Luca Furieri - Curriculum Vitae

email	furieril@control.ee.ethz.ch
date of birth	11 October 1992
nationality	Italian

CURRENT POSITION

PhD researcher and teaching assistant, in control theory — From: **Nov, 2016**
(**ETH Zurich**, Automatic Control Laboratory, Switzerland)
Advisor: Professor Maryam Kamgarpour

EDUCATION

Master's Degree in automation engineering — From: **Oct, 2014**
(University of Bologna, Italy) — To: **Oct 2016**
Thesis: *Geometric versus MPC-based guidance laws for fixed-wing UAVs in very strong wind fields*
Supervisors: Professor Roland Siegwart, ETH Zurich
Professor Lorenzo Marconi, University of Bologna
Grade: 110/110 cum laude, 29.80/30 average grade, top 1%

Excellence curriculum, Collegio Superiore — From: **Oct, 2011**
(University of Bologna, Italy) — To: **Oct 2016**
Admission through national competition in 2011 (5% acceptance rate)

Bachelor's degree in automation engineering — From: **Oct, 2011**
(University of Bologna, Italy) — To: **Oct 2014**
Thesis: *Consensus algorithms applied to trajectory planning of Multi-Robot-Systems*
Supervisor: Professor Lorenzo Marconi, University of Bologna
Grade: 110/110 cum laude, 29.27/30 average grade

High School Leaving Qualification in Classical Studies — From: **Sep 2006**
Liceo Classico Francesco Petrarca (Arezzo, Italy) — To: **Jul 2011**
Final Mark: 100/100
Italian Maths Olympiads: qualified for the Final National Competition, (1/1000 qualification ratio) — **May 2011**

RESEARCH INTERESTS

Distributed control and optimization: my present research interests focus on developing control policies for complex dynamical systems, when only limited information is available. Specifically, I develop the theory for tractable computation of distributed optimal controllers. I am particularly interested in the application of the methods I develop to several physical domains, ranging from smart grid systems to coordinating platoons of autonomous vehicles.

Game theory and learning based control: planned research activities include addressing competitive control scenarios where different agents aim at reaching different and conflicting control goals, and the case of uncertain and unkown dynamical systems.

JOURNAL PUBLICATIONS

[**J2**] An Input-Output Parametrization of Stabilizing Controllers: amidst Youla and System Level Synthesis, *L. Furieri, Y. Zheng, A. Papachristodoulou, M. Kamgarpour, IEEE Control Systems Letters (LCSYS), to appear*

[**J1**] Unified Approach to Convex Robust Distributed Control given Arbitrary Information

Structures, *L. Furieri, M. Kamgarpour, IEEE Transactions on Automatic Control (TAC), to appear*

CONFERENCE PUBLICATIONS

[C7] On Separable Quadratic Lyapunov Functions for Convex Design of Distributed Controllers, *L. Furieri, Y. Zheng, A. Papachristodoulou, M. Kamgarpour, European Control Conference (ECC), 2019*

[C6] Robust Distributed Control Beyond Quadratic Invariance, *L. Furieri, M. Kamgarpour, Proceedings of the Annual Conference on Decision and Control (CDC), 2018*

[C5] Reducing HVDC Network Oscillations Considering Wind Intermittency Through Optimized Grid Expansion Decision *A. Elahidoost, L. Furieri, E. Tedeschi, M. Kamgarpour, IEEE Energy Conversion Congress and Exposition (ECCE), 2018, 2683–2690*

[C4] Optimizing HVDC Grid Expansion and Control For Enhancing DC Stability *A. Elahidoost, L. Furieri, E. Tedeschi, M. Kamgarpour, Proceedings of the Power Systems Computation Conference (PSCC), 2018, 1–7*

[C3] Robust Control of Constrained Systems given an Information Structure *L. Furieri, M. Kamgarpour, Proceedings of the Annual Conference on Decision and Control (CDC), 2017, 3481–3486*

[C2] Gone with the wind: nonlinear guidance for small fixed-wing aircraft in arbitrarily strong windfields *L. Furieri, T. Stastny, L. Marconi, R. Siegwart, I. Gilitschenski, Proceedings of the American Control Conference (ACC), 2017, 4254-4261*

[C1] Internal model-based control for loitering maneuvers of UAVs, *G. Casadei, L. Furieri, N. Mimmo, R. Naldi, L. Marconi, Proceedings of the European Control Conference (ECC), 2016, pp. 672-677*

AWARDS

Best Student Paper Award @ ECC19, finalist **Jun 2019**
awarded for the paper [C7] presented at the 2019 European Control Conference (ECC19), as one of the best 5 student papers

O. Hugo Schuck Best Paper Award, **Jun 2018**
awarded for the paper [C2] as the best application paper presented at the 2017 American Control Conference (ACC17)

TALKS

Robust distributed control beyond quadratic invariance, **Dec 2018**
Presentation of the paper [C6] in Miami, IEEE Conference on Decision and Control

Convexity and performance bounds in synthesizing distributed controllers **Aug 2018**
Invited talk at the Department of Engineering Sciences, University of Oxford

Synthesizing robust distributed controllers: when is information enough?, **Feb 2018**
Seminar talk at IfA, ETH - Zurich

Control of constrained systems given an information structure, **Dec 2017**
Presentation of the paper [C3] in Melbourne, IEEE Conference on Decision and Control

TEACHING

Control Systems II (ETH, M.Sc. level course) **Spring 2019**
Linear Systems Theory (ETH, M.Sc. level course) **Autumn 2017, Autumn 2018**
Advanced Topics in Control (ETH, M.Sc. level course) **Spring 2017, Spring 2018**

REVIEW ACTIVITIES

IEEE Conference on Decision and Control (CDC)
Nonlinear Analysis: Hybrid Systems (NAHS), Elsevier Journal

FELLOWSHIPS

Excellence Scholarship, University of Bologna **2011 to 2016**
Free tuition, lodging and reimbursement of living expenses. Granted annually based on excellent academic results

Thesis abroad scholarship, University of Bologna **Mar 2016**
To spend 6 months as a visiting researcher at ETH Zurich - Autonomous Systems Laboratory (ASL)

PATENTS

Apparatus for processing horticultural products **Jan 2016**
Inventors: Manuel Amadori, Maria Elena Fantoni, Luca Furieri, Marco Marian, Xhoan Papadhimitri. International application number PCT/IB2017/050405

COMPUTER SKILLS

Programming Languages: C/C++, Java, bash
Software: excellent skills in MATLAB/Simulink. Others include: Gazebo, CodeSYS, Solid Edge, Mathematica

LANGUAGES

Italian: Native

English: Proficient (C2)
Certificate: Cambridge Advanced English Certificate (CAE), Grade A. **Sep 2014**

German: Upper-Intermediate (B2)

Japanese: Lower-intermediate (A2-B1)
Certificate: JLPT N4, Japanese Language Proficiency Test **Jan 2017**

French: Basic Knowledge (A2)
Certificate: DELF, Diplôme d'études en langue française, A2 **Jun 2006**

INTERESTS

Technology & research. Piano playing. Traveling. Learning languages. (And others!)