

Naoki Masuda

Contact Information

Naoki Masuda

Email: naokimas@buffalo.edu

Website: <https://naokimas.github.io/naokimasuda.github.io>

Employment

7/2025–	Professor (tenured) Gilbert S. Omenn Department of Computational Medicine and Informatics & Department of Mathematics, University of Michigan, USA
9/2021–6/2025	Professor (tenured) Department of Mathematics, State University of New York at Buffalo, USA Director of Graduate Studies, 7/2022–6/2025
8/19/2019–8/2021	Associate Professor (non-tenured) Department of Mathematics, State University of New York at Buffalo, USA
8/19/2019–	Institute for Artificial Intelligence and Data Science (incorporating the Computational and Data-Enabled Sciences and Engineering Program, which I have been core faculty of, in 4/2021) State University of New York at Buffalo, USA
8/1/2019– 8/18/2019	Associate Professor (tenured) Department of Engineering Mathematics, University of Bristol, United Kingdom
3/2014–7/2019	Senior Lecturer (tenured after one year of probation) Department of Engineering Mathematics, University of Bristol, United Kingdom
9/2008–2/2014	Associate Professor (tenured) Department of Mathematical Informatics, University of Tokyo, Japan
10/2006–8/2008	Lecturer (tenured) Department of Mathematical Informatics, University of Tokyo, Japan
4/2004–9/2006	Special Postdoctoral Fellow Amari Research Unit, RIKEN Brain Science Institute, Japan Host researcher: Professor Shun-ichi Amari
4/2003–3/2004	Research Fellow (PD) Japan Society for the Promotion of Science, at Yokohama National University, Japan Host researcher: Professor Norio Konno
10/2002–3/2003	Research Fellow (PD) Japan Society for the Promotion of Science, at University of Tokyo, Japan Host researcher: Professor Kazuyuki Aihara
4/2000–9/2002	Research Fellow (DC1) Japan Society for the Promotion of Science, at University of Tokyo, Japan Host researcher: Professor Kazuyuki Aihara

Visiting and Term Appointments

8/2022–	Research Fellow (non-tenured) Center for Computational Social Science, Kobe University, Japan
9/2021–3/2023	Professor (non-tenured) Faculty of Science and Engineering, Waseda University, Japan
4/2020–8/2021	Associate Professor (non-tenured) Faculty of Science and Engineering, Waseda University, Japan
11/2018–8/2019	Turing Fellow Alan Turing Institute, UK (terminated because of NM's move to the USA)
4/2018–3/2021	Visiting Professor Dalian University of Technology, China
10/2008–3/2012	Researcher (part-time appointment) Japan Science and Technology Agency, Basic Research Programs PRESTO, Japan
7/2004–3/2006	Group Leader (part-time appointment) Japan Science and Technology Agency, ERATO Aihara Complexity Modelling Project, Japan

Academic Qualifications

4/2000–9/2002	Ph.D. in Engineering, University of Tokyo, Japan (Department of Mathematical Engineering and Information Physics) Received 9/30/2002 Thesis title: “Duality of Information Coding in Pulse-coupled Neural Networks” Thesis advisor: Professor Kazuyuki Aihara
4/1998–3/2000	M.Sc. in Engineering, University of Tokyo, Japan (Department of Mathematical Engineering and Information Physics) Received 3/29/2000 Thesis title: “Cryptosystems with Discretized Chaotic Maps” Thesis advisor: Professor Kazuyuki Aihara
4/1994–3/1998	B.Sc. in Engineering, University of Tokyo, Japan (Department of Mathematical Engineering and Information Physics) Received 3/27/1998 Thesis title: “Analysis of Time Series with Wavelets” (The thesis was written in Japanese. Translation by NM.) Thesis advisor: Professor Yasunori Okabe
9/2000–6/2001	Academic Year Abroad Department of Physics, University of California, San Diego, USA

Citation Statistics

[Google Scholar Citations profile](#)

