

Masaki Ogura
Curriculum Vitae
Thursday 3rd December, 2020

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AREAS OF EXPERTISE

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

EDUCATION

- Ph.D. in Mathematics, *Texas Tech University*. 2014
- M.Sc. in Informatics, *Kyoto University*. 2009
- B.Eng., *Kyoto University*. 2007

PROFESSIONAL APPOINTMENTS

- Associate Professor, Department of Bioinformatic Engineering, Graduate School of Information Science and Technology, Osaka University, Japan. Nov 2019 – present
- Assistant Professor, Graduate School of Information Science, Nara Institute of Science and Technology, Japan. Mar 2017 – Oct 2019
- Postdoctoral Researcher, Department of Electrical and Systems Engineering, University of Pennsylvania, Oct 2014 – Feb 2017

SHORT TERM VISITS

- Department of Mechanical Engineering, University of Hong Kong. 2018, 2019
- ICTEAM Institute, Université catholique de Louvain, Belgium. 2013

SELECTED AWARDS AND HONORS

- Runner-up of the 2019 Best Paper Award, *IEEE Transactions on Network Science and Engineering*. 2019
- Summer Dissertation/Thesis Research Award, Texas Tech University. 2014
- Cash Family Endowed Fellowship, Texas Tech University. 2013
- Best Paper Award, The Society of Instrument and Control Engineers. 2012

PUBLICATIONS

Book Chapters

- [1] 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, 2020, pp. 293–322.
- [2] M. Ogura and V. M. Preciado, “Optimal Containment of Epidemics in Temporal and Adaptive Networks,” in *Temporal Networks Epidemiology*. Springer, 2017, pp. 241–266.
- [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. CreateSpace, 2013, pp. 291–300.

Refereed Journal Articles

- [1] 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, 2020, pp. 293–322.
- [2] M. Ogura and V. M. Preciado, “Optimal Containment of Epidemics in Temporal and Adaptive Networks,” in *Temporal Networks Epidemiology*. Springer, 2017, pp. 241–266.
- [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. CreateSpace, 2013, pp. 291–300.

Refereed Conference Proceedings

- [1] M. Ogura, M. Kishida, and J. Lam, “Optimization of positive linear systems via geometric programming,” in *24th International Symposium on Mathematical Theory of Networks and Systems* (accepted), 2021.
- [2] M. Kumazaki, M. Ogura, and T. Tachibana, “Service chain construction with efficient VNF sharing based on model predictive control,” in *2020 International Conference on Emerging Technologies for Communications* (accepted), 2020.
- [3] C. Zhao, M. Ogura, and K. Sugimoto, “Finite-time control of discrete-time positive linear systems via convex optimization,” in *SICE Annual Conference 2020*, 2020, pp. 1230–1235.
- [4] T. Kimura and M. Ogura, “Distributed collaborative 3D-deployment of UAV base stations for on-demand coverage,” in *IEEE INFOCOM 2020*, 2020, pp. 1748–1757. Acceptance rate **19.8 percent**.
- [5] Y. Abe, M. Ogura, H. Tsuji, A. Miura, and S. Adachi, “Resource and network management for satellite communications systems: a chance-constrained approach,” in *IFAC World Congress 2020* (accepted), 2020.
- [6] M. Aida, C. Takano, and M. Ogura, “On the fundamental equation of user dynamics and the structure of online social networks,” in *NetSci-X 2020*, 2020, pp. 155–170.

- [7] M. Ogura, M. Kishida, and A. Yassine, “Optimizing product development projects under asynchronous and aperiodic system-local interactions,” in *21st International DSM Conference*, 2019, pp. 97–106.
- [8] M. Ogura, W. Mei, and K. Sugimoto, “Upper-bounding dynamics on networked synergistic susceptible-infected-susceptible model,” in *SICE Annual Conference 2019*, 2019, pp. 1430–1431.
- [9] M. Ogura, M. Kishida, K. Hayashi, and J. Lam, “Geometric programming for optimizing stability of distributed power control algorithms,” in *SICE Annual Conference 2019*, 2019, pp. 679–680.
- [10] M. Ogura, M. Kishida, K. Hayashi, and J. Lam, “Resource allocation for robust stabilization of Foschini-Miljanic Algorithm,” in *2019 American Control Conference*, 2019, pp. 4030–4035.
- [11] 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*, 2019.
- [12] 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*, 2018, pp. 197–202. **Young Author Award Finalist.**
- [13] W. Mei and M. Ogura, “Instability analysis of Markov jump linear systems by spectral optimization,” in *SICE Annual Conference 2018*, 2018, pp. 419–422.
- [14] 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*, 2018, pp. 241–246.
- [15] 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*, 2018, pp. 537–542.
- [16] M. Ogura, J. Tagawa, and N. Masuda, “Distributed agreement on activity driven networks,” in *2018 American Control Conference*, 2018, pp. 4147–4152.
- [17] 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*, 2017, pp. 2448–2454.
- [18] M. Wakaiki, M. Ogura, and J. P. Hespanha, “Linear quadratic control for sampled-data systems with stochastic delays,” in *2017 American Control Conference*, 2017, pp. 1978–1983.
- [19] M. Ogura and V. M. Preciado, “Katz centrality of Markovian temporal networks: analysis and optimization,” in *2017 American Control Conference*, 2017, pp. 5001–5006.
- [20] M. Ogura and V. M. Preciado, “Efficient containment of exact SIR Markovian processes on networks,” in *55th IEEE Conference on Decision and Control*, 2016, pp. 967–972.
- [21] 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*, 2016, pp. 4178–4183.
- [22] M. Wakaiki, M. Ogura, and J. P. Hespanha, “Robust stability under asynchronous sensing and control,” in *55th IEEE Conference on Decision and Control*, 2016, pp. 5962–5967.

