlands **2010 – 2011**
Vehicle Dynamics B: Anti Lock Braking Systems (lectures and recitations) - 4
ECTS

Responsible Instructor **Delft University of Technology**
Delft, the Netherlands **2009 – 2010**
Vehicle Mechatronics (lectures and recitations) - 3 ECTS

Recitations **Politecnico di Milano**
Milano, Italy **2008 – 2009**
Model Identification and Adaptive Systems. Responsible Instructor: Prof. S.M.
Savaresi - 20 hours

Recitations **Politecnico di Milano**
Milano, Italy **2007 – 2008**
Automatic Controls. Responsible Instructor: Prof. S. Strada - 32 hours

Recitations **Politecnico di Milano**
Milano, Italy **2008 – 2009**
Intro to Industrial Robotics. Responsible Instructor: Prof. G. Magnani - 10
hours

Recitations **Politecnico di Milano**
Milano, Italy **2007 – 2008**
Intro to Industrial Robotics. Responsible Instructor: Prof. G. Magnani - 10
hours

Faculty Advisor **Delft University of Technology**
Delft, the Netherlands **2010 – 2012**
Faculty advisor for the automotive student team. Provided supervision during
the transition from a gasoline powered racing car to an electric car for the For-
mula Student Team and provided supervision for the vehicle dynamics control
program of the Green Forze Team (Hydrogen powered cart).

OTHER
ACTIVITIES

Reviewer for the following International Journals: Automatica, Transaction of
Control System Technologies, International Journal of Robust and Nonlinear
Control, Control Engineering Practice, Transactions on Intelligent Transporta-
tion Systems.

Reviewer for several conferences in the Systems and Control community.

Participated to the organization of several editions of the Politecnico di Mi-
lano *open days* for perspective undergraduate and graduate students, and two
editions of a similar initiative at TU Delft.

SCIENTIFIC
PUBLICATIONS

My publications are divided in International Journal papers: **(45)** (from which

one is a single-author paper). International Conference papers: **(77)**. Edited books: **(1)**. Chapters in edited books: **(5)**. Patents: **(13)**.

Scientific Indexes (January, 2018): Scopus h-index = 17, Scopus total number of citations = 1140. Google Scholar h-index = 21, Google Scholar citations = 1539.

PUBLICATIONS ON
INTERNATIONAL
JOURNALS

[J.45] Corno, M., Roselli, F., Onesto, L., Molinaro, F., Graves, E., Doubek, A., Savaresi, S. M. (2018). *Experimental Validation of an Antilock Braking System for Snowmobiles With Lateral Stability Considerations*. IEEE Transactions on Control Systems Technology (early access).

[J.44] G. Rallo, S. Formentin, M. Corno and Sergio M Savaresi (2018) *Real-time cycling cadence estimation via wheel speed measurement* in International Journal of Adaptive Control and Signal Processing 32.7 (2018): 1052-1066.

[J.43] D. Selmanaj, M. Corno, G. Panzani and S. M. Savaresi (2017) *Vehicle sideslip estimation: A kinematic based approach* in Control Engineering Practice 67, 1-12.

[J.42] J. Guanetti, S. Formentin, M. Corno, S. M. Savaresi (2017) *Optimal energy management in series hybrid electric bicycles* in Automatica 96-106.

[J.41] M.Corno, F. Roselli, and S.M. Savaresi (2016) *Bilateral Control of SeNZA: A Series Hybrid Electric Bicycle* in IEEE Transactions on Control Systems Technology 25(3), 864-874.

[J.40] F. Todeschini, S. Formentin, G. Panzani, M. Corno, S.M. Savaresi, and L. Zaccarian (2016) *Nonlinear pressure control for BBW systems via dead zone and anti-windup compensation* in IEEE Transactions on Control Systems Technology. Vol 24, no. 4.

[J.39] A. Kunnappillil Madhusudhanan, M. Corno E. Holweg (2016) *Vehicle sideslip estimator using load sensing bearings* in Control Engineering Practice, Vol 54.

[J.38] M. Corno, S. M. Savaresi, (2016) *Design and Control of an All-in-the-Wheel Assisted Kick Scooter* in IEEE/ASME Transactions on Mechatronics, Vol. 21, No. 4).