Number of citations: 10,900 (Google Scholar Citations)

h-index: 55 (Google Scholar Citations)

Grants

State University of New York at Buffalo, USA

[Selected for a potential award, but cancelled because transferring the award to a different institution (University of Michigan, to which NM moved on 7/1/2025) would violate DARPA's procurement integrity and solicitation process]

Twelve months from around 5/2025

Defense Advanced Research Projects Agency (DARPA), Advanced Research Concepts (ARC)

Opportunity titled Critical Orientation of Mathematics to Produce Advancements in Science and Security (COMPASS)

Subject: Early warning signals for complex network dynamics

Amount: \$297,844

Role: PI (sole PI)

10/2024–9/2025

Research and Economic Development Grant Resubmission Program, State University of New York at Buffalo

Subject: Correlation network analysis: algorithms and application to gene co-expression data

Amount: \$15,000

Role: PI (co-I: Omer Gokcumen, State University of New York at Buffalo)

3/2024–12/2024

College of Arts and Sciences proposal incentive program 2023–24 under Category 2, State University of New York at Buffalo

Subject: None

Amount: \$5,000

Role: PI (sole PI)

1/2024–12/2024

Institute for Artificial Intelligence and Data Science, State University of New York at Buffalo

Subject: Co-designing an artificial intelligence model with communities to increase treatment success for opioid use disorders

Amount: \$50,000

Collaborators: Ekaterina Noyes, Brian Clemency, Henry Taylor, Michael Lamonte (all at State University of New York at Buffalo), Reza Yousefi-Nooraie (University of Rochester); I am the advisor of the hired PhD student (effectively co-advised with Ekaterina Noyes).

9/2022–6/2026

National Institute of General Medical Sciences (NIGMS) and National Science Foundation (administered by NIGMS)

Award number: 1R01GM148973-01

Subject: DMS/NIGMS 1: Multilayer network approach to tandem repeat variation in genomes

Amount: \$444,229

Role: PI (co-I: Omer Gokcumen, State University of New York at Buffalo)

[I am only named Senior Personnel] 9/2022–2/2026

National Science Foundation (CCF, NSF 21-590 Predictive Intelligence for Pandemic Prevention Phase I: Development Grants)

Award Number: 2200173

Subject: PIPP Phase I: Center for Ecosystems Data Integration and Pandemic Early Warning Systems

Amount: \$1,000,000

Role: Named Senior Personnel (PI: Jennifer Surtees; co-PIs: E. Bruce Pitman, Wen Dong, Laurene Tumiel-Berhalter, Yinyin Ye; all at State University of New York at Buffalo)

9/2022–8/2025

National Science Foundation (Applied Mathematics Program)

Award number 2204936

Subject: Theory and application of temporal network embedding

Amount: \$300,000

Role: PI (sole PI)

4/2021–3/2024

National Science Foundation (Mathematical Biology Program)

Award number 2052720

Subject: Floquet theory for stochastic temporal networks and optimization theory for the design of schedules for COVID-19

Amount: \$239,983

Role: PI (Co-PI: Dane Taylor, State University of New York at Buffalo)

4/2021–11/2025

Japan Science and Technology Agency, Moonshot Research & Development Program, Japan

Award number: JPMJMS2021

Project title: Mathematical modeling and data analysis for understanding and intervening into resilience, robustness, and cascading failures in inter-organ networks

Amount: \$1,618,494 (= JPY 169,000,000) (to my group)

Role: Co-PI (PI: Kazuyuki Aihara, University of Tokyo, Co-PI: Jun-ichi Imura, Tokyo Institute of Technology; Shingo Iwami, Kyushu University; Yukinori Okada, Osaka University; Shigeru Saito, University of Toyama; Kiyohito Kasai, University of Tokyo)

An additional supplement travel grant of JPY 1,758,000 (\approx \$ 13,488) was given, 1/2023.

