Naci Saldi

Current Position

Postdoctoral Research Associate, Coordinated Science Laboratory, UIUC.

Contact Information

Coordinated Science Laboratory, 142
University of Illinois at Urbana-Champaign
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Research Interests

Optimal control of stochastic systems, decentralized control, mean field game theory, information theory (source coding and quantization), probability theory.

Education

Mathematics and Statistics Department, Queen's University

Ph.D., Engineering Mathematics, June 2015

- Dissertation Topic: Optimal Quantization and Approximation in Source Coding and Stochastic Control
- Advisor: Prof. Serdar Yüksel and Prof. Tamás Linder

Bilkent University

M.S. in Electrical and Electronics Engineering, June 2010

- Dissertation Topic: Output Regulation for All-Pole and Minimum Phase LTI/LTV Systems
- Advisor: Prof. Ömer Morgül

B.S. in Electrical and Electronics Engineering, May 2008

Publications

Journal Papers

Published

[J1] **N. Saldi**, T. Linder, and S. Yüksel "Asymptotic Optimality and Rates of Convergence of Quantized Stationary Policies in Stochastic Control", *IEEE Trans. Automatic Control*, 60(2):553-558, Feb. 2015. (arXiv).

[J2] **N. Saldi**, T. Linder, and S. Yüksel "Randomized Quantization and Source Coding with Constrained Output Distribution", *IEEE Trans. Information Theory*, 61(1):91-106, Jan. 2015. (arXiv).

[J3] **N. Saldi**, T. Linder, and S. Yüksel "Output Constrained Lossy Source Coding with Limited Common Randomness", *IEEE Trans. Information Theory*, 61(9):4984-4998, Sep. 2015. (arXiv).

[J4] **N. Saldi**, S. Yüksel, and T. Linder "Near Optimality of Quantized Policies in Stochastic Control Under Weak Continuity Conditions", *Journal of Mathematical Analysis and Applications*, 435(1):321-337, Mar. 2016. (arXiv).

[J5] **N. Saldi**, S. Yüksel, and T. Linder "Finite Model Approximations and Asymptotic Optimality of Quantized Policies in Decentralized Stochastic Control", to appear in *IEEE Trans. Automatic Control* (arXiv).

[J6] **N. Saldi**, S. Yüksel, and T. Linder "Asymptotic Optimality of Finite Approximations to Markov Decision Processes with Borel Spaces", to appear in *Mathematics of Operations Research* (arXiv).

[J7] S. Yüksel and **N. Saldi** "Convex Analysis in Decentralized Stochastic Control, Strategic Measures and Optimal Solutions", to appear in *SIAM Journal on Control and Optimization* (arXiv).

Book Chapters

[B1] **N. Saldi**, S. Yüksel, and T. Linder "Finite Approximations to Markov Decision Processes with Borel Spaces", in *Modern Trends in Controlled Stochastic Processes: Volume II*, ed.: Alexey B. Piunovskiy, Luniver Press, 2015.

Conference Papers

[C1] **N. Saldi**, T. Linder, and S. Yüksel "Randomized quantization and optimal design with a marginal constraint", in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Istanbul, Jul. 2013.

[C2] **N. Saldi**, T. Linder, and S. Yüksel "Approximation of Stationary Control Policies by Quantized Control in Markov Decision Processes", in *Proc. 51th Annual Allerton Conf. Communications, Control, and Computing*, Monticello, IL, Oct. 2013.

[C3] **N. Saldi**, T. Linder, and S. Yüksel "Randomized Source Coding with Limited Common Randomness", in *Proc. 52th Annual Allerton Conf. Communications, Control, and Computing*, Monticello, IL, Oct. 2014.

[C4] **N. Saldi**, T. Linder, and S. Yüksel "Asymptotic Optimality of Quantized Policies in Stochastic Control under Weak Continuity Conditions", in *Proc. IEEE Conf. Decision Control (CDC)*, Los Angeles, Dec. 2014.

[C5] **N. Saldi**, T. Linder, and S. Yüksel "On Finite State-Action Approximation of Markov Decision Processes with General State and Action Spaces", in *Proc. IEEE American Control Conference (ACC)*, Chicago, Jul. 2015.