[J.37] A. Kunnappillil Madhusudhanan, M. Corno, M.A. Arat, E. Holweg (2016) *Tyre Force Measurement Based Road-Tyre Friction Estimation Considering Combined Tyre Slip* Mechatronics (available online).

[J.36] D. Selmanaj, M. Corno; S. M. Savaresi (2016) *Hazard Detection for Motorcycles via Accelerometers: A Self-Organizing Map Approach*. in IEEE Transactions on Cybernetics (available online).

- [J.35] M. Corno, S. Formentin, S.M. Savaresi (2016) *Data-driven online speed optimization in autonomous sailboats*. IEEE Transactions on Intelligent Transportation Systems. Vol. 17 (3), pp. 762-771.
- [J.34] M. Corno, D. Berretta, S.M. Savaresi, (2016) *An IMU-Driven Rider-on-Saddle Detection System for Electric-Power-Assisted Bicycles*. IEEE Transactions on Intelligent Transportation Systems (in press).
- [J.33] M. Corno, D. Berretta, P. Spagnol, P., S.M. Savaresi, (2016) *Design, Control, and Validation of a Charge-Sustaining Parallel Hybrid Bicycle*. IEEE Transaction on Control Systems Technology Vol. 24 (3), pp. 817-829.
- [J.32] A. Kunnappillil Madhusudhanan, M. Corno, E. Holweg (2015) *Sliding mode-based lateral vehicle dynamics control using tyre force measurements*. Vehicle System Dynamics 53.11 (2015): 1599-1619.
- [J.31] M. Corno, S. Bottelli, G. Panzani, C. Spelta, M. Tanelli, S. M. Savaresi (2015) *Performance Assessment of Active Aerodynamic Surfaces for Comfort and Handling Optimization in Sport Cars*. IEEE Transaction on Control Systems Technology Vol 24, Issue 1.
- [J.30] F. Todeschini, M. Corno, G. Panzani, S. Fiorenti, and S. M. Savaresi (2015) *Adaptive Cascade Control of a Brake-By-Wire Actuator for Sport Motorcycles*. IEEE/ASME Transaction on Mechatronics Vol 20, issue 3 .
- [J.29] M. Corno, G. Panzani, S.M. Savaresi (2015) *Single-Track Vehicle Dynamics Control: State of the Art and Perspective*. IEEE/ASME Transaction on Mechatronics. Vol. 20, issue 4.
- [J.28] M. Corno, P. Giani, M. Tanelli, S.M. Savaresi *Human-in-the-Loop Bicycle Control via Active Heart Rate Regulation*. IEEE Transaction on Control Systems Technology . Vol. 23 issue 3
- [J.27] M. Corno, N. Bhatt, S. M. Savaresi and M. Verhaegen (2014). *Electrochemical Model Based State of Charge Estimation for Li-ion Cells*. IEEE Transaction on Control Systems Technology. Vol 23, issue 1.
- [J.26] F. Todeschini, M. Corno, G. Panzani, S.M. Savaresi, (2014) *Adaptive position-pressure control of a brake by wire actuator for sport motorcycles*. European Journal of Control. Vol 20, issue 2, pp. 79-86.
- [J.25] D.I. Katzourakis, J.C.F. de Winter, M. Alirezai, M. Corno, R.Happee, (2014) *Road-Departure Prevention in an Emergency Obstacle Avoidance Situation*. IEEE Transactions on Systems, Man, and Cybernetics: Systems, vol.44, no.5 pp. 621-629.
- [J.24] P. De Filippi, M.Tanelli, M. Corno, S. M. Savaresi and M. D. Santucci (2014) *Electronic Stability Control for Powered Two-Wheelers* IEEE Transac-

tions on Control Systems Technology. vol.22, no.1, pp.265,272, Jan. 2014

[J.23] S. Formentin, M. Corno, D. Alberer, C. Benatzky, S. M. Savaresi (2014) *Diesel engine NO_x-estimation via in-cylinder pressure measurement*. IEEE Transactions on Control Systems Technology. vol.22, no.1, pp.396,403, Jan. 2014

[J.22] M. Corno (2013) *Design, Analysis, and Validation of a Haptic-Based Driver Support System for Traction Control*. IEEE Transactions on Intelligent Transportation Systems. vol.14, no.4, pp.1849 -1859.

