Masaki Ogura

Curriculum Vitae
Thursday 19th March, 2020

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AREAS OF EXPERTISE

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

EDUCATION

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

PROFESSIONAL APPOINTMENTS

Nov 2019 –	*Associate Professor* Department of Bioinformatic Engineering, Graduate School of Information Science and Technology, Osaka University, Japan
Apr 2018 – Oct 2019	*Assistant Professor* Graduate School of Science and Technology, Division of Information Science Nara Institute of Science and Technology, Japan
Mar 2017 – Mar 2018	*Assistant Professor* Graduate School of Information Science Nara Institute of Science and Technology, Japan
Nov 2014 – Feb 2017	*Postdoctoral Researcher* Department of Electrical and Systems Engineering University of Pennsylvania

SHORT TERM VISITS

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

SELECTED AWARDS AND HONORS

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

PUBLICATIONS

Book Chapters

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

[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. CreateSpace, 2013, pp. 291–300.

Refereed Journal Articles

[1] N. Masuda, V. M. Preciado, and M. Ogura, "Analysis of the susceptible-infected-susceptible epidemic dynamics in networks via the non-backtracking matrix," *IMA Journal of Applied Mathematics* (accepted for publication), 2020.

[2] M. Ogura, M. Kishida, and J. Lam, "Geometric programming for optimal positive linear systems," *IEEE Transactions on Automatic Control* (accepted for publication), 2020.

[3] äżŁæđŮäžŸ, é§Şå£ČåŘĹ, åřŔèŤţæ⬡čèijİ, and æİĽæIJňèňŹäžŇ, "ãČŢãĆčãČijãČĽãČŘãČČãĆŕèłďåůőå⬡ęç£ŠåĹűå¿ąãĄńãĄŁãĄŚãĆŃãČŢãĆčãČńãĆ£èĺ⬡èĺĹãĄĺåijůæ⬡čåő§æĂğãĄőéA *èĺĹæÿňèĞłåŃŢåĹűå¿ąå⬡ęäijŽèńŰæŰĞéŻĘ*, vol. 56, no. 3, pp. 141–148, 2020.

[4] M. Ogura, W. Mei, and K. Sugimoto, "Synergistic effects in networked epidemic spreading dynamics," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 67, no. 3, pp. 496–500, 2020.

[5] èŞijæšijç§ěçğĂ, åřŔèŤţæ⬡čèijİ, and æİĽæIJňèňŹäžŇ, "èęşæÿňä£ąåŔůãĄĺæŞ⬡äiIJä£ąåŔůãĄőæŘ⬡åďśãĄńãČ⬡ãČŘãĆźãČĹãĄłãČĽãĆęãČşãČĽãČ⬡ãČŞãČşãĆźãĆśãĆÿãČě *èĺĹæÿňèĞłåŃŢåĹűå¿ąå⬡ęäijŽèńŰæŰĞéŻĘ*, vol. 56, no. 3, pp. 89–97, 2020.

[6] Y. Abe, M. Ogura, H. Tsuji, A. Miura, and S. Adachi, "Resource and network management framework for a large-scale satellite communications system," *IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences*, vol. E103, no. 2, pp. 492–501, 2020.

[7] 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.

[8] M. Ogura, J. Harada, M. Kishida, and A. Yassine, "Resource optimization of product development projects with time-varying dependency structure," *Research in Engineering Design*, vol. 30, no. 3, pp. 435–452, 2019.

[9] M. Ogura, V. M. Preciado, and N. Masuda, "Optimal containment of epidemics over temporal activity-driven networks," *SIAM Journal on Applied Mathematics*, vol. 79, no. 3, pp. 986–1006, 2019.

[10] èŞijæšijç§ěçğĂ, åřŕèŤţæ◌čèijİ, and æİĽæIJňèňŹäžŇ, "ä£ąåŕůæŘ◌åďśãĆŠèĂČæĚőãĄŮãĄ§ãĆšãĆďãČşåĹĞãĆŁæŻ£ãĄĹåđŃçŁűæĚŃãĆłãČŰãĆűãČijãČŘãĄőèĺ◌èĺĹ," *èĺĹæÿňèĞłåŃŢåĹűå¿ąå◌ęäijŽèńŰæŰĞéŻĘ*, vol. 55, no. 3, 2019.

[11] 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.

[12] 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.

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

[14] 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.

[15] 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.

[16] 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.

[17] 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.

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

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

[20] 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. **(Runner-up of 2019 IEEE TNSE Best Paper Award)**

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

[22] 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.

[23] 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.

[24] 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.

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

[26] 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. **(2012 SICE Best Paper Award)**

Refereed Conference Proceedings

[1] 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.

[2] T. Kimura and M. Ogura, "Distributed collaborative 3D-deployment of UAV base stations for on-demand coverage," in *IEEE INFOCOM 2020* (accepted), 2020. (acceptance rate

Invited and Hourly Talks

[1] "åź¿äıŢèÍĹçŤżæşŢãĄńãĆĹãĆŃéĂĄä£ąéŻżåŁŻåĹűå¿ą," *2019åźťåžęæňąäÿŰäżčãČŕãĆďãČďãČňãĆźæŁĂèąŞèňŻåž* 2020.

