Paolo Falcone - Curriculum Vitae

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1 Basic Information

1.1 Personal Info

Date and place of birth	August 24$^{\text{th}}$, 1977, Avellino, Italy
Nationality	Italian, Swedish
Status	Engaged
Personal Web Page	`http://www.chalmers.se/en/staff/Pages/paolo-falcone.aspx`

1.2 Research Experience

Professor 2019, November - present
Institution: Chalmers University of Technology, Gothenburg, Sweden
Department: Electrical Engineering

Associate Professor 2019, November - present
Institution: Università di Modena e Reggio Emilia, Italy
Department: Dipartimento di Ingegneria "Enzo Ferrari"

Associate Professor 2012, April - 2018, September
Institution: Chalmers University of Technology, Gothenburg, Sweden
Department: Electrical Engineering

Assistant Professor 2008, April - 2012, March
Institution: Chalmers University of Technology, Gothenburg, Sweden
Department: Signals and Systems

Postdoctoral Research Assistant 2007, May - 2008, March
Institution: Università del Sannio, Benevento, Italy
Department: Dipartimento di Ingegneria

1.3 Education

Docent in Mechatronics, Chalmers University of Technology 2011, September
Academic Degree in Sweden

Ph. D. in Information Technology[1], Università del Sannio, Benevento, Italy 2007, June
Topic: Nonlinear Model Predictive Control for Autonomous Vehicles
Advisor: Prof. Francesco Borrelli (now at University of California at Berkeley)

"Laurea" in Computer and Systems Engineering[2], University "Federico II", Naples, Italy 2003, February

2 Research

2.1 Research Interests. Summary

Below is a summary of the ongoing research activities.

- ***Control of constrained networked systems***. *Objective:* developing a novel self-triggered networked control scheme, where the communication schedule accounts for the limited communication network resources and the systems constraints.

[1] Ingegneria dell'Informazione
[2] Ingegneria Informatica

- ***Control with performance guarantees***. *Objective:* developing control design tools providing performance and safety guarantees for autonomous systems, where the lack of a human supervisor (e.g. self-driving vehicles) impose strict requirements.
- ***Autonomous driving in urban environments***. *Objective:* developing path planning and motion control algorithms with safety guarantees in urban environment, where the humans' presence makes the motion planning problem challenging.
- ***Cooperative driving, multi-vehicle systems***. *Objective:* developing coordination algorithms for connected autonomous vehicles, with a focus on the scalability and the robustness of the coordination algorithms.
- ***Learning of humans' behavior in traffic environments***. *Objective:* developing a framework for learning and predicting the human behavior in complex environments like, e.g., traffic to support the decision-making and control in autonomous systems.
- ***Precision farming***. *Objective:* developing an autonomous decision-making system, based on mobile robot manipulators, aiming at minimizing the impact of farming on pollution and resource consumption.

My research activity is experimentally demonstrated to a large extent, also thanks to close collaborations with industrial partners.

2.2 Research Grants and Projects

Control of Assistive Robots in crowded Environments (CARE) 2023 - 2026
Funder: Italian Ministry for University and Research, under the program PRIN 2022
Role: PI
Objective: designing motion planning and control algorithms for assistive mobile robots in crowded environments.

Control of Connected Automated Vehicles over 5G network 2019 - 2024
Funder: Wallenberg Autonomous Systems Program (WASP)
Role: PhD supervisor
Objective: designing coordination control algorithms for connected autonomous vehicles based on 5G cellular communication technology.

5G for Connected Autonomous Vehicles in Complex Urban Environments 2019 - 2023
Funder: Fordonsstrategisk Forskning och Innovation (FFI). Vinnova
Partners: Ericsson, Zenuity
Amount: 15.8MSEK
Role: Main applicant
Objective: communication schedule and control design for connected autonomous vehicles, learning of humans' behavior in traffic using mobile devices.

