



CURRICULUM VITAE

Daniele Bernardini

Personal data

Born March 29th 1982 in Siena, Italy
Address: via G. Pietri, 5 - 53100 Siena, Italy
Phone: +39 339 1875527
E-mail: daniele.bernardini@imtlucca.it
daniele.bernardini@odys.it
Web: <http://cse.lab.imtlucca.it/~bernardini>

Work experience

- Oct. 2011 - to date Co-founder and R&D Director of ODYS Srl, spin-off company of IMT Lucca, <http://www.odys.it>. Development of optimization and real-time control algorithms and software for advanced process control.
- Oct. 2011 - to date Post-Doctoral Fellow at the Dynamical Systems, Control and Optimization (DYSCO) research unit, IMT Institute for Advanced Studies Lucca, Italy.
- Oct. 2010 - Sept. 2011 Post-Doctoral Fellow at the Department of Mechanical and Structural Engineering (DIMS), University of Trento, Italy.

Education

- 2011 Ph.D. degree in Information Engineering (curriculum in Automation and Control) granted by the University of Siena. Thesis: Model predictive control of stochastic and networked systems.
- 2010 Visiting student at the Information Systems Laboratory, Department of Electrical Engineering, Stanford University, CA, during Q1-Q2 2010. Host: prof. Stephen Boyd.
- 2007 Master degree in Computer Engineering, *cum laude*, granted by the University of Siena. Curriculum in Robotics and Automation. Thesis: Energy-aware model predictive control based on wireless sensor feedback.
- 2005 Bachelor degree in Computer Engineering, *cum laude*, granted by the University of Siena. Curriculum in Systems for Industrial Automation. Thesis: Modelling and coordinated flatness control based on optimization for cold tandem rolling, in collaboration with Danieli Automation SpA.

Research interests

Model predictive control, stochastic control, networked control systems, hybrid systems. Applications of optimization-based control algorithms to problems in the energy, automotive, and aerospace domains.

Languages Italian, English.

Scientific publications

Journal Papers

6. S. Di Cairano, D. Bernardini, A. Bemporad, and I.V. Kolmanovsky, *Stochastic MPC With Learning for Driver-Predictive Vehicle Control and its Application to HEV Energy Management*, IEEE Transactions on Control Systems Technology, vol. 22, no. 3, pp. 1018-1031, 2014.
5. S. Di Cairano, H.E. Tseng, D. Bernardini and A. Bemporad, *Vehicle yaw stability control by coordinating active front steering and differential braking in the tire sideslip angles domain*, IEEE Transactions on Control Systems Technology, vol. 21, no. 4, pp. 1236-1248, 2013.
4. D. Bernardini and A. Bemporad, *Stabilizing model predictive control of stochastic constrained linear systems*, IEEE Transactions on Automatic Control, vol. 57, no. 6, pp. 1468-1480, 2012.
3. M.C.F. Donkers, W.P.M.H. Heemels, D. Bernardini, A. Bemporad, V. Shneer, *Stability analysis of stochastic networked control systems*, Automatica, vol. 48, no. 5, pp. 917-925, 2012.
2. D. Bernardini and A. Bemporad, *Energy-aware robust model predictive control based on noisy wireless sensors*, Automatica, vol. 48, no. 1, pp. 36-44, 2012.
1. A. Bemporad, D. Bernardini, F.A. Cuzzola, and A. Spinelli, *Optimization-based automatic flatness control in cold tandem rolling*, Journal of Process Control, vol. 20, no. 4, pp. 396-407, 2010.

Book Contributions

1. D. Bernardini, D. Muñoz de la Peña, A. Bemporad, and E. Frazzoli, *Simultaneous optimal control and discrete stochastic sensor selection*, in Hybrid Systems: Computation and Control, R. Majumdar and P. Tabuada, Eds., Lecture Notes in Computer Science, pp. 61-75. Springer-Verlag, Berlin Heidelberg, 2009.

Refereed Proceedings

15. P. Sopasakis, D. Bernardini, and A. Bemporad, *Constrained Model Predictive Control Based on Reduced-Order Models*, in Proc. 52nd IEEE Conf. on Decision and Control, Florence, Italy, 2013, pp. 7071-7076.
14. L. Puglia, P. Patrinos, D. Bernardini, and A. Bemporad, *Reliability and Efficiency for Market Parties in Power Systems*, in Proc. 10th International Conference on the European Energy Market, Stockholm, Sweden, 2013, pp. 1-8.
13. P. Patrinos, D. Bernardini, A. Maffei, A. Jokic, and A. Bemporad, *Two-time-scale MPC for economically optimal real-time operation of balance responsible parties*, in Proc. 8th IFAC Symposium on Power Plant and Power System Control, Toulouse, France, 2012.
12. L. Puglia, D. Bernardini and A. Bemporad, *A multi-stage stochastic optimization approach to optimal bidding on energy markets*, in Proc. 50th IEEE Conf. on Decision and Control and European Control Conference, Orlando, FL, 2011, pp. 1509-1514.
11. M. Rubagotti, S. Trimboli, D. Bernardini, and A. Bemporad, *Stability and invariance analysis of approximate explicit MPC based on PWA Lyapunov functions*, in Proc. of 18th IFAC World Congress, Milano, Italy, 2011, pp. 5712-5717.