[C6] **N. Saldi**, S. Yüksel, and T. Linder "Finite-State Approximation of Markov Decision Processes with Unbounded Costs and Borel Spaces", in *Proc. IEEE Conf. Decision Control (CDC) 2015*.

[C7] **N. Saldi**, S. Yuksel, and T. Linder "Finite-State Approximations to Constrained Markov Decision Processes with Borel Spaces", in *Proc. 53rd Annual Allerton Conf. Communications, Control, and Computing*, Monticello, IL, Oct. 2015.

[C8] **N. Saldi**, T. Linder, and S. Yuksel "Asymptotic Optimality of Finite Representations and Quantized Policies in Team Problems and Witsenhausen's Counterexample", in *Proc. IEEE American Control Conference (ACC)*, Boston, Jul. 2016.

[C9] **N. Saldi**, S. Yüksel, and T. Linder "Finite Model Approximations and Asymptotic Optimality of Quantized Policies in Decentralized Stochastic Control", in *International Symposium on Mathematical Theory of Networks and Systems (MTNS) 2016*.

[C10] **N. Saldi**, S. Yüksel, and T. Linder "Finite Model Approximations and Asymptotic Optimality of Quantized Policies in Decentralized Stochastic Control", in *Proc. IEEE Conf. Decision Control (CDC) 2016*.

[C11] S. Yüksel and **N. Saldi** "Convex Analysis in Decentralized Stochastic Control and Strategic Measures", in *Proc. IEEE Conf. Decision Control (CDC) 2016*.

[C12] **N. Saldi**, T. Başar, and M. Raginsky "Markov-Nash Equilibria in Mean-Field Games with Discounted Cost", submitted to *Proc. IEEE American Control Conference*

(ACC), Seattle, May 2017.

Teaching Experience

Instructor

Winter	2014	Instructor, Control of Stochastic Systems Queen's University

Teaching Assistant

Winter	2015	Teaching Assistant, Mathematics of Engineering Systems Queen's University
Fall	2014	Teaching Assistant, Differential Equations for Engineering Science Queen's University
Winter	2012	Teaching Assistant, Mathematics of Engineering Systems Queen's University
Fall	2011	Teaching Assistant, Linear Algebra Queen's University
Spring	2010	Teaching Assistant, Nonlinear Systems Analysis Bilkent University
Spring	2009	Teaching Assistant, Feedback Control Systems Bilkent University

Honors and Awards

2016	Queen's University Engineering and Applied Science Outstanding Thesis Award
2015	IEEE Kingston Section Research Excellence Award for Doctoral Research
2011 - 2015	Queen's University Graduate Award
2011 - 2015	Queen's University International Tuition Award
2008 - 2010	Scholarship for M.S. study by TUBITAK
2008 - 2010	Full scholarship for M.S. study by Bilkent University
2003 - 2008	Full scholarship for B.S. study by Bilkent University
2003	Ranked 91st in OSS (Turkey's university entrance exam) among approximately 1.5 million candidates

Professional Activity

Reviewer for

IEEE Transactions on Automatic Control, Systems and Control Letters, Automatica, IEEE Transactions on Information Theory, IEEE Transactions on Signal Processing, IEEE Conference on Decision and Control.

Memberships

IEEE: Student Member, 2014 - 2015.
American Mathematical Society (AMS): Student Member, 2011 - 2015.

Graduate Coursework

Doctorate

- ❑ Real Analysis
- ❑ Complex Analysis
- ❑ Stochastic Processes
- ❑ Information Theory
- ❑ Control of Stochastic Systems
- ❑ Source Coding
- ❑ Core Course on Probability Theory
- ❑ Probability with Martingales
- ❑ Stochastic Calculus
- ❑ Topics in Networked Control
- ❑ Differential Manifolds
- ❑ Graph Theory

Masters

- ❑ Linear Systems Theory
- ❑ Random Processes
- ❑ Advanced Signal Processing
- ❑ Sampled Data Systems
- ❑ Detection and Estimation Theory
- ❑ Advanced Quantum Mechanics I
- ❑ Nonlinear Dynamics and Chaos
- ❑ Optics

ADDITIONAL INFORMATION

Permanent Resident in Canada.