Joint communication and control for constrained systems 2017
Funder: Wallenberg Autonomous Systems Program (WASP)
Role: PhD supervisor
Objective: joint design of communication schedule and control policies for constrained networked systems subject to limited communication capacity.

Driving Automation in Complex Environments 2016
Funder: Wallenberg Autonomous Systems Program (WASP)
Partners: Autoliv AB
Role: Industrial PhD supervisor

Objective: design decision making and path planning algorithms in complex traffic situations including crossings and roundabouts.

Experimental validation of cooperative driving algorithms at traffic intersections 2016
Funder: Fordonsstrategisk Forskning och Innovation (FFI). Vinnova
Amount: 500kSEK
Role: Main applicant
Objective: experimental validation of optimization-based coordination algorithms for autonomous vehicles at traffic intersections

COPPLAR CampusShuttle cooperative perception & planning platform 2016 - 2018
Funder: Fordonsstrategisk Forskning och Innovation (FFI). Vinnova
Amount: 20MSEK
Role: Co-applicant
Objective: developing an autonomous driving vehicle capable of driving in urban environments and cooperating with other connected autonomous vehicles. The projects involves several research groups at Chalmers and local companies

Vehicle motion control with performance and safety guarantees 2015 - 2019
Funder: Fordonsstrategisk Forskning och Innovation (FFI). Vinnova
Amount: 9.6MSEK
Role: PI, Ph. D. student supervisor
Objective. Designing, implementing and experimentally validating path following algorithms with safety and performances guarantees for autonomous vehicles.

Cooperative control autonomous vehicles 2013 - 2015
Funder: Chalmers Area of Advance in Transportation
Amount: 0.5 MSEK
Role: Main Applicant, Post-doc supervisor
Objective: developing coordination algorithms for autonomous vehicles, based on constrained optimal control techniques. The project focus is to understand the impact of limited communication capacity on, e.g., the convergence of distributed optimization algorithms, the overall system stability and the persistent feasibility fo the coordination problem.

AdaptIVe. Automated Driving 2014 - 2017
Funder: European Union, FP7
Amount: 25M€
Role: Co-investigator
Objective: developing automated driving function adapting the level of automation to the surrounding traffic.

A-Drive 2013 - 2015
Funder: Fordonsstrategisk Forskning och Innovation (FFI). Vinnova
Amount: 4.3MSEK
Role: Co-applicant
Objective: design of autonomous driving in one-way, two lanes highways.

Distributed Coordination of Networked Mobile Systems in Uncertain Environments 2013 - 2017
Funder: Swedish Research Council (Vetenskapsrådet (VR)) - Young Researchers
Amount: 3.2MSEK
Role: Principal Investigator, Ph. D. student supervisor
Objective: coordinating networked mobile agents subject to communication constraints.

Non-Hit Car and Truck 2011 - 2016

Funder: Fordonsstrategisk Forskning och Innovation (FFI). Vinnova
Amount: 30MSEK
Partners: Volvo Cars Corporation, Volvo AB, HiQ, Epsilon (Sweden)
Role: Ph. D. student supervisor
Objective: design of advanced driver assistance systems.

Integrated Control of Propulsion, Braking and Steering of Long Modular Heavy Vehicle Combinat
2012 - 2015
Funder: Fordonsstrategisk Forskning och Innovation (FFI). Vinnova
Amount: 9MSEK
Partners: Volvo AB (Sweden)
Role: Ph. D. student co-supervisor
Objective. Developing algorithms for coordinating propulsion, braking and steering at the towed units of long combinations of heavy vehicles in order to control lateral and yaw dynamics.

Energy Efficient Control of Vehicle Convoys 2013 - 2015

Funder: Chalmers Area of Advance in Transportation
Amount: 0.5 MSEK
Role: Main Applicant, Post-doc supervisor
Objective. Developing algorithms for controlling vehicle convoys in order to minimize the fuel consumption by exploiting the air drag.