[J.21] R. de Castro, F. Todeschini, R. E Araujo, S. M. Savaresi, M. Corno, and D. Freitas (2013) *Adaptive-robust friction compensation in a hybrid brake-by-wire actuator* Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering 0959651813507562, first published on November 20, 2013.

[J.20] S. Formentin, P. De Filippi, M. Corno, M. Tanelli, and S. M. Savaresi. (2013) *Data-Driven Design of Braking Control Systems* IEEE Transactions on Control Systems Technology. vol.21, no.1, pp.186-193 Jan. 2013.

[J.19] M. Corno, G. Panzani, S.M. Savaresi. (2013) *Traction-Control-Oriented State Estimation for Motorcycles* IEEE Transactions on Control Systems Technology. vol.21, no.6, pp.2400,2407, Nov. 2013.

[J.18] G. Panzani, M. Corno, S. M. Savaresi (2013), *On adaptive electronic throttle control for sport motorcycles*, Control Engineering Practice, Volume 21, Issue 1, January 2013, Pages 42-53.

[J. 17] P. De Filippi, M. Corno, M. Tanelli, and S. M. Savaresi (2012), *Single-Sensor Control Strategies for Semi-Active Steering Damper Control in Two-Wheeled Vehicles* IEEE Transactions on Vehicular Technology, vol 61, no 2

[J.16] M. Alirezaei, M. Corno. D. Katzourakis, A. Ghaffari, R. Kasemi (2011) *A Robust Steering Assistance System for Road Departure Avoidance*. IEEE Transactions on Vehicular Technology. vol.61, no.5, pp.1953,1960, Jun 2012.

[J.15] R. Toth, M. Lovera, P.S. Heuberger, M. Corno, P.M.J. Van den Hof (2012) *On the Discretization of Linear Fractional Representations of LPV Systems* IEEE Transactions on Control Systems Technology. vol.20, no.6, pp.1473,1489, Nov. 2012

[J.14] S. Formentin, M. Corno, S.M. Savaresi and L. Del Re (2012) *Direct data-driven control of linear time-delay systems* Asian Journal of Control. Vol 13, Issue 3, p 652-663.

[J.13] M. Alirezaei, M. Corno, A Ghaffari, and R Kazemi. (2012) *A new approach to the design of coordinated road departure avoidance systems*. Proceed-

ings of the IMechE, Part K: Journal of Multi-body Dynamics. vol. 226 no. 1 p. 45-60. March 2012

[J.12] M. Corno, M. Gerard, M. Verhaegen, E. Holweg (2012) *Hybrid ABS Control Using Force Measurement* IEEE Transactions on Control Systems Technology. vol.20, no.5, pp.1223,1235, Sept. 2012.

[J.11] P. De Filippi, M. Tanelli, M. Corno, S.M Savaresi, L. Fabbri, (2011) *Semi-Active Steering Damper Control in Two-Wheeled Vehicles*. IEEE Transactions on Control Systems Technology, vol.19, no.5, pp.1003-1020, Sept. 2011.

[J.10] M. Corno, M. Tanelli, S. M. Savaresi, L. Fabbri, L. Nardo. (2011) *Design and Validation of a Gain-Scheduled Controller for the Electronic Throttle Body in Ride-by-Wire Racing Motorcycles*. IEEE Transactions on Control Systems Technology. vol.19, no.1, pp.18,30, Jan. 2011.

[J.9] M. Corno, S. M. Savaresi. (2010) *Experimental Identification of Engine-to-Slip Dynamics for Traction Control Applications in a Sport Motorbike*. European Journal of Control 2010, vol. 16, no 1, pp. 88-108.

[J.8] G. Panzani, M. Corno, M. Tanelli, A. Zappavigna, S. M. Savaresi, A. Fortina, S. Campo. (2010) *Designing On-Demand Four-Wheel-Drive Vehicles via Active Control of the Central Transfer Case*. IEEE Transactions on Intelligent Transportation Systems vol. 11, no.4 , pp 931 - 94. Dec. 2010.