11/2020–11/2021

Sumitomo Foundation

Project title: Analysis of epidemic process models using higher-order random walks on networks

Amount: \$13,302.83 (= JPY 1,400,000) (to my group)

Role: PI (Co-I: Gouhei Tanaka, University of Tokyo)

7/2020–6/2021

Nakatani Foundation

Project title: Engineering curfew strategies based on contact network analysis

Amount: \$18,497.97 (= JPY 2,000,000) (to my group)

Role: PI (Co-I: Dane Taylor, State University of New York at Buffalo; Naoya Fujiwara, Tohoku University)

5/2020–8/2021

JP Morgan Chase Faculty Research Awards

Project title: Detecting fraudulent transactions in online marketplaces using temporal network motifs

Amount: \$150,000

Role: PI (partner PI: A. Erdem Sariyüce, State University of New York at Buffalo)

4/2020–7/2020

SUNY Research Seed Grant Program

Project title: Optimizing curfew schedules to suppress COVID-19 spreading

Amount: \$5,500 (\$2,750 to my group)

Role: PI (Other member of the Team: Dane Taylor, State University of New York at Buffalo)

2/2020–8/2023

Air Force Office of Scientific Research (AFOSR) European Office

Award number: FA9550-19-1-7024

Project title: Inferring dynamics of discrete states in time-varying networks

Amount: \$144,402 (Subcontracted from University of Bristol, which is NM's previous institution. NM secured \$160,709 while he was in Bristol, which has been split between Buffalo and Bristol.)

Role: PI (no Co-PI/Co-I)

Kobe University, Japan (as non-tenured Research Fellow)

4/2024–3/2027

Japan Society for Promotion of Science (Grant-in-Aid for Scientific Research (C))

Award number: 24K14840

Subject: Developing mathematical methods for analyzing correlation networks (translation by NM)

Amount: JPY 4,550,000

Role: PI (no Co-PI/Co-I)

4/2024–3/2028

Japan Society for Promotion of Science (Grant-in-Aid for Scientific Research (B))

Award number: 24K03013

Subject: Revealing mechanisms behind emergence of collective emotion by field sensing (translation by NM)

Amount: JPY 18,590,000 for the entire project (so far JPY 1,430,000 distributed to my group)

Role: Co-I (PI: Ryota Nomura, Waseda University, Co-I: Yutaka Shimada)

4/2023–3/2027

Japan Society for Promotion of Science (Grant-in-Aid for Scientific Research (B))

Award number: 23K28104

Subject: Deriving dynamical model equations from temporal network data using a graph rewriting framework (translation by NM)

Amount: JPY 9,100,000 for the entire project (so far JPY 1,755,000 distributed to my group)

Role: Co-I (PI: Hiroki Sayama, Waseda University)

Waseda University, Japan (as non-tenured faculty member)

4/2021–3/2025

Japan Society for Promotion of Science (Grant-in-Aid for Scientific Research (A))

Award number: 21H04595 Subject: Co-evolution of epidemics, interventions, and behavior in network epidemiology

Amount: JPY 2,600,000 (to my group)

Role: Co-I (PI: Petter Holme, Tokyo Institute of Technology, Co-Is: Tsuyoshi Murata, Misako Takayasu, Yoko Ibuka, Yusuke Asai, Catherine Beauchemin) [money moved to Kobe University in 4/2024]

University of Bristol, United Kingdom

2/2019–9/2019

GW4 Accelerator Fund

Project title: Recurrence analysis for the characterisation and classification of epileptic patients

Amount: £34,928 (£32,721 to my group)

Role: PI (Co-I: Lorenzo Livi, University of Exeter; Jiaxiang Zhang, Cardiff University; Tiago de Paula Peixoto, University of Bath)

11/2018–8/2019

Alan Turing Institute

Project title: Revealing citation cartels in network data

Amount: £35,139

Role: PI (no Co-PI/Co-I)

9/2018–2/2019

Mercari Inc (a company in Japan)

Project title: Detection of problematic transactions in online marketplaces of Mercari