- [23] 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*, 2016, pp. 13–18.
- [24] 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*, 2016, pp. 345–350.
- [25] M. Ogura and V. M. Preciado, “Optimal design of networks of positive linear systems under stochastic uncertainty,” in *2016 American Control Conference*, 2016, pp. 2930–2935.
- [26] 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*, 2016, pp. 709–714.
- [27] M. Ogura and V. M. Preciado, “Spreading processes over socio-technical networks with phase-type transmissions,” in *54th IEEE Conference on Decision and Control*, 2015, pp. 3548–3553.
- [28] M. Ogura and V. M. Preciado, “Cost-optimal switching protection strategy in adaptive networks,” in *54th IEEE Conference on Decision and Control*, 2015, pp. 3574–3579.
- [29] 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*, 2015, pp. 5073–5078.
- [30] 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*, 2015, pp. 1333–1337.
- [31] 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*, 2015, pp. 377–378.
- [32] 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*, 2015, pp. 1764–1769.
- [33] M. Ogura and V. M. Preciado, “Disease spread over randomly switched large-scale networks,” in *2015 American Control Conference*, 2015, pp. 1782–1787.
- [34] 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*, 2014, pp. 5463–5468.
- [35] M. Ogura and C. F. Martin, “Mean stability of continuous-time semi-Markov jump linear positive systems,” in *2014 American Control Conference*, 2014, pp. 3261–3266.
- [36] 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*, 2013, pp. 97–102.
- [37] M. Ogura and C. F. Martin, “Stability of switching systems and generalized joint spectral radius,” in *2013 European Control Conference*, 2013, pp. 3185–3190.
- [38] M. Ogura and C. F. Martin, “Stochastic properties of switched Riccati differential equations,” in *51st IEEE Conference on Decision and Control*, 2012, pp. 1319–1324.

- [39] M. Ogura, Y. Yamamoto, and J. C. Willems, “On the dissipativity of pseudorational behaviors,” in *49th IEEE Conference on Decision and Control*, 2010, pp. 1737–1742.
- [40] Y. Yamamoto, J. C. Willems, and M. Ogura, “Pseudorational behaviors and Bezoutians,” in *19th International Symposium on Mathematical Theory of Networks and Systems*, 2010, pp. 1917–1921.
- [41] M. Ogura and Y. Yamamoto, “Dissipativity of pseudorational behaviors,” in *19th International Symposium on Mathematical Theory of Networks and Systems*, 2010, pp. 849–853.
- [42] 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*, 2009, pp. 5502–5507.
- [43] M. Nagahara, M. Ogura, and Y. Yamamoto, “A novel approach to repetitive control via sampled-data H^∞ filters,” in *7th Asian Control Conference*, 2009, pp. 160–165.
- [44] M. Nagahara, M. Ogura, and Y. Yamamoto, “Interpolation of nonuniformly decimated signals via sampled-data H^∞ optimization,” in *SICE Annual Conference 2008*, 2008, pp. 1151–1154.
- [45] M. Ogura, M. Nagahara, and Y. Yamamoto, “Optimal wavelet expansion via sampled-data H^∞ control theory,” in *SICE Annual Conference 2007*, 2007, pp. 1422–1426.

Invited and Hourly Talks

- [1] 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, 2020, pp. 293–322.
- [2] M. Ogura and V. M. Preciado, “Optimal Containment of Epidemics in Temporal and Adaptive Networks,” in *Temporal Networks Epidemiology*. Springer, 2017, pp. 241–266.
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TEACHING ACTIVITIES

Nara Institute of Science and Technology

- Machine Learning and Intelligent Control (Spring 2019)
- 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

- Program Committee member, International Conference on Complex Networks and their Applications, 2020–.
- Technical Program Committee member, International Conference on Decision Aid Sciences and Applications, 2020.
- Associate Editor, Journal of The Franklin Institute, 2020–.
- Local Arrangements Vice Chair, SICE Annual Conference 2018.
- Associate Editor, The 5th IFAC Workshop on Distributed Estimation and Control in Networked Systems, 2015 .

0.1 Journal Reviewer

Annual Reviews in Control; Automatica; Applied Mathematics and Computation; Asian Journal of Control; Computer Communications; European Journal of Control European Physical Journal B; Foundations of Computational Mathematics; IEEE/ACM Transactions on Computational Biology and Bioinformatics IEEE Control Systems Letters; IEEE Intelligent Systems; IEEE Transactions on Automatic Control; IEEE Transactions on Big Data; IEEE Transactions on Circuits and Systems; IEEE Transactions on Control of Network Systems; IEEE Transactions on Fuzzy Systems; IEEE Transactions on Signal Processing; IEEE Transactions on Systems, Man and Cybernetics: Systems; IEEE Transactions on Network Science and Engineering; IEEE Transactions on Neural Networks and Learning Systems; IET Control Theory & Applications; International Journal of Robust and Nonlinear Control; Journal of Biological Dynamics; Journal of the Franklin Institute; Mathematics of Control, Signals, and Systems; Neurocomputing; Non-linear Analysis: Hybrid Systems; Operations Research and Decisions; Physica A; Physics Letters A; SIAM Journal on Control and Optimization; SICE Journal of Control, Measurement, and System Integration; Stochastics and Dynamics; Systems and Control Letters; Research in Engineering Design;

Masaki Ogura, December 2020