

## Andrea Carron

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8092 Zürich, Switzerland  
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### WORK EXPERIENCE

PostDoc Researcher,  
ETH Zurich  
From October 2016-current.

- NCCR Digital Fabrication project.
- Safe learning and Distributed MPC.
- Autonomous Mobility on Demand.

Simulation Development Engineer,  
McLaren Racing Ltd.  
From January 2016-September 2016.

- Development of new Simulation tools.
- Maintenance of the existing software platform.

### EDUCATION

*Ph.D.* in Control Engineering,  
University of Padova, Italy  
From January 2013 to January 2016  
Thesis: Efficient Parametric and Non-Parametric Localization and Mapping.  
Topics: Robotics, Multi-agent systems, Machine Learning.

*Master of Engineering*, Control Engineering, 110/110 cum laude  
University of Padova, Italy  
From October 2010 to October 2012  
Thesis: Receding Horizon Control of Multiagent systems with competitive dynamics.  
Topics: Control Systems, Estimation, Identification and Applied Math.

*Bachelor of Engineering*, Control Engineering, 110/110 cum laude  
University of Padova, Italy  
From October 2007 to July 2010  
Thesis: design and implementation of a stepper motor driver.  
Topics: Control Systems, Computer Science, Electronics and Telecommunications.

*Post-secondary education*, Informatics, 100/100  
I.T.I.S. F. Severi, Italy  
From September 2001 July 2007  
Thesis: Cluster Fault Tolerant.  
Topics: Programming Languages, IT, Networking and Database.

### ABROAD EXPERIENCES

*Visiting Researcher, University of California Santa Barbara,  
Mechanical Engineering Department,  
Santa Barbara (CA), USA*

Research period at the Motion Dynamic and  
Path Planning Laboratory, under the supervision  
of Prof. Francesco Bullo.

May-November 2014

- Research on Markov Chains.
- Support in writing research grant proposal.

*Visiting Researcher, Max Planck Institute  
for Biological Cybernetics, Tuebingen, Germany* November-December 2013  
Research period at the Autonomous Robotics and  
Human Machine System group under the supervision  
of Dr. Antonio Franchi.

- Research on Localization Algorithms.
- Development of hardware for robotic localization.

*Visiting Scholar, University of California  
Riverside (CA), USA* March - August 2012

5 months experience during the Master Degree

- Attending the class: "Introduction to Robotics".
- Working on my Master Thesis  
under the supervision of Prof. Elisa Franco.

## COMPUTER SKILLS

*Languages & Software:* Matlab, Simulink, C, Java, Ruby on Rails, Python.

*Operating Systems:* Windows, Unix, Mac OS X, QNX.

*Communication Networks:* TCP/IP, CanOpen.

*Version Control:* GIT, SVN, TFS.

*IDEs:* Microsoft Visual Studio 2013, Eclipse.

## MASTER THESIS SUPERVISOR

*Francesco Seccamonte:* A distributed MPC algorithm for optimal  
rebalancing of AMoD systems. IDSC, ETH. 2017

*Alberto Dalla Libera:* Control using Gaussian Regression of a  
robotic arm made with dielectric elastometer cones. DEI, UniPD, 2015.

*Andrea Cogliervina:* UAV control for delivery of  
unknown loads. DEI, UniPD, 2015.

## BACHELOR THESIS SUPERVISOR

*Ines Garcia Paloma:* Distributed Partitioning Algorithms. DEI, UniPD, 2015.

*Carlos Saiz:* Distributed Partitioning Algorithms. DEI, UniPD, 2015.

## TEACHING ASSISTANT

*Model Predictive Control, ETH* 2017

*Robotics, Vision and Control, UniPD* 2015

*System Mathematical Modeling, UniPD* 2014

*Control Laboratory, UniPD* 2014

## OTHER EXPERIENCES

*Students Supervisor* October 2014 - September 2015

ERC (European Rover Challenge) Program

Morpheus Team.

- Technical support for the design of the software and the control architecture.
- Coaching and mentoring.

*Control and Software Programmer* October 2012 - February 2014

ESA (European Space Agency) Rexus/Bexus

Program - ARCADE-R2 Team

- Development of the ARCADE control system.
- Development of the ARCADE software.

*Control and Software Programmer* December 2010 - February 2012

ESA (European Space Agency) Rexus/Bexus

Program - ARCADE Team

- Development of the ARCADE control system.

- Development of the ARCADE software.

Computer Technician  
Aesse Informatica S.r.l., Padova

June-July 2005

- Computers Repair and Maintenance.

**JOURNAL  
PUBLICATIONS**

M. Todescato, A. Carron, R. Carli, G. Pillonetto, L. Schenato. *Efficient Spatio-Temporal Gaussian Regression via Kalman Filtering*. *IEEE Transactions on Pattern Analysis and Machine Intelligence*. [submitted]

M. Todescato, A. Carron, R. Carli, G. Pillonetto, L. Schenato. *Multi-Robots Gaussian Estimation and Coverage Control from Client-Server to Peer-to-Peer Architectures*. *Automatica*. 80:284-294, 2017

R. Patel, A. Carron, F. Bullo. *The Hitting Time of Multiple Random Walks*. *SIAM Journal on Matrix Analysis and Applications*. 37(3):933-954, 2016.

M. Barbetta, A. Boesso, F. Branz, A. Carron, L. Olivieri, J. Prendin, G. Rodeghiero, F. Sansone, L. Savioli, F. Spinello, A. Francesconi. *ARCADE-R2 experiment on board BEXUS 17 stratospheric balloon*. *Ceas Space Journal*, 7(3):347-358, 2015.