Amount: £20,371 (company's contribution)

Role: PI (no Co-PI/Co-I)

5/2018–11/2018

EPSRC, BRIM (Building Resilience into Risk Management) Feasibility Fund

Project title: Network resilience theory for water distribution systems

Amount: £10,200

Role: PI (Co-I: Fanlin Meng, University of Exeter)

3/2018–2/2020

Cookpad Limited (a company registered in England and Wales)

Project title: Cookpad networks

Amount: £182,278 (company's contribution)

Role: PI (no Co-PI/Co-I)

3/2018–6/2018

Jean Golding Institute: Seed Corn Funding, University of Bristol

Project title: Immune state networks in wild mice

Amount: £2,600

Role: PI (Co-I: Mark Viney, University of Bristol)

2/2018–6/2018

GW4 Data Science Seed Corn Funding

Project title: Recurrence analysis for time-varying networks and its application to brain dynamics

Amount: £5,000

Role: PI (Co-I: Lorenzo Livi, University of Exeter; Jiaxiang Zhang, Cardiff University)

12/2017–6/2018

Faculty of Engineering: Research Pump Priming, University of Bristol

Project title: Immune response networks in wild mice

Amount: £5,000

Role: PI (Co-I: Mark Viney, University of Bristol)

9/2016–3/2017

EPSRC Institutional Sponsorship

Project title: Phase transitions in neuroimaging data

Amount: £7,234

Role: PI (Co-I: Elohim Fonseca dos Reis, University of Campinas, Brazil)

10/2013–3/2019

CREST, Japan Science and Technology Agency

Project title: Theory for analyzing temporal network data as deep knowledge (originally in Japanese. Translation by NM)

Amount: JPY 62,970,700 (to my group), of which £388,411.21 is to the University of Bristol; the rest is to the University of Tokyo

Role: Co-I (PI: Kenji Yamanishi, University of Tokyo, Japan)

University of Tokyo, Japan

4/2013–2/2014

Bilateral Joint Research Projects, Japan Society for the Promotion of Science

Project title: TempoNet: theoretical foundations of temporal networks

Amount: JPY 2,500,000 (to my group)

Role: PI (partner PI: Renaud Lambiotte, University of Namur, Belgium)

4/2013–3/2014

Research Grants for Japanese Young Scientists (originally in Japanese. Translation by NM), The Nakajima Foundation

Project title: Quantify reputations of agents in networks (originally in Japanese. Translation by NM)

Amount: JPY 1,000,000

Role: PI (no Co-PI/Co-I)

6/2013–8/2013

Japan Society for the Promotion of Science

Grant given to the host of a visiting fellow on JSPS Summer Program

Amount: JPY 100,000

Role: Host of Dr. Friederike Greb

4/2011–2/2014

Japan Society for the Promotion of Science (Grant-in-Aid for Young Scientists (A))

Project title: Computational modeling of games on social networks and analysis of cooperative behavior

Amount: JPY 10,100,000

Role: PI (no Co-PI/Co-I)

2/2012–3/2012

Japan Society for the Promotion of Science

Grant given to the host of a visiting fellow on Postdoctoral Fellowships for Foreign Researchers (short-term) program

Amount: JPY 81,000

Role: Host of Dr. Paul Expert

5/1/2009–2/28/2010

Grant given to the host researcher from the sender institution

Amount: JPY 150,000

Role: Host of Prof. Toshihiro Tanizawa, Kochi National College of Technology, Japan

11/2008–3/2013

Japan Society for the Promotion of Science (Grant-in-Aid for Scientific Research on Innovative Areas)

Project title: Computational study of locomotion, learning, and memory using stochastic analysis methods

Amount: JPY 29,845,000 (to my group)

Role: PI (Co-I: Jun Ohkubo)

10/2008–3/2012

Japan Science and Technology Agency, Basic Research Programs PRESTO, Japan

Project title: Modeling of epidemic dynamics on networks with group structure

Amount: JPY 49,332,600

Role: PI (no Co-PI/Co-I)