Intelligent Dynamics For fully Electric Vehicles (ID4EV) 2010 - 2012

Funder: European Union, FP7
Amount: 4.05M€
Partners: FKA (Germany), Continental Engineering Services (Germany), Renault (France), ZF AG (Germany), IDIADA (Spain), TNO (The Netherlands), ICOOR (Italy)
Role: Co-investigator, co-applicant
Objective. Designing control algorithms for maximizing the energy recovery through regenerative braking in electric vehicles, while preserving the vehicle stability and drivability.

Optimization-Based Approaches to Regenerative Braking in Hybrid Vehicles 2008 - 2009

Funder: Ford Research Laboratory, Dearborn, USA
Amount: 20k$
Partners: Ford (USA), Volvo Cars Corporation (Sweden)
Role: Principal investigator
Objective. Designing control algorithms for maximizing the energy recovery through regenerative braking in hybrid vehicles on low friction road surfaces, while avoiding yaw instability.

2.3 Post-doc Supervision

Yingshuai Quan 2024-2026

Project: Behavior learning in multi-agent setting. Motion planning and control of safety-critical systems

Debayani Ghosh 2019-2021

Project: Constrained optimal control of networked systems

Mario Zanon 2015-2017

Project: Constrained optimal control of networked systems

Hakan Köroğlu 2013-2015

Project: Energy Efficient Control of Vehicle Convoys

Gabriel Garcia de Campos 2012 - 2014
Project: Distributed Coordination of Vehicles in Unsignalled Cross Intersections

2.4 Graduated Students Supervision

Ongoing

Carl-Johan Heiker Ph.D. started in 2020
Project: Behavior learning in multi-agent setting
Subject: Learning of humans' behavior in traffic environments

Muhammad Faris Ph.D. started in 2020
Project: 5G for connected autonomous vehicles
Subject: Networked control systems

Completed

Masoud Bahraini Ph.D. started in 2023
Project: Joint communication and control of constrained system under limited communication capacity
Subject: Networked control systems

Ivo Batkovic Ph.D. started in 2022
Project: Decision-making and Control of Autonomous Vehicles in Urban Environment
Subject: Autonomous driving

Ankit Gupta Graduated in 2020
Project: Vehicle Motion Control with Performance and Safety Guarantees
Subject: Model Predictive Control for Automotive Applications

Robert Hult Graduated in 2019
Project: Distributed Coordination of Networked Mobile Systems in Uncertain Environments
Subject: Cooperative driving

Roozbeh Kianfar (*co-supervised*) Graduated in 2014
Project: Machatronics Group Internal Project
Subject: Control of Heterogeneous Vehicle Platoons

Josef Nilsson Graduated in 2014
Project: System Safety Through the Combination of HMI And DEpendable Systems (SHADES)
Subject: Active Safety

Malin Sundbom Graduated in 2014
Project: Non-Hit Car and Truck
Subject: Driver's State Estimation in Semi-Autonomous Vehicles

Mohammad Ali (*co-supervised*) (best paper award in 2012 Intelligent Transportation Systems Conference) Graduated in 2012
Project: Systems for Roadway Departure Avoidance
Subject: Semi-Autonomous Vehicles

3 Teaching Activities and Pedagogical Skills

3.1 Undergraduate Courses

Automatic Control 2020 - present
Program: Master Program in *Advanced Automotive Engineering of the Università di Modena e Reggio Emilia*
Role: Lecturer and examiner

Model Predictive Control 2018 - 2019
Program: Master Program in *Systems, Control and Mechatronics of the Chalmers University of Technology*
Role: Lecturer and examiner

Applied Mechatronic Design 2017 - present
Program: Master Program in *Mechanical Engineering*
Role: Lecturer and examiner

Mechatronic Design (now *Modeling and Control of Mechatronic Systems*) 2013 - 2015
Program: Master Program in *Systems, Control and Mechatronics of the Chalmers University of Technology*
Role: Lecturer and examiner