A. Carron, M. Todescato, R. Carli, L. Schenato. *An asynchronous consensus-based algorithm for estimation from noisy relative measurements*. *IEEE Transactions on Control of Network Systems*, 1(3):283-296, 2014.

**CONFERENCE  
PUBLICATIONS**

R. Larsen, A. Carron, M. N. Zeilinger, *Safe Learning for Distributed Systems with Bounded Uncertainties*, 20th IFAC World Congress, 2017 [to appear].

A. Carron, M. Todescato, R. Carli, G. Pillonetto, L. Schenato. *Machine Learning Meets Kalman Filtering*. 55th IEEE Conference on Decision and Control (CDC'16), pages 4594-4599, 2016.

A. Antonello, A. Carron, R. Carli, P. Tsiotras, *Performance Analysis of Three Cost Policies for The Control of a Camera in Relative Circumnavigation Scenarios*, 67th International Astronautical Congress, 2016.

A. Carron, R. Patel, and F. Bullo. *Hitting time for doubly-weighted graphs with application to robotic surveillance*. *European Control Conference (ECC'16)*, pages 661-665, 2016.

M. Todescato, A. Carron, R. Carli, A. Franchi, L. Schenato. *Multi-Robot Localization via GPS and Relative Measurements in the Presence of Asynchronous and Lossy Communication*. *European Control Conference (ECC'16)*, pages 2527-2532, 2016.

A. Carron, M. Todescato, R. Carli, L. Schenato, G. Pillonetto. *Multi-agents adaptive estimation and coverage control using Gaussian regression*. *European Control Conference (ECC'15)*, pages 2490-2495, 2015.

F. Branz, A. Antonello, A. Carron, R. Carli, A. Francesconi. *Kinematics and control using Gaussian Regression of redundant robotic arm based on Dielectric Elastomer Actuators*. *SPIE Smart Structure*, 2015.

M. Todescato, A. Carron, R. Carli, L. Schenato. *Distributed Localization from Rel-*

ative Noisy Measurements: a Robust Gradient Based Approach. *European Control Conference (ECC'15)*, pages 1914-1919, 2015.

M. Barbetta, F. Branz, A. Carron, L. Olivieri, J. Prendin, F. Sansone, F. Spinello, L. Savioli, A. Francesconi. *Data retrieved by ARCADE-R2 Experiment on board the BEXUS-17 balloon. 22nd ESA Symposium on European Rocket and Balloon Programmes and Related Research*, pages 349-360, 2015.

M. Barbetta, A. Boesso, F. Branz, A. Carron, J. Olivieri, J. Prendin, G. Rodeghiero, F. Sansone, L. Savioli, F. Spinello, A. Francesconi. *Autonomous Rendezvous, Control and Docking Experiment - Reflight 2. The 4S Symposium*, 2014.

A. Antonello, F. Sansone, A. Francesconi, R. Carli, A. Carron. *A Novel Approach to the Simulation of On-Orbit Rendezvous and Docking Manoeuvres in a Laboratory Environment Through the Aid of an Anthropomorphic Robotic Arm. IEEE METRO*, pages 347-352, 2014.

A. Carron, M. Todescato, R. Carli, L. Schenato. *Adaptive consensus-based algorithms for fast estimation from relative measurements. 4th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys13)*, 46(27):234-239, 2013.

A. Carron, E. Franco. *Receding Horizon Control of a Two-Agent System with Competitive Objectives. American Control Conference (ACC13)*, 2533-2538, 2013.

Saverio Bolognani, Andrea Carron, Alberto Di Vittorio, Diego Romeres and Luca Schenato. *Distributed multi-hop reactive power compensation in smart micro-grids subject to saturation constraints. (CDC'12)*, 1118-1123, 2012.

## TALKS

*Peer-to-Peer Multi-Robots Gaussian Estimation and Coverage Control* November 2016  
IFA - ETH Zurich,  
Switzerland.

*Cooperation and learning in robotic networks with unreliable communication* November 2014  
University of Stanford,  
California, USA.

*Localization and Coverage Control in Robotics Networks* June 2014  
University of California Santa Barbara,  
California, USA.

*ARCADE Experiment: an overview of the BEXUS 13-17 missions* December 2013  
Max Planck Institute for Biological Cybernetics,  
Tuebingen, Germany.

*Localization Algorithms* November 2013  
Max Planck Institute for Biological Cybernetics,  
Tuebingen, Germany.

## SUMMER AND WINTER SCHOOLS

*SIDRA Ph.D Summer School, Bertinoro* July 2014

*Topics: Non-Linear Control and UAVs.*

*SIDRA Ph.D Summer School, Bertinoro*

*July 2013*

*Topics: System Biology and Vehicle Dynamics Control.*

*Ph.D. Summer School in Information Engineering, Bressanone*

*July 2013*

*Topic: Wireless Sensors Networks.*

*EECI Graduate School on Control*

*January 2013*

*Randomized Algorithms for Systems*

*and Control: Theory and Applications.*

**HONORS  
and AWARDS**

*Ing. Aldo Gini Foundation Fellowship, Padova, Italy.*

*2014*

*Placed 10th in the Italian Olympiad in Informatics (ABACUS).*

*2007*

*Fellowship winner for Academic Merit.*

*2006/2007*

**PERSONAL  
SKILLS  
and  
COMPETENCES**

*Professional Engineer since 2013*

*Italian Mother Tongue*

*English European Level B1*

**EXTRA-  
CURRICULAR  
ACTIVITIES**

*Car and Motorbike Licenses*

*Guitar Player, Swimmer and Ultimate player*