4/2008–3/2011

Japan Society for the Promotion of Science (Grant-in-Aid for Young Scientists (B))

Project title: Computational modeling of games on social networks and analysis of cooperative behavior

Amount: JPY 4,030,000

Role: PI (no Co-PI/Co-I)

4/2008–3/2011

Japan Society for Promotion of Science (Grant-in-Aid for Scientific Research (C))

Project title: Renormalization group approach to the analysis of coexistence dynamics on complex networks with randomness (originally in Japanese. Translation by NM)

Amount: JPY 221,000

Role: Co-I (PI: Toshihiro Tanizawa, Kochi National College of Technology)

4/2008–11/2009

Ministry of Education, Culture, Sports, Science and Technology of Japan (Grant-in-Aid for Scientific Research on Priority Areas “Integrative Brain Research”)

Project title: Neuro-computational modeling of cooperative behavior (originally in Japanese. Translation by NM)

Amount: JPY 1,787,269

Role: PI (no Co-PI/Co-I)

6/2007–3/2009

Trend Micro Incorporated (a company in Japan)

Project title: Exploration of content security on the WWW using network analysis (originally in Japanese. Translation by NM)

Amount: JPY 5,250,000

Role: PI

4/26/2007–5/26/2007

National Institute for Physiological Sciences, Japan, Japan–U.S. Brain Research Cooperative Program (travel grant)

Project title: A computational study of improvement in behavioral performance by attention

Amount: JPY 570,000

Role: Visiting investigator (Host: Dr. Brent Doiron, Center for Neural Science, New York University)

As postdoc and PhD student in Japan

4/2004–9/2006

Special Postdoctoral Researcher, RIKEN Brain Science Institute, Japan

Project title: Spatiotemporal information processing by recurrent neural networks with synaptic learning and integrate-and-fire dynamics (originally in Japanese. Translation by NM)

Amount: JPY 3,900,000 (research grant portion)

Role: Sole recipient

4/2003–3/2004

Research Fellowships for Young Scientists (PD), Japan Society for the Promotion of Science

Project title: Multiplexity of information representation and contributions of complex spiking patterns and synaptic learning to brain functioning (originally in Japanese. Translation by NM)

Host researcher: Prof. Norio Konno (Yokohama National University, Japan)

Amount: JPY 1,200,000 (research grant portion)

Role: Sole recipient

4/2000–3/2003

Research Fellowships for Young Scientists (DC1), Japan Society for the Promotion of Science

Project title: Analysis of finite-state transformations by chaotic mapping and its application to cryptosystems and neural dynamics (originally in Japanese. Translation by NM)

Host researcher: Prof. Kazuyuki Aihara (University of Tokyo, Japan)

Amount: JPY 3,000,000 (research grant portion)

Role: Sole recipient

Honors and Awards

PLoS ONE, Editorial Board, Long Service Award, 2023

IOP (Institute of Physics) Trusted Reviewer status 2020
(awarded to approximately the top 12% of reviewers since 2018)

JSPS (Japan Society for Promotion of Science) Prize 2020
(awarded to 24 researchers under the age of 45 across all fields of the humanities, social sciences, and natural sciences)

Junior Akira Okubo Prize 2019
jointly administered by the Society for Mathematical Biology and the Japanese Society for Mathematical Biology

Outstanding Reviewer Awards 2017
New Journal of Physics, IOP Publishing (awarded to 82 out of 1,507 reviewers)

3/2016 First Prize for Creating Research (originally in Japanese. Translation by NM)
Research Grants on Brain and Creativity
administered by Neurocreative Laboratory (an NPO in Japan)
Project title: Quantifying drastic changes in brain dynamics (originally in Japanese. Translation by NM) Award prize amount: \$10,000

The Young Scientists' Prize
The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, Japan, April 2013.

Japanese Society for Mathematical Biology Early Career Award, 2012.