[J.7] C. Vecchio, M. Tanelli, M. Corno, A. Ferrara, S. M. Savaresi. (2009) *Traction Control for Ride-by-Wire Sport Motorcycles: a Second Order Sliding Mode Approach*. IEEE Transactions on Industrial Electronics vol.56, no.9, pp.3347-3356, Sept. 2009. doi: 10.1109/TIE.2009.2018430. ISSN: 0278-0046.

[J.6] M. Corno, S.M. Savaresi, G.J. Balas. (2008) *On Linear Parameter Varying (LPV) Slip-Controller Design for Two-Wheeled Vehicles*. International Journal of Robust and Nonlinear Control. International Journal of Robust and Nonlinear Control. vol. 19, no. 12, pages 13131336, August 2009. doi: 10.1002/rnc.1381. ISSN: 1099-1239.

[J.5] M. Corno, S. M. Savaresi, R. Scattolini, E. Comignaghi, M. Sofia, A. Palma, E. Sepe. (2009) *Modeling, Parameter Identification and Dynamics Analysis of a Common Rail Injection System for Gasoline Engines*. International Journal of Vehicle Systems Modelling and Testing. Vol. 4, No.1/2 pp. 17 - 42. ISSN: 1745-6436.

[J.4] M. Tanelli, M. Corno, I. Boniolo, S. M. Savaresi. (2009) *Active Braking Control of Two-Wheeled Vehicles on Curves*. International Journal of Vehicle Autonomous Systems, vol, 7, no 3-4 / 2009, pp. 243 - 269. doi: 10.1504/IJ-VAS.2009.033263. ISSN: 1471-0226

[J.3] M. Corno, M. Lovera. (2008) *Spacecraft Attitude Dynamics and Control*

in the Presence of Large Magnetic Residuals. Control Engineering Practice Vol. 17, No. 4, April 2009, Pages 456-468. doi: 10.1016/j.conengprac.2008.09.010. ISSN: 0967-0661.

[J.2] M. Corno, S. M. Savaresi, M. Tanelli, L. Fabbri. (2008) *On Optimal Motorcycle Braking*. Control Engineering Practice. Vol. 16, No. 6, pp. 644-657. doi:10.1016/j.conengprac.2007.08.001 . ISSN: 0967-0661.

[J.1] M. Corno, L. Fabbri, L. Nardo S. M. Savaresi, M. Tanelli. (2007) *Braking Optimal Maneuver: the Role of Front and Rear Tires in a Sport Motorbike*. Tire Technology International Review 2007, 2007, pp. 40-46.

BOOK CHAPTERS [BC. 5] M. Corno, S.M. Savaresi (2014). Identification and Analysis of Motorcycle Engine-to-Slip Dynamics. In Modeling, Simulation and Control of Two-Wheeled Vehicles, M. Tanelli, M. Corno, S.M. Savaresi, (Eds.), John Wiley and Sons Ltd. (2014, 268 p.) ISBN: 978-1-119-95018-9.

[BC. 4] M. Corno, G. Panzani (2014). Traction Control Systems Design: A Systematic Approach. In Modeling, Simulation and Control of Two-Wheeled Vehicles, M. Tanelli, M. Corno, S.M. Savaresi, (Eds.), John Wiley and Sons Ltd. (2014, 268 p.) ISBN: 978-1-119-95018-9.

[BC. 3] P. De Filippi, M. Tanelli, M Corno (2014). Semi-active steering damper control for two-wheeled vehicles. In Modeling, Simulation and Control of Two-Wheeled Vehicles, M. Tanelli, M. Corno, S.M. Savaresi, (Eds.), John Wiley and Sons Ltd. (2014, 268 p.) ISBN: 978-1-119-95018-9.

[BC. 2] I. Boniolo, G. Panzani, D. Delvecchio, M. Corno, M. Tanelli, C. Spelta, S.M. Savaresi (2014). Estimation problems in two-wheeled vehicles. In Modeling, Simulation and Control of Two-Wheeled Vehicles, M. Tanelli, M. Corno, S.M. Savaresi, (Eds.), John Wiley and Sons Ltd. (2014, 268 p.) ISBN: 978-1-119-95018-9.

