Masaki Ogura

Curriculum Vitae

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Graduate School of Information Science
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AREAS OF EXPERTISE

Control theory, network science, optimization, stochastic processes, biological physics

EDUCATION

Aug 2011 – Aug 2014 Ph.D. Mathematics, *Texas Tech University*

Mar 2007 – Mar 2009 M.Sc. Informatics, *Kyoto University*

Mar 2003 – Mar 2007 B.Eng., *Kyoto University*

PROFESSIONAL APPOINTMENTS

Apr 2017 – Present *Assistant Professor*
Graduate School of Information Science
Nara Institute of Science and Technology

Nov 2014 – Feb 2017 *Postdoctoral Researcher*
Department of Electrical and Systems Engineering
University of Pennsylvania

SHORT TERM VISITS

May 2017 Washington State University, USA

Dec 2015 Tokyo Institute of Technology, Japan

Nov 2013 ICTEAM Institute, Université catholique de Louvain, Belgium

SELECTED AWARDS AND HONORS

Apr 2014 Dissertation/Thesis Research Award, Texas Tech University

Jan 2013 Clark Family Endowed Fellowship, Texas Tech University

Jan 2012 Best Paper Award, The Society of Instrument and Control Engineers

May 2012 Roy M. Anderson Scholarship, Texas Tech University

May 2011 Gordon Fuller Mathematics Scholarship, Texas Tech University

PUBLICATIONS

Book Chapters

[1] M. Ogura and V. M. Preciado, "Optimal Containment of Epidemics in Temporal and Adaptive Networks," in *Temporal Networks Epidemiology*, pp. 241–266, Springer, 2017.

[2] V. M. Preciado, M. Zargham, C. Nowzari, S. Han, M. Ogura, A. Jadbabaie, and G. J. Pappas, "Bio-inspired framework for allocation of protection resources in cyber-physical networks," in *Principles of Cyber-Physical Systems*, Cambridge University Press, in press, 2015.

[3] M. Ogura and C. F. Martin, "Linear switching systems and random products of matrices," in *Mathematical System Theory – Festschrift in Honor of Uwe Helmke on the Occasion of his Sixtieth Birthday* (K. Hüper and J. Trumpf, eds.), pp. 291–300, CreateSpace, 2013.

Refereed Journal Articles

[1] M. Ogura, J. Harada, M. Kishida, and A. Yassine, "Resource optimization of product development projects with time-varying dependency structure," *Research in Engineering Design* (accepted for publication), 2019.

[2] M. Ogura and V. M. Preciado, "Stability of SIS spreading processes in networks with non-Markovian transmission and recovery," *IEEE Transactions on Control of Network Systems* (accepted for publication), 2019.

[3] W. Mei and M. Ogura, "Kronecker weights for instability analysis of Markov jump linear systems," *IET Control Theory & Applications*, vol. 13, no. 3, pp. 360–366, 2019.

[4] M. Wakaiki, M. Ogura, and J. P. Hespanha, "LQ-optimal sampled-data control under stochastic delays: gridding approach for stabilizability and detectability," *SIAM Journal on Control and Optimization*, vol. 56, no. 4, pp. 2634–2661, 2018.

[5] M. Ogura, A. Cetinkaya, T. Hayakawa, and V. M. Preciado, "State feedback control of Markov jump linear systems with hidden-Markov mode observation," *Automatica*, vol. 89, pp. 65–72, 2018.

[6] M. Ogura and V. M. Preciado, "Second-order moment-closure for tighter epidemic thresholds," *Systems & Control Letters*, vol. 113, pp. 59–64, 2018.

[7] M. Ogura and V. M. Preciado, "Optimal design of switched networks of positive linear systems via geometric programming," *IEEE Transactions on Control of Network Systems*, vol. 4, no. 2, pp. 213–222, 2017.

[8] M. Ogura, M. Wakaiki, H. Rubin, and V. M. Preciado, "Delayed bet-hedging resilience strategies under environmental fluctuations," *Physical Review E*, vol. 95, p. 052404, 2017.

[9] M. Ogura, V. M. Preciado, and R. M. Jungers, "Efficient method for computing lower bounds on the p-radius of switched linear systems," *Systems & Control Letters*, vol. 94, pp. 159–164, 2016.