Modeling and Simulation 2008 - 2016
Program: Master Program in *Systems, Control and Mechatronics of the Chalmers University of Technology*
Role: Lecturer and examiner

System Theory and Control related courses 2003 - 2006
Program: Undergraduate Programs in *Telecommunication* and *Computer Engineering*. Università del Sannio
Role: Teaching Assistant

3.2 Ph. D. Courses

Introduction to Model Predictive Control for Linear and Hybrid Systems 2010 - 2018
Role: Lecturer and examiner

Vehicle Dynamics Control 2009
Role: Lecturer and examiner

3.3 Pedagogical Courses

I have attended the following pedagogical courses.

Leadership training 2012
Institution: Chalmers University of Technology
Lecturer: Peter Lysell (Sharing Insights)

Philosophies of learning (3 credits) 2010
Institution: University of Gothenburg - Engineering Education Research (EER)
Lecturer: Prof. Sven Andersson

Supervision of research (3 credits) 2010
Institution: University of Gothenburg - Engineering Education Research (EER)
Lecturer: Prof. Michael F. Christie

Theory and practice of science (3 credits) 2010
Institution: University of Gothenburg - Engineering Education Research (EER)
Lecturer: Prof. Sven Andersson

Pedagogical project (6 credits) 2010
Institution: University of Gothenburg - Engineering Education Research (EER)
Lecturer: Prof. Michael F. Christie, *Examiner*: Elisabeth Saalman

4 Professional Activities

4.1 Ph. D. Committees

Member of the Ph. D. committees or reviewer for

- Pedro Lima, Royal Institute of Technology. *Advisor*: Bo Wahlberg
- Martin Sivertsson, Linköping University. *Advisor*: Lars Eriksson
- Kristoffer Lidström, Halmstad University. *Advisor*: Tony Larsson
- Andrea Dardanelli, Politecnico di Milano. *Advisor*: Sergio Savaresi

4.2 Editorial and Reviewer Services

Editorial activity

- Associate Editor for Control Engineering Practice and IEEE Transactions on Intelligent Transportation Systems
- I have served as member of the Program Committee in the following conferences
  - American Control Conference (ACC)
  - International Conference on Informatics in Control, Automation and Robotics (ICINCO)
  - IEEE Conference on Control Applications (CCA)

Reviewer activity

Reviewer for the following journals

- IEEE Transactions on Automatic Control
- IEEE Transactions on Control Systems Technology
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Transactions on Robotics
- IEEE/ASME Transactions on Mechatronics
- Automatica
- Control Engineering Practice
- International Journal of Robust and Nonlinear Control
- International Journal of Vehicle Autonomous Systems
- International Journal of Vehicle Systems Modeling and Testing

Reviewer for a number of international conferences, workshops and symposia, including IEEE Conference on Decision and Control, American Control Conference, European Control Conference, IFAC World Congress.

4.3 Invited Talks

Institute for Automation Engineering Control, Otto-von-Guericke University, Magdeburg 2019, May
Title: Coordination of Autonomous Vehicles at Traffic Junctions. Theory and Experiments

3rd IAVSD Workshop on Dynamics of Road Vehicles. Connected and Automated Vehicles 2019, April
Title: Coordination of Autonomous Vehicles at Traffic Junctions. Theory and Experiments

Engineering Department at University of Sannio, Italy 2018, May
Title: Control Invariance in Intelligent Transportation Systems

Hyunday Center of Excellence at UC Berkeley 2018, May
Title: Control Invariance in Intelligent Transportation Systems

The South Korean Research Council (NRF), Seoul, South Korea 2013, June
Title: Distributed Conflict Resolution at Road Intersections

Linköping University, Linköping, Sweden 2013, May
Title: Distributed Conflict Resolution at Road Intersections