International Neural Network Society Young Investigator Award
The International Neural Network Society, August 15, 2007.

Refereed Journal Papers

221. Naoki Masuda, Zachary M. Boyd, Diego Garlaschelli, Peter J. Mucha.
Introduction to correlation networks: Interdisciplinary approaches beyond thresholding.
Physics Reports, 1136, 1–39 (2025).
220. Shilong Yu, Neil G. MacLaren, Naoki Masuda.
Using covariance of node states to design early warning signals for network dynamics.
Philosophical Transactions of the Royal Society A, in press (2025).
219. Alber Aqil, Yanyan Li, Zhiliang Wang, Saiful Islam, Madison Russel, Theodora Kunovac Kallak, Marie Saitou, Omer Gokcumen, Naoki Masuda.
Switch-like gene expression modulates disease risk.
Nature Communications, 16, 5323 (2025).
218. Lucas Lacasa, F. Javier Marín-Rodríguez, Naoki Masuda, Lluís Arola-Fernández.
Scalar embedding of temporal network trajectories.
Chaos, Solitons and Fractals, 199, 116599 (2025).
217. Chanon Thongprayoon, Naoki Masuda.
Spline tie-decay temporal networks.
Journal of Computational Science, 88, 102591 (2025).

216. [Naoki Masuda](#), Saiful Islam, Si Thu Aung, Takamitsu Watanabe.
Energy landscape analysis based on the Ising model: Tutorial review.
PLoS Complex Systems, 2, e0000039 (2025).
215. Neil G. MacLaren, Kazuyuki Aihara, [Naoki Masuda](#).
Applicability of spatial early warning signals to complex network dynamics.
Journal of the Royal Society Interface, 22, 20240696 (2025).
214. Harrison Hartle, [Naoki Masuda](#).
Autocorrelation properties of temporal networks governed by dynamic node variables.
Physical Review Research, 7, 013083 (2025).
213. Christelle Langley, Giovanni De Marco, Souhir Daly, [Naoki Masuda](#), Angela Davies Smith, Rosemary Jones, Jared Bruce, Ngoc Jade Thai.
Neural substrates of alerting dysfunction in females with multiple sclerosis.
Multiple Sclerosis and Related Disorders, 93, 106208 (2025).
212. Maisha Islam Sejunti, Dane Taylor, [Naoki Masuda](#).
A Parrondo paradox in susceptible-infectious-susceptible dynamics over periodic temporal networks.
Mathematical Biosciences, 378, 109336 (2024).
211. Lucas H. McCabe, [Naoki Masuda](#), Shannon Casillas, Nathan Danneman, Alen Alic, Royal Law.
Network analysis of U.S. non-fatal opioid-involved overdose journeys, 2018–2023.
Applied Network Science, 9, 68 (2024).
210. Hang-Hyun Jo, Tibebe Birhanu, [Naoki Masuda](#).
Temporal scaling theory for bursty time series with clusters of arbitrarily many events.
Chaos, 34, 083110 (2024).
209. Chanon Thongprayoon, [Naoki Masuda](#).
Online landmark replacement for out-of-sample dimensionality reduction methods.
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 480, 20230966 (2024).
208. Jnanajyoti Bhaumik, [Naoki Masuda](#).
Constant-selection evolutionary dynamics on weighted networks.
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 480, 20240223 (2024).
207. Katherine Betz, Feng Fu, [Naoki Masuda](#).
Evolutionary game dynamics with environmental feedback in a network with two communities.
Bulletin of Mathematical Biology, 86, 84 (2024).
206. Pitambar Khanra, Johan Nakuci, Sarah Muldoon, Takamitsu Watanabe, [Naoki Masuda](#).
Reliability of energy landscape analysis of resting-state functional MRI data.
European Journal of Neuroscience, 60, 4265–4290 (2024).
205. Ruodan Liu, [Naoki Masuda](#).
Fixation dynamics on multilayer networks.
SIAM Journal on Applied Mathematics, 84, 2028–2050 (2024).
204. Saiful Islam, Pitambar Khanra, Johan Nakuci, Sarah Muldoon, Takamitsu Watanabe, [Naoki Masuda](#).
State-transition dynamics of resting-state functional magnetic resonance imaging data: Model comparison and test-to-retest analysis.
BMC Neuroscience, 25, 14 (2024).