[BC. 1] Matteo Corno, Jan-Willem van Wingerden and Michel Verhaegen (2012). Linear Parameter-Varying System Identification: the Subspace Approach. In Identification for Automotive Systems, Daniel Alberer and Greg Steward (Eds.), Springer (2012, XVI, 356 p. 172 illus., 129 in color).

EDITED BOOKS [EB. 1] M. Tanelli, M. Corno, S.M. Savaresi, *Modeling, Simulation and Control of Two-Wheeled Vehicles*, John Wiley and Sons Ltd. (2014, 268 p.) ISBN: 978-1-119-95018-9.

PUBLICATIONS ON [C.77] Corno, M., D'Avico, L., and Savaresi, S. M. (2018). *An Anti-lock Braking System for bicycles*. In 2018 IEEE Conference on Control Technology and Applications (CCTA) (pp. 834-839)..

[C.76] Rosero, N., Martinez, J., and Corno, M. (2018). *Modeling of gas exchange*

dynamics using cycle-ergometer tests. In 9th Vienna International Conference on Mathematical Modelling.

[C.75] Corno, M., Zaffaroni, S., and Girotti, A. (2018). *Modeling and Control of a Servo Mechanical Press.* In 2018 IEEE Conference on Control Technology and Applications (CCTA) (pp. 477-482).

[C.74] Galluppi, O., Corno, M., and Savaresi, S. M. (2018). *Mixed-kinematic body sideslip angle estimator for high performance cars.* In 2018 European Control Conference (ECC) (pp. 941-946).

[C.73] Kuyt, C., and Como, M. (2018). *Mixed Kinematics and Camera Based Vehicle Dynamic Sideslip Estimation for an RC Scaled Model.* In 2018 IEEE Conference on Control Technology and Applications (CCTA) (pp. 1216-1221).

[C.72] Sabatini, S., Corno, M., Fiorenti, S., and Savaresi, S. M. (2018). *Improving Occupancy Grid Mapping via Dithering for a Mobile Robot Equipped with Solid-State LiDAR Sensors.* In 2018 IEEE Conference on Control Technology and Applications (CCTA) (pp. 1145-1150).

[C.71] Sabatini, S., Corno, M., Fiorenti, S., and Savaresi, S. M. (2018). *Vision-based pole-like obstacle detection and localization for urban mobile robots.* In 2018 IEEE Intelligent Vehicles Symposium (IV) (pp. 1209-1214)

[C.70] Marelli, S., and Corno, M. (2018). *A mass-preserving Sliding Mode Observer for Li-ion cells electrochemical model.* In IEEE 2018 European Control Conference (ECC) (pp 2659-2664).

[C.69] Sabatini, S., and Corno, M. (2018). *Battery aging management for Fully Electric Vehicles.* In IEEE 2018 European Control Conference (ECC) (pp. 231-236).

[C.68] M. Corno, F. Roselli, L. Onesto, Sergio M. Savaresi, F. Molinaro, E. Graves, A. Doubek (2017). *Longitudinal and Lateral Dynamics Evaluation of an Anti-Lock Braking System for Trail Snowmobiles.* 35th SAE Brake Colloquium and Exhibition, Orlando, Florida, USA, pp.1-6, SAE paper number 2017-01-2512 (ISSN 0148-7191 - <http://papers.sae.org/2017-01-2512>).

[C.67] L. Onesto, S. Marelli, M.Corno (2017) *Control-oriented Coupled Electrochemical Thermal Model for Li-Ion Batteries.* Proceedings of 2017 Control and Decision Conference.

[C.66] S. Marelli, M. Corno (2017) *A soft-constrained Unscented Kalman Filter estimator for Li-ion cells electrochemical model.* Proceedings of 2017 Control and Decision Conference.

[C.65] Amodio, A., Corno, M., Panzani, G., and Savaresi, S. M. (2017). Differential braking-based anti-rollover control for non-tilting narrow-track vehicles.