General Motors - Advanced Technical Center, Haifa, Israel 2013, January
Title: Driver Modeling and Set-Based Approaches to Driving Mode Transition Logics in Semi-Autonomous Vehicles

AAC Vehicle Control Workshop, Technion, Haifa, Israel 2013, January
Title: Constrained Optimal Control Methods for Vehicle Control Problems in Intelligent Transportation Systems

Volvo Group, Göteborg, Sweden 2012, November
Title: Constrained Optimal Control Methods in Autonomous Driving

Halmstad University, Halmstad, Sweden 2012, September
Title: Control and Verification Problems in Intelligent Transportation Systems

Penn State University, USA 2012, April
Title: Research on Transportation Systems at the Department of Signals and Systems

University of Trento, Italy 2011, October
Title: Constrained Optimal Control Methods for Vehicle Control Problems in Intelligent Transportation Systems

Volvo Construction Equipment, Göteborg, Sweden 2011, May
Title: Model Predictive Control for Automotive Applications

Vrije Universiteit Brussel, Brussels, Belgium 2010, May
Title: An Introduction to Constrained Optimal Control for Automotive Applications

1st Workshop on Automotive Model Predictive Control, Linz, Austria 2009, February
Title: Predictive Approaches to Vehicle Dynamics Control

Department of Aeronautical and Vehicle Engineering, Kungliga Tekniska Högskolan (KTH), Stockholm 2008, December
Title: Predictive Approaches to Global Chassis Control

Delft Center for Systems and Control, TU Delft, The Netherlands 2008, November
Title: Overview of a Predictive Controller in Chemical Reactors and a Receding Horizon Scheduler in a Multistage Production Plant

Linköping University, Linköping, Sweden 2008, November
Title: Predictive Approaches for Vehicle Dynamics Control

Department of Mechanical Engineering, University of California at Berkeley, USA 2008, February
Title: Formulation and Real-Time Implementation of MPC Approaches to Vehicle Dynamics Control

Volvo Cars Corporation, Göteborg, Sweden 2008, May
Title: Model Predictive Control for Fast Nonlinear Systems. A Vehicle Dynamics Control Application.

SAAB Automobiles, Trollhättan, Sweden 2008, June
Title: Model Predictive Control for Fast Nonlinear Systems. A Vehicle Dynamics Control Application.

Volvo Cars Corporation, Göteborg, Sweden 2008, January
Title: Formulation and Real-Time Implementation of MPC Approaches for Vehicle Dynamics Control

Ford Research Lab, Dearborn, USA 2007, October
Title: Formulation and Real-Time Implementation of MPC Approaches for Vehicle Dynamics Control

Department of Aerospace Engineering and Mechanics, University of Minnesota, USA 2006, November
Title: A Real-Time Model Predictive Control Approach for Autonomous Active Steering

5 Publications

H-index: 34
Source: Google Scholar, Tuesday 2nd July, 2024

Journal papers

[1] Robert Hult, Mario Zanon, Gianluca Frison, Sébastien Gross, and Paolo Falcone. Experimental validation of a semi-distributed sqp method for optimal coordination of automated vehicles at intersections. Accepted for publication on *Optimal Control Applications & Methods*, 2020.

[2] Ivo Batkovic, Mohammad Ali, Paolo Falcone, and Mario Zanon. Safe trajectory tracking in uncertain environments. *Submitted to IEEE Transactions on Automatic Control*, 2020. arXiv preprint arXiv:2001.11602.

[3] Masoud Bahraini, Mario Zanon, Paolo Falcone, and Alessandro Colombo. Receding-horizon robust online communication scheduling for constrained networked control systems. *Submitted to IEEE Transactions on Automatic Control*, 2020.

[4] Emil Klintberg, Magnus Nilsson, Ankit Gupta, Lars Johannesson Mårdh, and Paolo Falcone. Tree-structured polyhedral invariant set calculations. *IEEE Control Systems Letters*, 4(2):426–431, 2019.

