

Curriculum Vitae

Danielle C. Tarraf

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1. Personal:

Citizenship: US Citizen.

2. Education:

<u>Institution</u>	<u>Degree</u>	<u>Year</u>
American University of Beirut	B.E.	1996
MIT	S.M.	1998
MIT	Ph.D.	2006

3. Title of Doctoral Thesis:

A Finite State Machine Framework for Robust Analysis and Control of Hybrid Systems.

4. Principal Fields of Interest:

- Systems and control theory, particularly: Robust control of hybrid systems and systems over finite alphabets, model complexity reduction for control design.
- Algebra, combinatorics and automata theory, particularly as they relate to systems and control theory.
- Analysis and approximation of complex networks. Applications in financial and social networks.

5. History of JHU Appointments:

<u>Date</u>	<u>Position</u>
07/2008 - present	Assistant Professor of ECE

6. Non JHU Academic Experience:

<u>Date</u>	<u>Position</u>	<u>Institution</u>
06/2006 - 11/2006	Postdoctoral Fellow	MIT
11/2006 - 2/2007	Postdoctoral Associate	MIT
03/2007 - 05/2008	Postdoctoral Scholar	Caltech

7. Professional Service:

<u>Activity</u>	<u>Date</u>
Reviewer: IEEE Transactions on Automatic Control; International Journal of Robust and Nonlinear Control; HSCC; various conferences (ACC, CDC, ROCOND)	2004 - present
Co-chair, ACC session on "Linear Matrix Inequalities II"	06/2006
Member, CDC Best Student Paper Award committee	09/2007
Reviewer, AFOSR proposal	10/2008

8. Department & Institute Service:

<u>Activity</u>	<u>Date</u>
Member: Thesis defense committee (<i>Wilbur Channels, ECE</i>)	09/2008
Panelist: Women of Whiting Event	11/2008
Member: Seminar committee (<i>Christopher Poirier, ECE</i>)	12/2008
Member: WSE Student Initiatives Fund review committee	12/2008
Alternate Member: Thesis defense committee (<i>Yanyan Gao, Physics & Astronomy</i>)	12/2008
Chair: ECE Graduate Admissions Evaluations (Control Systems Group)	01/2009 - 02/2009

9. Publications: (Papers marked * are the outcome of supervised student research)

Refereed Papers in Journals and Archival Volumes:

- [1] D. C. Tarraf, A. Megretski and M. A. Dahleh, "Finite state controllers for stabilizing switched systems with binary sensors," *Hybrid Systems: Computation and Control, Lecture Notes in Computer Science*, v. 4416, pp.543-557. Springer, April 2007.
- [2] D. C. Tarraf, A. Megretski and M. A. Dahleh, "A framework for robust stability of systems over finite alphabets," *IEEE Transactions on Automatic Control*, vol.53, no.5, pp.1133-1146, June 2008.

Under review:

- [1] D. C. Tarraf, A. Megretski and M. A. Dahleh, "Finite state stabilizing controllers for systems with binary sensors: A robust control approach", submitted to the *IEEE Transactions on Automatic Control* (February 2009).

Refereed Conference Proceedings:

- [1] D. C. Tarraf and H. Asada, "A differential-algebraic equation (DAE) formulation of arterial hemodynamics," *Proceedings of the 22nd Annual International Conference of the IEEE*, Chicago, IL, July 2000, v.2, pp.1126-1129.
- [2] D. C. Tarraf and H. Asada, "PDAE formulation for multi-domain dynamic systems with application to fluid-structure interactions in arterial hemodynamics," *Proceedings of the ASME Dynamic Systems and Control Division*, Orlando, FL, November 2000, v.69, no.2, pp.763-769.
- [3] D. C. Tarraf and H. Asada, "Driving a real-time multi-physics simulator to follow an actual system: a DAE observer approach," *Proceedings of the First MIT Conference on Computational Fluid and Solid Mechanics*, Cambridge, MA, June 2001, v.2, pp. 1393-1396.
- [4] D. C. Tarraf and H. Asada, "A sliding observer for differential-algebraic (DAE) systems," *Proceedings of the American Control Conference*, Arlington, VA, June 2001, pp.4338-4343.
(*Best paper in session.*)
- [5] D. C. Tarraf and H. Asada, "Non-disruptive online identification of linearly parametrized systems," *Proceedings of the ASME Dynamic Systems and Control Division*, New York, NY, November 2001, pp.581-588.
- [6] D. C. Tarraf and H. Asada, "Decentralized hierarchical control of multiple time scale systems," *Proceedings of the American Control Conference*, Anchorage, AK, May 2002, pp.1121-1122.
- [7] D. C. Tarraf and H. Asada, "On the nature and stability of differential-algebraic systems," *Proceedings of the American Control Conference*, Anchorage, AK, May 2002, pp.3546-3551.
- [8] D. C. Tarraf, A. Megretski and M. A. Dahleh, "Finite automata approximations with error bounds for systems with quantized actuation and measurement: A case study," *Proceedings of the 43rd IEEE Conference on Decision and Control*, Bahamas, December 2004, pp.1436-1441.

- [9] D. C. Tarraf, M. A. Dahleh and A. Megretski, "Stability of deterministic finite state machines," Proceedings of the American Control Conference, Portland, OR, June 2005, pp.3932-3936.
- [10] D. C. Tarraf, A. Megretski and M. A. Dahleh, "Input/Output stability of systems over finite alphabets," Proceedings of the American Control Conference, Minneapolis, MN, June 2006, pp.4044-4049. (*Best paper in session.*)
- [11] D. C. Tarraf, A. Megretski and M. A. Dahleh, "On stabilizing the double integrator with switched gain feedback and binary sensing," Proceedings of the 44th Annual Allerton Conference on Communication, Control and Computing, Allerton, IL, September 2006.
- [12] D. C. Tarraf and P. A. Parrilo, "Solving commutative relaxations of word problems," Proceedings of the 46th IEEE Conference on Decision and Control, New Orleans, LA, December 2007, pp.5575-5580.
- [13] * C. K. Enyioha, D. C. Tarraf, L. Li and J. C. Doyle, "On the graph of trees", to appear in the Proceedings of the IEEE Multi-conference on Systems and Control, July 2009.

10. Teaching:

<u>Date</u>	<u>Course</u>	<u>Institution</u>
Fall 2007	CDS212: Introduction to Modern Control (G)	Caltech
Fall 2008	520.353: Control Systems (U)	JHU
Spring 2009	520.633: Introduction to Robust Control (G)	JHU

11. Invited Talks:

<u>Host</u>	<u>Date</u>
University of Pennsylvania, GRASP Lab	08/2006
Université Catholique de Louvain (Belgium), Mathematical Engineering Department	09/2006
UC Berkeley, Center for Hybrid & Embedded Software Systems	09/2006
UCLA, Systems, Dynamics & Control Seminar	11/2006
Stanford University, Department of Aeronautics & Astronautics	12/2007
UCSB, Center for Control, Dynamical Systems & Computation	02/2008
Kyoto University (Japan), Department of Applied Mathematics & Physics	03/2009

12. Students Supervised:

<u>Student</u>	<u>Role</u>	<u>Institution</u>	<u>Date</u>
Rutika Muchhala (<i>CDS SURF student</i>)	Co-advisor	Caltech	05/2007 - 07/2007
Chinwendu Enyioha (<i>CDS MURF student</i>)	Co-advisor	Caltech	06/2007 - 08/2007
Jixin Li (<i>ECE PhD student</i>)	Advisor	JHU	08/2008 - present