203. [Naoki Masuda](#), Kazuyuki Aihara, Neil G. MacLaren.
Anticipating regime shifts by mixing early warning signals from different nodes.
Nature Communications, 15, 1086 (2024).
202. Jun Miyata, Akihiko Sasamoto, Takahiro Ezaki, Masanori Isobe, Takanori Kochiyama, [Naoki Masuda](#), Yasuo Mori, Yuki Sakai, Nobukatsu Sawamoto, Shisei Tei, Shiho Ubukata, Toshihiko Aso, Toshiya Murai, Hidehiko Takahashi.
Associations of conservatism and jumping to conclusions biases with aberrant salience and default mode network.
Psychiatry and Clinical Neurosciences, 78, 322–331 (2024).
201. Shota Yonezawa, Takayuki Haruki, Keiichi Koizumi, Akinori Taketani, Yusuke Oshima, Makito Oku, Akinori Wada, Tsutomu Sato, [Naoki Masuda](#), Jun Tahara, Noritaka Fujisawa, Shota Koshiyama, Makoto Kadowaki, Isao Kitajima, Shigeru Saito.
Establishing monoclonal gammopathy of undetermined significance as an independent pre-disease state of multiple myeloma using Raman spectroscopy, dynamical network biomarker theory, and energy landscape analysis.
International Journal of Molecular Sciences, 25, 1570 (2024).
200. Neil G. MacLaren, Lingqi Meng, Melissa Collier, [Naoki Masuda](#).
Cooperation and the social brain hypothesis in primate social networks.
Frontiers in Complex Systems, 1, 1344094 (2024).
199. Ruodan Liu, Masaki Ogura, Elohim Fonseca dos Reis, [Naoki Masuda](#).
Effects of concurrency on epidemic spreading in Markovian temporal networks.
European Journal of Applied Mathematics, 35, 430–461 (2024).
198. Ik Soo Lim, [Naoki Masuda](#).
To trust or not to trust: Evolutionary dynamics of an asymmetric N -player trust game.
IEEE Transactions on Evolutionary Computation, 28, 117–131 (2024).
197. Madison Russell, Alber Aqil, Marie Saitou, Omer Gokcumen, [Naoki Masuda](#).
Gene communities in co-expression networks across different tissues.
PLoS Computational Biology, 19, e1011616 (2023).
196. Kashin Sugishita, [Naoki Masuda](#).
Social network analysis of manga: Similarities to real-world social networks and trends over decades.
Applied Network Science, 8, 79 (2023).
195. Kazuki Nakajima, Ruodan Liu, Kazuyuki Shudo, [Naoki Masuda](#).
Quantifying gender imbalance in East Asian academia: Research career and citation practice.
Journal of Informetrics, 17, 101460 (2023).
194. Ruodan Liu, [Naoki Masuda](#).
Fixation dynamics on hypergraphs.
PLoS Computational Biology, 19, e1011494 (2023).
193. Jnanajyoti Bhaumik, [Naoki Masuda](#).
Fixation probability in evolutionary dynamics on switching temporal networks.
Journal of Mathematical Biology, 87, 64 (2023).
192. Maximilian B. Kloucek, Thomas Machon, Shogo Kajimura, C. Patrick Royall, [Naoki Masuda](#), Francesco Turci.
Biases in inverse Ising estimates of near-critical behavior.
Physical Review E, 108, 014109 (2023).