[10] M. Ogura and V. M. Preciado, "Epidemic processes over adaptive state-dependent networks," *Physical Review E*, vol. 93, p. 062316, 2016.

[11] M. Ogura and V. M. Preciado, "Stability of Markov regenerative switched linear systems," *Automatica*, vol. 69, pp. 169–175, 2016.

[12] M. Ogura and V. M. Preciado, "Stability of spreading processes over time-varying large-scale networks," *IEEE Transactions on Network Science and Engineering*, vol. 3, no. 1, pp. 44–57, 2016.

[13] M. Ogura and C. F. Martin, "Stability analysis of linear systems subject to regenerative switchings," *Systems & Control Letters*, vol. 75, pp. 94–100, 2015.

[14] M. Ogura and C. F. Martin, "A limit formula for joint spectral radius with p-radius of probability distributions," *Linear Algebra and its Applications*, vol. 458, pp. 605–625, 2014.

[15] M. Ogura and C. F. Martin, "Stability analysis of positive semi-Markovian jump linear systems with state resets," *SIAM Journal on Control and Optimization*, vol. 52, pp. 1809–1831, 2014.

[16] M. Ogura and C. F. Martin, "Generalized joint spectral radius and stability of switching systems," *Linear Algebra and its Applications*, vol. 439, no. 8, pp. 2222–2239, 2013.

[17] M. Ogura and Y. Yamamoto, "Dissipativity of pseudorational behaviors," *IEEE Transactions on Automatic Control*, vol. 58, no. 4, pp. 823–833, 2013.

[18] M. Nagahara, M. Ogura, and Y. Yamamoto, "H^∞ design of periodically nonuniform interpolation and decimation for non-band-limited signals," *SICE Journal of Control, Measurement, and System Integration*, vol. 4, no. 5, pp. 341–348, 2011.

Refereed Conference Proceedings

[1] M. Ogura, M. Kishida, K. Hayashi, and J. Lam, "Resource allocation for robust stabilization of Foschini-Miljanic Algorithm," in *2019 American Control Conference* (accepted), 2019.

[2] M. Kumazaki, M. Ogura, and T. Tachibana, "VNF management with model predictive control for multiple service chains," in *IEEE International Conference on Consumer Electronics – Taiwan* (accepted), 2019.

[3] T. Tadenuma, M. Ogura, and K. Sugimoto, "Sampled-data state observation over lossy networks under round-robin scheduling," in *5th IFAC Conference on Analysis and Control of Chaotic Systems*, pp. 197–202 (Young Author Award Finalist), 2018.

[4] W. Mei and M. Ogura, "Instability analysis of Markov jump linear systems by spectral optimization," in *SICE Annual Conference 2018*, pp. 419–422, 2018.

[5] M. Ogura, J. Wan, and S. Kasahara, "Model predictive control for energy-efficient operation of data centers with cold aisle containments," in *6th IFAC Conference on Nonlinear Model Predictive Control*, pp. 241–246, 2018.

[6] M. Ogura and J. Harada, "Resource allocation for containing epidemics from temporal network data," in *23rd International Symposium on Mathematical Theory of Networks and Systems*, pp. 537–542, 2018.

[7] M. Ogura, J. Tagawa, and N. Masuda, "Distributed agreement on activity driven networks," in *2018 American Control Conference*, pp. 4147–4152, 2018.

[8] X. Chen, M. Ogura, K. R. Ghusinga, A. Singh, and V. M. Preciado, "Semidefinite bounds for moment dynamics: Application to epidemics on networks," in *56th IEEE Conference on Decision and Control*, pp. 2448–2454, 2017.

[9] M. Wakaiki, M. Ogura, and J. P. Hespanha, "Linear quadratic control for sampled-data systems with stochastic delays," in *2017 American Control Conference*, pp. 1978–1983, 2017.

[10] M. Ogura and V. M. Preciado, "Katz centrality of Markovian temporal networks: analysis and optimization," in *2017 American Control Conference*, pp. 5001–5006, 2017.