[5] Ankit Gupta, Hakan Krolu, and Paolo Falcone. Computation of low-complexity control-invariant sets for systems with uncertain parameter dependence. *Automatica*, 101:330 – 337, 2019.

[6] A. Gupta and P. Falcone. Full-complexity characterization of control-invariant domains for systems with uncertain parameter dependence. *IEEE Control Systems Letters*, 3(1):19–24, Jan 2019.

[7] Marco Di Vaio, Paolo Falcone, Robert Hult, Alberto Petrillo, Alessandro Salvi, and Stefania Santini. Design and experimental validation of a distributed interaction protocol for connected autonomous vehicles at a road intersection. *IEEE Transactions on Vehicular Technology*, 68(10):9451–9465, 2019.

[8] Luca Maria Castiglione, Paolo Falcone, Alberto Petrillo, Simon Pietro Romano, and Stefania Santini. Cooperative intersection crossing over 5g. *Submitted to IEEE/ACM Transactions on Networking*, 2019. arXiv preprint arXiv:1907.07643.

[9] Mario Zanon, Themistoklis Charalambous, Henk Wymeersch, and Paolo Falcone. Optimal scheduling of downlink communication for a multi-agent system with a central observation post. *IEEE Control Systems Letters*, 2(1):37–42, 2018.

[10] Hakan Köroğlu, Maryam Mirzaei, Paolo Falcone, and Siniša Krajnović. Platoon control under a novel leader and predecessor following scheme with the use of an advanced aerodynamic model. *Journal of Dynamic Systems, Measurement, and Control*, 140(4):041006, 2018.

[11] R. Hult, M. Zanon, S. Gros, and P. Falcone. Optimal coordination of automated vehicles at intersections: Theory and experiments. *IEEE Transactions on Control Systems Technology*, pages 1–16, 2018.

[12] R. Hult, F. E. Sancar, M. Jalalmaab, A. Vijayan, A. Severinson, M. Di Vaio, P. Falcone, B. Fidan, and S. Santini. Design and experimental validation of a cooperative driving control architecture for the grand cooperative driving challenge 2016. *IEEE Transactions on Intelligent Transportation Systems*, 19(4):1290–1301, April 2018.

[13] Hakan Köroğlu and Paolo Falcone. Robust static output feedback synthesis for platoons under leader and predecessor feedback. *International Journal of Robust and Nonlinear Control*, 27(10):1726–1756, 2017.

[14] R. Hult, G. R. Campos, E. Steinmetz, L. Hammarstrand, P. Falcone, and H. Wymeersch. Coordination of cooperative autonomous vehicles: Toward safer and more efficient road transportation. *IEEE Signal Processing Magazine*, 33(6):74–84, Nov 2016.

[15] M. di Bernardo, P. Falcone, A. Salvi, and S. Santini. Design, analysis, and experimental validation of a distributed protocol for platooning in the presence of time-varying heterogeneous delays. *IEEE Transactions on Control Systems Technology*, 24(2):413–427, March 2016.

[16] Julia Nilsson, Paolo Falcone, Mohammad Ali, and Jonas Sj¨Receding horizon maneuver generation for automated highway driving. *Control Engineering Practice*, 41:124 – 133, 2015.

[17] Roozbeh Kianfar, Paolo Falcone, and Jonas Fredriksson. A control matching model predictive control approach to string stable vehicle platooning. *Control Engineering Practice*, 45:163 – 173, 2015.

[18] J. Nilsson, P. Falcone, and J. Vinter. Safe Transitions From Automated to Manual Driving Using Driver Controllability Estimation. *IEEE Transactions on Intelligent Transportation Systems*, 1:1 – 11, 2014.

[19] R. Kianfar, P. Falcone, and J. Fredriksson. Safety Verification of Automated Driving Systems. *IEEE Intelligent Transportation Systems Magazine*, 5:73 – 86, 2013.