In Control Technology and Applications (CCTA), 2017 IEEE Conference on (pp. 1880-1885). IEEE.

[C.64] F. Busnelli, G. Panzani, M. Corno and S.M. Savaresi (2017) *Two-wheeled vehicles black-box sideslip angle estimation*. Proceedings of 2017 Control and Decision Conference.

[C.63] M. Corno, L. D' Avico, G. Panzani, and S. M. Savaresi *A haptic-based, safety-oriented, braking assistance system for road bicycles*. Proceedings of 2017 IEEE Intelligent Vehicles Symposium.

[C.62] D. Selmanaj, M. Corno, G. Panzani, S.M. Savaresi *Robust Vehicle Sideslip Estimation Based on Kinematic Considerations* Proceedings of 20th World Congress of International Federation of Automatic Control. Toulouse, France. pp 15420 -15425

[C.61] G. Rallo, S. Formentin, M. Corno, S.M. Savaresi *Real-time pedaling rate estimation via wheel speed filtering*. Proceedings of 20th World Congress of International Federation of Automatic Control. Toulouse, France.

[C.60] A. Lucchetti, M. Corno, S.M. Savaresi *Cyclist's Riding Style Assessment via Inertial Measurement* Proceedings of 20th World Congress of International Federation of Automatic Control. Toulouse, France.

[C.59] M. Corno, F. Busnelli, S.M. Savaresi *Design and Control of an Electrically Assisted Kick Scooter* 2016 American Control Conference (ACC) Boston Marriott Copley Place July 6-8, 2016. Boston, MA, USA. pp 5290 - 5295.

[C.58] D. Berretta, M. Corno, S.M. Savaresi *An IMU-Driven Rider-on-Saddle Detection System for Electric Power Assisted Bicycles*. 2016 American Control Conference (ACC) Boston Marriott Copley Place July 6-8, 2016. Boston, MA, USA pp 430- 435.

[C.57] M. Tanelli, S. C. Strada, M. Corno and A.Ferrara (2016) *Sliding Mode Control for LPV Systems* 2016 American Control Conference (ACC) Boston Marriott Copley Place July 6-8, 2016. Boston, MA, USA pp 3686 - 3691.

[C.56] J. Guanetti, S. Formentin, M. Corno, S. M. Savaresi *Optimal energy management in series hybrid electric bicycles*. 2015 IEEE 54th Annual Conference on Decision and Control (CDC) December 15-18, 2015. Osaka, Japan. pp 869 - 874.

[C.55] G. Panzani, S. Fiorenti, F. Roselli, M. Corno and S, M. Savaresi (2015) *Traction control oriented torque-to-slip identification for powered two-wheelers* 2015 European Control Conference (ECC) July 15-17, 2015. Linz, Austria pp 830 - 835.

[C.54] A. Kunnappillil Madhusudhanan, M. Corno, E. Holweg (2015) . *Vehicle*

sideslip estimation using tyre force measurements. Proceedings of the 23rd Mediterranean Conference on Control and Automation, MED 2015 - Conference Proceedings, art. no. 7158734, pp. 88-93.

[C.53] M. Corno, A. Lucchetti, I. Boniolo, S.M. Savaresi (2015) *Coordinated Lateral and Longitudinal Vehicle Dynamics Control of a Scale RC Vehicle*. Proceeding of the 2015 American Control Conference.

[C.52] M. Corno, D. Berretta, S. M. Savaresi (2015) *Human Machine Interfacing Issues in SeNZA, a Series Hybrid Electric Bicycle*. Proceeding of the 2015 American Control Conference.

[C.51] M. El Lakkis, O. Sename, M. Corno, D. Bresch Pietri (2015) *Combined battery SOC/SOH estimation using a nonlinear adaptive observer* Proceedings of the 14th European Control Conference (ECC).

[C.50] A. Kunnappillil Madhusudhanan, M. Corno, and E. Holweg (2015) *Vehicle Yaw Rate Control Using Tyre Force Measurements*. Proceedings of the 14th European Control Conference (ECC).