[11] M. Ogura and V. M. Preciado, "Efficient containment of exact SIR Markovian processes on networks," in *55th IEEE Conference on Decision and Control*, pp. 967–972, 2016.

[12] M. Ogura, M. Wakaiki, and V. M. Preciado, "Dynamic analysis of bet-hedging strategies as a protection mechanism against environmental fluctuations," in *55th IEEE Conference on Decision and Control*, pp. 4178–4183, 2016.

[13] M. Wakaiki, M. Ogura, and J. P. Hespanha, "Robust stability under asynchronous sensing and control," in *55th IEEE Conference on Decision and Control*, pp. 5962–5967, 2016.

[14] V. M. Preciado and M. Ogura, "Structural analysis of spreading processes from ego-nets," in *6th IFAC Workshop on Distributed Estimation and Control in Networked Systems*, pp. 345–350, 2016.

[15] M. Ogura, A. Cetinkaya, T. Hayakawa, and V. M. Preciado, "Efficient criteria for stability of large-scale networked control systems," in *6th IFAC Workshop on Distributed Estimation and Control in Networked Systems*, pp. 13–18, 2016.

[16] M. Ogura and V. M. Preciado, "Optimal design of networks of positive linear systems under stochastic uncertainty," in *2016 American Control Conference*, pp. 2930–2935, 2016.

[17] M. Ogura, M. Wakaiki, J. P. Hespanha, and V. M. Preciado, "L^2-gain analysis of regenerative switched linear systems under sampled-data state-feedback control," in *2016 American Control Conference*, pp. 709–714, 2016.

[18] M. Ogura and V. M. Preciado, "Spreading processes over socio-technical networks with phase-type transmissions," in *54th IEEE Conference on Decision and Control*, pp. 3548–3553, 2015.

[19] M. Ogura and V. M. Preciado, "Cost-optimal switching protection strategy in adaptive networks," in *54th IEEE Conference on Decision and Control*, pp. 3574–3579, 2015.

[20] C. Nowzari, M. Ogura, V. M. Preciado, and G. J. Pappas, "A general class of spreading processes with non-Markovian dynamics," in *54th IEEE Conference on Decision and Control*, pp. 5073–5078, 2015.

[21] C. Nowzari, M. Ogura, V. M. Preciado, and G. J. Pappas, "Optimal resource allocation for containing epidemics on time-varying networks," in *49th Asilomar Conference on Signals, Systems and Computers*, pp. 1333–1337, 2015.

[22] M. Ogura, M. Nagahara, and V. M. Preciado, "L^1-optimal disturbance rejection for disease spread over time-varying networks," in *SWARM 2015: The First International Symposium on Swarm Behavior and Bio-Inspired Robotics*, pp. 377–378, 2015.

[23] M. Ogura, A. Cetinkaya, and V. M. Preciado, "State-feedback stabilization of Markov jump linear systems with randomly observed markov states," in *2015 American Control Conference*, pp. 1764–1769, 2015.

[24] M. Ogura and V. M. Preciado, "Disease spread over randomly switched large-scale networks," in *2015 American Control Conference*, pp. 1782–1787, 2015.

[25] M. Ogura and R. M. Jungers, "Efficiently computable lower bounds for the p-radius of switching linear systems," in *53rd IEEE Conference on Decision and Control*, pp. 5463–5468, 2014.

[26] M. Ogura and C. F. Martin, "Mean stability of continuous-time semi-Markov jump linear positive systems," in *2014 American Control Conference*, pp. 3261–3266, 2014.

[27] M. Ogura and C. F. Martin, "On the mean stability of a class of switched linear systems," in *52nd IEEE Conference on Decision and Control*, pp. 97–102, 2013.

[28] M. Ogura and C. F. Martin, "Stability of switching systems and generalized joint spectral radius," in *2013 European Control Conference*, pp. 3185–3190, 2013.

[29] M. Ogura and C. F. Martin, "Stochastic properties of switched Riccati differential equations," in *51st IEEE Conference on Decision and Control*, pp. 1319–1324, 2012.

[30] M. Ogura, Y. Yamamoto, and J. C. Willems, "On the dissipativity of pseudorational behaviors," in *49th IEEE Conference on Decision and Control*, pp. 1737–1742, 2010.

