Curriculum Vitae of Maria Teresa Napoli

EDUCATION

Ph.D:	Mechanical Engineering, March 2004 University of California, Santa Barbara, USA 1 Major in Dynamical Systems and Control 2 Advisor: Professor Bassam Bamieh
Ph.D:	Electrical Engineering, February 1999 Universita' degli Studi di Padova, Padova, Italy 3 Major in Systems Theory and Control 4 Advisor: Professor Mauro Bisiacco
M.S:	Software Engineering, 1996. TecnoPadova, Padova Italy
B. Tech:	Electricall Engineering, July 1995 Universita' degli Studi di Padova, Padova, Italy 5 Emphasis in Data Analysis and Control Theory 6 Advisor: Professor Mauro Bisiacco

ACADEMIC EXPERIENCE

Jan 2009 – present	Assistant Project Scientist, Prof. Pennathur's Nanolab, University of California, Santa Barbara
Jan 2008 – Dec 2008	Postdoctoral Associate: University of California, Santa Barbara.
Dec.2007 – Mar 2008	Lecturer appointment for the Master "Nano and Micro Electromechanical Systems" University of Trento, Italy.
Dec.2006 – Mar 2007	Lecturer appointment for the Master "Nano and Micro Electromechanical Systems" University of Trento, Italy.
May 2004 – Oct 2004	Postdoctoral Associate: University of California, Santa Barbara. Research: Implementation of observer-based sensing scheme for the estimation of displacement of electrostatically actuated MEMS devices. Fabrication and characterization of a novel tunable MEMS oscillator.
2001 – 2002	Postdoctoral Associate: Universita' degli Studi di Padova, Italy. Research: Design of positioning system for HHD heads, Robust H_∞ design.
Sep 1998 – Mar 2004	Research Assistant: University of California, Santa Barbara. Research: Control and dynamical systems – modeling of multicantilever arrays, experimental characterization of electrostatically actuated microcantilevers, observer based design of decoupling controller, design of current measuring circuit.

Sep 1998 – Jun 2002	Teaching Assistant: University of California, Santa Barbara. Held office hours, discussion sessions, and graded homework and exams for undergraduate courses in Control Systems, Automotive Design, Numerical methods and for graduate courses in Linear Systems Theory.

WORK EXPERIENCE

Oct 2004 – Dec 2007	SensorDynamics AG – R&D Department. Microsensors system expert. Senior Engineer since Jan. 2007. System design and data analysis.
Jun 2001 – Sep 2001	Internship at Digital Instruments – Veeco, Santa Barbara, R&D Group. Design and characterization of novel probes for the Atomic Force Microscope.
Jun 2001 – Jul 2001	Taught a class on "Image Processing with Matlab" for Raytheon, Santa Barbara.
Sep 1996 – Jun 1997	Responsible for the lab on Automatic Control for the Universita' degli Studi di Vicenza, Italy.

ACADEMIC AREAS OF SPECIALIZATION

- **Research Areas**

  Atomic Force Microscopy, Spatially Invariant Distributed Parameters Systems, Optimal Control of Distributed Systems, Microfabrication, Modeling and Control of MEMS.

- **Supporting Coursework**

Dynamical Systems:	Classical Mechanics, Dynamical Systems, Advanced Dynamical Systems.
Control Systems:	Linear System Theory, Robust Control Theory, Nonlinear Systems, Optimal Control, Infinite Dimensional Systems & Control, Stochastic Control.
Mathematics:	Real Analysis, Functional Analysis, Hilbert Spaces.
Fabrication and MEMS:	Semiconductor Design, Introduction to MEMS, MEMS Analysis and Design.

ADDITIONAL INFORMATION

Female. Citizen of Italy.
Language skills: Italian (native), English (fluent), French (fluent), Spanish (basic).

TECHNICAL PUBLICATIONS & PRESENTATIONS

Ph. D. Thesis

"Modelling and Control of Electrostatically Actuated Microcantilever Arrays", University of California at Santa Barbara, March 2004.

Ph. D. Thesis

"Multidimensional Systems : Characterization of causality of I/O Discrete Representations and Optimal Control of Spatio-Temporal Models", Universita' degli Studi di Padova, Padova, Italy, February 2000.

B. Tech. Thesis

"Comparative Analysis of 2D Systems and Systems Defined Over Rings", Universita' degli Studi di Padova, Padova, Italy, July 1995.