[20] M. Ali, P. Falcone, C. Olsson, and J. Sjöberg. Predictive Prevention of Loss of Vehicle Control for Roadway Departure Avoidance. *IEEE Transactions on Intelligent Transportation Systems*, 14(1):56 – 68, 2013.

[21] R. Kianfar, B. Augusto, A. Ebadighajari, U. Hakeem, J. Nilsson, A. Reza, R. Tabar, N. V. Irukulapati, C. Englund, P. Falcone, S. Papanastasiou, L. Svensson, and H. Wymeersch. Design and Experimental Validation of a Cooperative Driving System in the Grand Cooperative Driving Challenge. *IEEE Transactions on Intelligent Transportation Systems*, 13(3):994 –1007, September 2012.

[22] P. Falcone, M. Ali, and J. Sjöberg. Predictive Threat Assessment via Reachability Analysis and Set Invariance Theory. *IEEE Transactions on Intelligent Transportation Systems*, 12(4):1352 – 1361, December 2011.

[23] P. Falcone, F. Borrelli, E. H. Tseng, J. Asgari, and D. Hrovat. Experimental Validation of Integrated Steering and Braking Model Predictive Control. *International Journal on Vehicle Autonomous Systems*, 7(3/4):292– 309, November 2009.

[24] F. Borrelli, P. Falcone, J. Pekar, and G. E. Stewart. Reference Governor for Constrained Piecewise Affine Systems. *Journal of Process Control*, 8(19):1229– 1237, September 2009.

[25] P. Falcone, E. H. Tseng, F. Borrelli, J. Asgari, and D. Hrovat. MPC-Based Yaw and Lateral Stabilization Via Active Front Steering and Braking. *Vehicle System Dynamics*, 7(3/4):611 – 628, November 2008.

[26] P. Falcone, F. Borrelli, E. H. Tseng, J. Asgari, and D. Hrovat. Linear Time Varying Model Predictive Control and its Application to Active Steering Systems: Stability Analysis and Experimental Validation. *International Journal of Robust and Nonlinear Control*, 18(8):862 – 875, May 2008.

[27] P. Falcone, F. Borrelli, J. Asgari, E. H. Tseng, and D. Hrovat. Predictive Active Steering Control for Autonomous Vehicle Systems. *IEEE Transactions on Control Systems Technology*, 15(3):566 – 580, May 2007.

[28] F. Borrelli, P. Falcone, and C. Del Vecchio. Event-Based Receding Horizon Control for Two-Stages Multi-Product Production Plants. *Control Engineering Practice*, 15(12):1556 – 1568, December 2007.

[29] P. Falcone, F. Borrelli, T. Keviczky, J. Asgari, and D. Hrovat. MPC-based approach to active steering for autonomous vehicle systems. *International Journal on Vehicle Autonomous Systems*, 3(2/3/4):265– 291, November 2005.

Book chapters

[1] P. Falcone. Lane keeping. In John Baillieul and Tariq Samad, editors, *Encyclopedia of Systems and Control*, pages 1–7. Springer London, 2014.

[2] D. Hrovat, H. E. Tseng, J. Lu, J. Deur, F. Assadian, F. Borrelli, and P. Falcone. Vehicle Controls. In William S. Levine, editor, *The Control Handbook, Second Edition. Control System Applications*, chapter 1. Taylor&Francis/CRC Press, December 2011.

[3] P. Falcone, F. Borrelli, E. H. Tseng, and D. Hrovat. On Low Complexity Predictive Approaches to Control of Autonomous Vehicles. In F. Allgöwer, L. Glielmo, C. Guardiola, and I. Kolmanovsky, editors, *Automotive Model Predictive Control*, Lecture Notes in Control and Information Sciences, pages 195 – 210. Springer, January 2010.