[31] Y. Yamamoto, J. C. Willems, and M. Ogura, "Pseudorational behaviors and Bezoutians," in *19th International Symposium on Mathematical Theory of Networks and Systems*, pp. 1917–1921, 2010.

[32] M. Ogura and Y. Yamamoto, "Dissipativity of pseudorational behaviors," in *19th International Symposium on Mathematical Theory of Networks and Systems*, pp. 849–853, 2010.

[33] M. Ogura and Y. Yamamoto, "Hankel norm computation for pseudorational transfer functions," in *48th IEEE Conference on Decision and Control held jointly with 2009 28th Chinese Control Conference*, pp. 5502–5507, 2009.

[34] M. Nagahara, M. Ogura, and Y. Yamamoto, "A novel approach to repetitive control via sampled-data H^∞ filters," in *7th Asian Control Conference*, pp. 160–165, 2009.

[35] M. Nagahara, M. Ogura, and Y. Yamamoto, "Interpolation of nonuniformly decimated signals via sampled-data H^∞ optimization," in *SICE Annual Conference 2008*, pp. 1151–1154, 2008.

[36] M. Ogura, M. Nagahara, and Y. Yamamoto, "Optimal wavelet expansion via sampled-data H^∞ control theory," in *SICE Annual Conference 2007*, pp. 1422–1426, 2007.

Invited and Hourly Talks

[1] "Networked epidemic spreading: modeling, analysis, and control," *National Insitutite of Informatics*, 2018.

[2] "Network epidemiology and control theory," *University of Hong Kong*, 2018.

[3] "Analysis and control of spreading processes over complex networks," *Washington State University*, 2017.

[4] "Analysis and control of spreading processes over complex networks," *Tokyo University of Agriculture and Technology*, 2016.

[5] "Stability analysis of switched linear systems with non-traditional switching signals," in *GRASP special seminar*, University of Pennsylvania, 2014.

[6] "Mean stability of switched linear systems," *Université Catholique de Louvain*, 2013.

TEACHING ACTIVITIES

Nara Institute of Science and Technology
- Advanced Intelligent System Control (Spring 2017, 2018)

University of Pennsylvania
Co-lecturer:
- Convex Optimization in Systems and Control (Fall 2015)

Texas Tech University
Graduate Part-Time Instructor:
- Calculus II (Summer 2014, Spring 2014, Spring 2013)
- Calculus I (Summer 2013, Fall 2012)
- Trigonometry (Fall 2011)
- College Algebra (Fall 2013, Spring 2012)

Teaching Assistant:
- Advanced Calculus (Summer 2012)
- Linear Algebra (Summer 2012)
- Higher Mathematics for Engineers and Scientists I (Summer 2011)

Kyoto School of Computer Science
Lecturer:
- Control Engineering (Fall 2009, Fall 2008)
- Electrical Circuits (Spring 2008)
- Data Structures (Spring 2008)
- Numerical Analysis (Spring 2010, Spring 2009)

Kyoto University
Teaching Assistant:
- Modern Control Theory (Fall 2009, Fall 2008)

PROFESSIONAL SERVICE

Local Arrangements Vice Chair: SICE Annual Conference 2018
Associate Editor: The 5th IFAC Workshop on Distributed Estimation and Control in Networked Systems (2015)
Reviewer: IEEE Transactions on Automatic Control; IEEE Transactions on Control of Network Systems; IEEE Transactions on Network Science and Engineering, Annual Reviews in Control; Automatica; SIAM Journal on Control and Optimization; Systems and Control Letters; IEEE Transactions on

Circuits and Systems; Foundations of Computational Mathematics; Nonlinear Analysis: Hybrid Systems; International Journal of Robust and Nonlinear Control; Asian Journal of Control; European Physical Journal B; Physics Letters A; Neurocomputing; Applied Mathematics and Computation; IEEE Conference on Decision and Control; American Control Conference; European Control Conference; SIAM Conference on Control and Its Applications; IEEE Multi-Conference on Systems and Control; IFAC Workshop on Distributed Estimation and Control in Networked Systems

Masaki Ogura, March 2019