10. M. Bichi, G. Ripaccioli, S. Di Cairano, D. Bernardini, A. Bemporad, and I.V. Kolmanovsky, *Stochastic model predictive control with driver behavior learning for improved powertrain control*, in Proc. 49th IEEE Conf. on Decision and Control, Atlanta, GA, 2010, pp. 6077-6082.
9. D. Barcelli, D. Bernardini, and A. Bemporad, *Synthesis of networked switching linear decentralized controllers*, in Proc. 49th IEEE Conf. on Decision and Control, Atlanta, GA, 2010, pp. 2480-2485.
8. D. Bernardini, M.C.F. Donkers, A. Bemporad, and W.P.M.H. Heemels, *A Model Predictive Control Approach for Stochastic Networked Control Systems*, 2nd IFAC Workshop on Distributed Estimation and Control in Networked Systems, Annecy, France, 2010, pp. 7-12.
7. S. Di Cairano, H.E. Tseng, D. Bernardini, and A. Bemporad, *Steering vehicle control by switched model predictive control*, 6th IFAC Symposium Advances in Automotive Control, Munich, Germany, 2010.
6. M.C.F. Donkers, W.P.M.H. Heemels, D. Bernardini, A. Bemporad, and V. Shneer, *Stability analysis of stochastic networked control systems*, in Proc. American Control Conference, Baltimore, MD, 2010, pp. 3684-3689.
5. G. Ripaccioli, D. Bernardini, S. Di Cairano, A. Bemporad, and I.V. Kolmanovsky, *A stochastic model predictive control approach for series hybrid electric vehicle power management*, in Proc. American Control Conference, Baltimore, MD, 2010, pp. 5844-5849.
4. D. Bernardini and A. Bemporad, *Scenario-based model predictive control of stochastic constrained linear systems*, in Proc. 48th IEEE Conf. on Decision and Control, Shanghai, China, 2009, pp. 6333-6338.
3. D. Bernardini, S. Di Cairano, A. Bemporad, and H.E. Tseng, *Drive-by-wire vehicle stabilization and yaw regulation: a hybrid model predictive control design*, in Proc. 48th IEEE Conf. on Decision and Control, Shanghai, China, 2009, pp. 7621-7626.
2. D. Bernardini and A. Bemporad, *Energy-aware robust model predictive control with feedback from multiple noisy wireless sensors*, 10th European Control Conference, Budapest, Hungary, 2009, pp. 4308-4313.
1. D. Bernardini and A. Bemporad, *Energy-aware robust model predictive control based on wireless sensor feedback*, in Proc. 47th IEEE Conf. on Decision and Control, Cancun, Mexico, 2008, pp. 3342-3347.

Technical Reports

3. A. Bemporad, D. Bernardini, F.A. Cuzzola, and A. Spinelli, *Optimization-based AFC Automatic Flatness Control in cold tandem rolling*, Technological Paper, Danieli Automation SpA, 2011.
2. M.C.F. Donkers, W.P.M.H. Heemels, D. Bernardini, A. Bemporad, and V. Shneer, *Stability analysis of stochastic networked control systems*, Technical report, Eindhoven University of Technology, HNS 2011.002, 2011.
1. A. Bemporad, D. Bernardini, F.A. Cuzzola, and A. Spinelli, *Optimization-Based Feedback Control of Flatness in a Cold Tandem Rolling*, Tech. Rep. 2007-4, Dept. Information Engineering, University of Siena, Italy, 2007.

Theses

3. D. Bernardini, *Model predictive control of stochastic and networked systems*, PhD thesis, University of Siena, Italy, February 2011.

2. D. Bernardini, *Energy-aware model predictive control based on wireless sensor feedback*, M.E. thesis, University of Siena, Italy, June 2007. In Italian.
1. D. Bernardini, *Modelling and coordinated flatness control based on optimization for cold tandem rolling*, B.E. thesis, University of Siena, Italy, January 2005. In Italian.

Other activities

- Member of the International Program Committee of the IFAC Conference on Nonlinear Model Predictive Control 2012, Noordwijkerhout, the Netherlands, August 2012.
- Peer-reviewer of several international journals in automation and control, including *Automatica*, *IEEE Transactions on Automatic Control*, *IEEE Transactions on Control Systems Technology*, *IEEE Transactions on Circuits and Systems*, *International Journal of Robust and Nonlinear Control*, *Nonlinear Analysis: Hybrid Systems*, and others.
- Didactic activities:
 - Teaching assistant of the Digital Control course held at the University of Siena in 2008-2009.
 - Teaching assistant of the Process Control course held at the University of Siena in 2007-2008 and 2008-2009.
- Certificate of Accomplishment of the *International Curriculum Option of Doctoral Studies in Hybrid Control for Complex, Distributed and Heterogeneous Embedded Systems* earned in May 12, 2011.
- Qualifying exam for engineer's profession held in January 2008 at the University of Florence, Italy.

Lucca, May 29th, 2014.