Refereed Journals

1. **M. Napoli**, S.Zampieri, "2D Proper Rational Matrices and Causal I/O Representations of 2D Behavioral Systems," *SIAM J. Contr.Optim.*, Volume 37, No. 5, Pages 1538 - 1552, 1999.

2. **M. Napoli,** B.Bamieh, and M.Dahleh, "Optimal Control of Arrays of Microcantilevers," *ASME Journal of Dynamic Systems Measurement and Control*, Volume 121, Pages 686 - 690, Dec. 1999.

3. **M. Napoli**, B.Bamieh and K.Turner**,** "A Capacitive Microcantilever : Modeling, Validation and Estimation Using Current Measurements," *ASME Journal of Dynamic Systems Measurement and Control*, Volume 126, Pages 1-8, June 2004.

4. **M. Napoli**, W.Zhang, K.Turner and B.Bamieh, "Characterization of Electrostatically Coupled Micro Cantilevers," *Journal of MicroElectroMechanicalSystems,*Volume 14, Issue 2, Pages 295-304, April 2005.

Refereed Conferences and Presentations

1 **M. Napoli**, S. Pennathur, "Towards Understanding Biomolecule Behavior in Nanofluidic Channels", *Proceedings of the 23rd Int. MSB Symposium 2009*, Feb. 2009, Boston MA, USA.

2 D. Boy, **M. Napoli**, F. Gibou, I. Mezic, S. Pennathur, "Diffusivity Effects in Charged Particle Transport in Nanochannels", *Proceedings of AIChe Meeting 2008*, Nov. 2008, Philadelphia PA, USA.

3 **M. Napoli**, C. Olroyd, K. Turner and B. Bamieh, "A Novel Observer Based Sensing Scheme for the Displacement of Electrostatically Actuated Microcantilevers", *Proceedings of IEEE Sensors 2004*, Oct. 2004, Vienna Austria.

4 **M. Napoli**, B.Bamieh**,** "Design of a Decoupling Controller for Electrostatically Coupled Microcantilevers using Current Measurements, *Proceedings of the 2004 American Control Conference,* June 2004, Boston MA, USA.

5 **M. Napoli**, W.Zhang, K.Turner and B.Bamieh**, "**Dynamics of Mechanically and Electrostatically Coupled

Microcantilevers", *Proceedings of 12th Int. Conf. On Solid-State Sensors, Actuators and Microsystems*, June 2003, Boston MA, USA.

6 **M. Napoli**, B.Bamieh and K.Turner, "Mathematical Modeling, Experimental Validation and Observer Design for a Capacitively Actuated Microcantilever," *Proceedings of 2003 American Control Conference,* June 2003, Denver CO, USA.

7 **M. Napoli**, R.Baskaran, K.Turner and B.Bamieh, "Understanding Mechanical Domain Parametric Resonance in Microcantilevers," *Proceedings of 16th IEEE Annual Int, Conf. On Micro Electro Mechanical Systems*, January 2003, Kyoto Japan.

8 **M. Napoli**, B.Bamieh, "Modeling and Observer Design for Array of Electrostatically Actuated Cantilevers," *Proceedings of 40th IEEE Conference on Decision and Control*, December 2001, Orlando FL, USA.

9 **M. Napoli**, B.Bamieh and M. Dahleh, "Optimal Control of Arrays of Multicantilevers," *Proceedings of 37th IEEE Conference on Decision and Control*, December 1998, Tampa FL, USA.

10 **M. Napoli**, B.Bamieh and M. Dahleh, "H_2 – Norm Minimization for Distributed Continuous Time Systems: an Input/Output Approach," *Proceedings of 1998 Mathematical Theory of Networks and Systems,* July 1998, Padova, Italy.

11 **M. Napoli,** S.Zampieri, "Causality of 2D Input/Output Representations in the Behavioral Approach," *Proceedings of 1998 Mathematical Theory of Networks and Systems,* July 1998, Padova, Italy.

Invited Talks

1. "Control Issues in MEMS: Control of an Array of Microcantilevers ," Department of Electrical and Computer Engineering, University of Padova, Padova Italy, July 2002.

2. "MEMS for the automotive industry", Paedagogisches Institut des Bundes fuer Niederosterreich, Hollabrunn Austria, April 2006.