[C.49] A. Brankovic, D. Berretta, S. Formentin, M. Corno and S. M. Savaresi (2015) *Modeling and speed limitation control of an electric kick scooter*. Proceedings of the 14th European Control Conference (ECC)

[C.48] G. Panzani, S. Fiorenti, F. Roselli, M. Corno and S. M. Savaresi (2015) *Traction control oriented torque-to-slip identification for powered two-wheelers*. Proceedings of the 14th European Control Conference (ECC)

[C.47] M. Corno, A. Bisoffi, C. Ongini, S. M. Savaresi (2015) *An Energy-Driven Road-to-Driver Assistance System for Intersections*. European Control Conference (ECC) July 15-17, 2015. Linz, Austria. pp 3040 - 3045.

[C.46] D. Selmanaj, M. Corno, S.M. Savaresi (2014). *Accelerometer-based Data-driven Hazard Detection and Classification for Motorcycles*. Proceedings of the 13th European Control Conference (ECC). Strasbourg, France.

[C.45] M. Corno, S. Bottelli, M. Tanelli, C. Spelta, S. M. Savaresi (2014). *Active Control of Aerodynamic Surfaces for Ride Control in Sport Vehicles*. Proceedings of 19th World Congress of International Federation of Automatic Control. Cape Town, South Africa.

[C.44] P. Giani, M. Corno, M. Tanelli, S. M. Savaresi (2014). *Cyclist Heart Rate Control via a Continuously Varying Transmission*. Proceedings of 19th World Congress of International Federation of Automatic Control. Cape Town, South Africa.

[C.43] M. Corno, P. Spagnol, S. M. Savaresi (2014). *Road Slope Estimation in Bicycles without Torque Measurements*. Proceedings of 19th World Congress of

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[C.42] A. K. Madhusudhanan, M. Corno, and E. Holweg (2013) *Lateral Vehicle Dynamics Control Based On Tyre Utilization Coefficients and Tyre Force Measurements*. Proceedings of the 52nd IEEE Conference on Decision and Control December 10-13, 2013. Florence, Italy. pp. 2816-2821.

[C.41] M. Corno, S. Fiorenti, S.M. Savaresi (2013) *Active Tilt Control of a Narrow Tilting Vehicle via Torque Vectoring*. Proceedings of the 2013 Bicycle and Motorcycle Dynamics Symposium on the Dynamics and Control of Single Track Vehicles, 11 - 13 November 2013, Narashino, Japan.

[C.40] D. Selmanaj, M. Corno, O. Sename, S.M. Savaresi (2013) *Advantages of rear steer in LTI and LPV vehicle stability control*. Proceedings of the 52nd IEEE Conference on Decision and Control December 10-13, 2013. Florence, Italy. pp. 3523-3528.

[C.39] M. Corno, S. Bottelli; G. Panzani; M. Tanelli, C. Spelta; S.M. Savaresi (2013) *Improving high speed road-holding using actively controlled aerodynamic surfaces*. Proceedings of the 2013 European Control Conference (ECC), 1493, 1498, 17-19 July 2013.

[C.38] G. Panzani, M. Corno, S.M. Savaresi, (2013) *Wheelie detection for single-track vehicles*. Proceedings of the 2013 European Control Conference (ECC), pp.956,961, 17-19 July 2013.

[C.37] P. Spagnol, M. Corno, S.M. Savaresi (2013), *Pedaling torque reconstruction for half pedaling sensor*. Proceedings of the 2013 European Control Conference (ECC), pp.275,280, 17-19 July 2013.

[C.36] P. Spagnol, M. Corno, R. Mura and S.M. Savaresi (2013) *Self-sustaining Strategy for a Hybrid Electric Bike*. Proceedings of the 2013 IEEE American Control Conference. Washington DC. June 17-19, 2013. pp 6445 - 6450.

[C.35] M. Corno (2013). *A Haptic-Based Traction Control System*. Proceedings of the 2013 IEEE American Control Conference. Washington DC. June 17-19, 2013. pp. 6445 - 6450.

[C.34] M. Corno, S.M. Savaresi (2013) *A Diffusive Electro-Equivalent Li-ion Battery Model*. Proceeding of the 2013 IEEE international conference on circuits and systems. Beijing, China May 19 -23 2013. pp 2976 - 2979

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