[2] "ãČ◯ãČČãČĹãČŕãČijãĆŕåŇŰåĹűå¿ą–ãĆţãĆďãČŘãČijãČŢãĆčãĆÿãĆńãČńãĆůãĆźãČĘãČäãĆŠçŘĘèğčãĄŮïijŇåĹ ," *2020åźť1æIJĹéńŸä£qéăijåĹűå¿qéĂŽä£qçăŤçľűäijŽ*, 2020.

[3] "Optimization of positive linear systems via geometric programming," *Shenzhen University*, 2019.

[4] "Optimization of positive linear systems via geometric programming," *Guandong University of Technology*, 2019.

[5] "ãČ◯ãČČãČĹãČŕãČijãĆŕãĄńãĄŁãĄŚãĆŃæIJĂéĄľèşĞæžŘéĚ◯çió," *ãČ◯ãČČãČĹãČŕãČijãĆŕçğŚå◯ęãĆżãČ§ãČŁãČij2019*, 2019.

[6] "Synthesis of positive linear systems by geometric programming," *University of Hong Kong*, 2019.

[7] "èďĞéŻŚãČ◯ãČČãČĹãČŕãČijãĆŕãĄőæIJĂéĄľèĺ◯èĺĹïijŽãĄłãĄIJçğĄãĄŇãČ◯ãČČãČĹãČŕãČijãĆŕçğŚå◯ęãĄĺåĹ *èűşçńŃçăŤãĆżãČ§ãČŁãČij*, 2019.

[8] "åź¿äıŢèÍĹçŤżæşŢãĄőåĹűå¿ąå£IJçŤĺ," *éŻżå◯ŘæČĚåăšéĂŽä£qå◯ęäijŽ ä£qåŔůåĞęçŘĘçăŤçľűäijŽ*, 2019.

[9] "ãČ◯ãČČãČĹãČŕãČijãĆŕãĄńãĄŁãĄŚãĆŃçćžçŐĞçŽĎäijIæŠ◯ãČćãČĞãČńãĄőèğčæđŘãĄĺåĹűå¿ą," *æŮĕæIJňãĆłãČŽãČňãČijãĆůãČğãČşãĆžãČżãČłãĆţãČijãČĄå◯ęäijŽ çňň279åŻđå¿ĚãĄqèąŇåĹŮçăŤçľűéČĺäijŽ*, 2018.

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

[11] "éĞ⬡èęĄäžžçĽľãĄŕãĄąãćĆŇïij§ïıđ ãĄđ'ãĄłãĄŇãĆŁãĆŠçğŚå⬡ęãĄŹãĆŃ," *çŤ§éğŠåÿĆçńŃäÿ⬡å⬡ęæăąåĞžåĽ⬡æŐĹæě⬡*, 2018.

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

[13] "ãČĘãČşãČİãČľãČńãČ⬡ãČČãČĹãČŕãČijãĆŕãĄőæŢřçŘĘãČćãČĞãČłãČşãĆř," *çňň62åŻđãĆůãĆźãČĘãČăåĹűå¿ąæČĚåăśå⬡ęäijŽçăŤçľűçŹžèąĺèňŻæijŤäijŽ*, 2018.

[14] "ãĄŸãĆČãĆŞãĄŚãĆŞãĄğãĄ¿ãĄłãĄűèďĞéŻŚãČ⬡ãČČãČĹãČŕãČijãĆŕ," *çŤ§éğŠåÿĆçńŃäÿ⬡å⬡ęæăąåĞžåĽ⬡æŐĹæě⬡*, 2017.

[15] "How can we "control" spreading processes over complex networks?" *çňň4åŻđæŢřçŘĘãČćãČĞãČłãČşãĆřçăŤçľűäijŽ*, 2017.

[16] "äijÍæŠ⬡ãĄőèğčæđŘãĄĺåĹűå¿ąiijŽçćžçŐĞå¿őåĹĘąæŰźçĺŃåijŔãĄąńãĆĹãĆŃãĆćãČůãČ⬡ãČijãČĄ," *ERATOæšşåŐ§æđŮãČŮãČ⬡ãĆÿãĆğãĆŕãČĹ èďĞéŻŚãČ⬡ãČČãČĹãČŕãČijãĆŕãČžåIJřåŻşãĆřãČľãČŢãĆżãČ§ãČŁãČ* 2017.

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

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

[19] "Dynamical systems over time-varying networks," *Workshop on Recent Advances in Systems and Control*, Kyoto University, 2015.

[20] "Dynamical systems over time-varying networks," *Tokyo Institute of Technology*, 2015.

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

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

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

2020– **Program Committee member:** International Conference on Complex Networks and their Applications

Jan 2020– **Associate Editor:** Journal of The Franklin Institute
Local Arrangements Vice Chair: SICE Annual Conference 2018
Associate Editor: The 5th IFAC Workshop on Distributed Estimation and Control in Networked Systems (2015)

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 Control Systems Letters; IEEE Intelligent Systems; IEEE Transactions on Automatic Control; 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; Neurocomputing; Nonlinear Analysis: Hybrid Systems; Physica A; Physics Letters A; SIAM Journal on Control and Optimization; Stochastics and Dynamics; Systems and Control Letters; Research in Engineering Design

Masaki Ogura, March 2020