Conference papers

[1] A. Toytziaridis, P. Falcone, and J. Sjberg. A data-driven markovian framework for multi-agent pedestrian collision risk prediction. In *2019 IEEE Intelligent Transportation Systems Conference (ITSC)*, pages 777–782, Oct 2019.

[2] Ankit Gupta, Magnus Nilsson, Paolo Falcone, Emil Klintberg, and Lars Johannesson Mårdh. A framework for vehicle lateral motion control with guaranteed tracking and performance. In *2019 IEEE Intelligent Transportation Systems Conference (ITSC)*, pages 3607–3612. IEEE, 2019.

[3] Ivo Batkovic, Mario Zanon, Mohammad Ali, and Paolo Falcone. Real-time constrained trajectory planning and vehicle control for proactive autonomous driving with road users. Submitted to *European Control Conference (ECC)*, 2019.

[4] Ivo Batkovic, Mario Zanon, Mohammad Ali, and Paolo Falcone. Real-time constrained trajectory planning and vehicle control for proactive autonomous driving with road users. In *2019 18th European Control Conference (ECC)*, pages 256–262. IEEE, 2019.

[5] Masoud Bahraini, Mario Zanon, Alessandro Colombo, and Paolo Falcone. Receding-horizon robust online communication scheduling for constrained networked control systems. In *2019 18th European Control Conference (ECC)*, pages 2969–2974. IEEE, 2019.

[6] Robert Hult, Mario Zanon, Sébastien Gros, and Paolo Falcone. Experimental validation of distributed optimal vehicle coordination (i). In *European Control Conference (ECC)*, 2018.

[7] Robert Hult, Mario Zanon, Sébastien Gros, and Paolo Falcone. Energy-optimal coordination of autonomous vehicles at intersections. In *European Control Conference (ECC)*, 2018.

[8] R. Hult, M. Zanon, S. Gras, and P. Falcone. An miqp-based heuristic for optimal coordination of vehicles at intersections. In *2018 IEEE Conference on Decision and Control (CDC)*, pages 2783–2790, Dec 2018.

[9] Ankit Gupta and Paolo Falcone. Low-complexity explicit mpc controller for vehicle lateral motion control. Submitted to *IEEE 57th Conference on Decision and Control (CDC)*, 2018.

[10] Ankit Gupta and Paolo Falcone. Full-complexity characterization of control-invariant domains for systems with uncertain parameter dependence. Submitted to *IEEE 21st International Conference on Intelligent Transportation Systems (CDC)*, 2018.

[11] A. Colombo, M. Bahraini, and P. Falcone. Measurement scheduling for control invariance in networked control systems. In *2018 IEEE Conference on Decision and Control (CDC)*, pages 3361–3366, Dec 2018.

[12] Ivo Batkovic, Mario Zanon, Nils Lubbe, and Paolo Falcone. A computationally efficient model for pedestrian motion prediction. *European Control Conference (ECC)*, 2018.

[13] Mario Zanon, Sébastien Gros, P Falcone, and H Wymeersch. An asynchronous algorithm for optimal vehicle coordination at traffic intersections. In *20th IFAC World Congress*, 2017.

[14] Mehdi Jalalmaab, Baris Fidan, Soo Jeon, and Paolo Falcone. Guaranteeing persistent feasibility of model predictive motion planning for autonomous vehicles. *IEEE Intelligent Vehicles Symposium*, 2017.

[15] A. Gupta, H. Kro?lu, and P. Falcone. Restricted-complexity characterization of control-invariant domains with application to lateral vehicle dynamics control. In *2017 IEEE 56th Annual Conference on Decision and Control (CDC)*, pages 4946–4951, Dec 2017.

[16] Andrea Sinigaglia, Kristoffer Tagesson, Paolo Falcone, and Bengt Jacobson. Coordination of motion actuators in heavy vehicles using model predictive control allocation. In *2016 IEEE Intelligent Vehicles Symposium (IV)*, pages 590–596. IEEE, 2016.

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