191. Lingqi Meng, [Naoki Masuda](#).
Perturbation theory for evolution of cooperation on networks.
Journal of Mathematical Biology, 87, 12 (2023).
190. Christelle Langley, [Naoki Masuda](#), Simon Godwin, Giovanni De Marco, Angela Davies Smith, Rosemary Jones, Jared Bruce, Ngoc Jade Thai.
Dysfunction of basal ganglia functional connectivity associated with subjective and cognitive fatigue in multiple sclerosis.
Frontiers in Neuroscience, 17, 1194859 (2023).
189. Yiding Cao, Suraj Rajendran, Prathic Sundararajan, Royal K. Law, Sarah Bacon, Steven A. Sumner, [Naoki Masuda](#).
Web-based social networks of individuals with adverse childhood experiences: Quantitative study.
Journal of Medical Internet Research, 25, e45171 (2023).
188. Chanon Thongprayoon, Lorenzo Livi, [Naoki Masuda](#).
Embedding and trajectories of temporal networks.
IEEE Access, 11, 41426–41443 (2023).
187. Neil G. MacLaren, Prosenjit Kundu, [Naoki Masuda](#).
Early warnings for multistage transitions in dynamics on networks.
Journal of the Royal Society Interface, 20, 20220743 (2023).
186. Kazuki Nakajima, Kazuyuki Shudo, [Naoki Masuda](#).
Higher-order rich-club phenomenon in collaborative research grants.
Scientometrics, 128, 2429–2446 (2023).
185. Yukiko Matsumoto, Satoshi Nishida, Ryusuke Hayashi, Shuraku Son, Akio Murakami, Naganobu Yoshikawa, Hiroyoshi Ito, Naoya Oishi, [Naoki Masuda](#), Toshiya Murai, Karl Friston, Shinji Nishimoto, Hidehiko Takahashi.
Disorganization of semantic brain networks in schizophrenia revealed by fMRI.
Schizophrenia Bulletin, 49, 498–506 (2023).
184. Prosenjit Kundu, Neil G. MacLaren, Hiroshi Kori, [Naoki Masuda](#).
Mean-field theory for double-well systems on degree-heterogeneous networks.
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 478, 20220350 (2022).
Correction to: ‘Mean-field theory for double-well systems on degree-heterogeneous networks’ (2023) by Kundu *et al.*.
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 479, 20230171 (2023).
183. Takao Sasaki, [Naoki Masuda](#), Richard P. Mann, Dora Biro.
Empirical test of the many-wrongs hypothesis reveals weighted averaging of individual routes in pigeon flocks.
iScience, 25, 105076 (2022).
182. [Naoki Masuda](#), Prosenjit Kundu.
Dimension reduction of dynamical systems on networks with leading and non-leading eigenvectors of adjacency matrices.
Physical Review Research, 4, 023257 (2022).

181. Prosenjit Kundu, Hiroshi Kori, [Naoki Masuda](#).
Accuracy of a one-dimensional reduction of dynamical systems on networks.
Physical Review E, 105, 024305 (2022).
180. Elohim Fonseca dos Reis, [Naoki Masuda](#).
Metapopulation models imply non-Poissonian statistics of interevent times.
Physical Review Research, 4, 013050 (2022).
179. Penghang Liu, [Naoki Masuda](#), Tomomi Kito, Ahmet Erdem Sarıyüce.
Temporal motifs in patent opposition and collaboration networks.
Scientific Reports, 12, 1917 (2022).
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Dual coding hypotheses for neural information representation.
Mathematical Biosciences, 207, 312–321 (2007).
31. Naoki Masuda, Hisashi Ohtsuki.
Tag-based indirect reciprocity by incomplete social information.
Proceedings of the Royal Society B: Biological Sciences, 274, 689–695 (2007).

30. Yong-Yeol Ahn, Hawoong Jeong, Naoki Masuda, Jae Dong Noh.
Epidemic dynamics of two species of interacting particles on scale-free networks.
Physical Review E, 74, 066113 (2006).
29. Naoki Masuda, Norio Konno.
Networks with dispersed degrees save stable coexistence of species in cyclic competition.
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28. Yuichi Katori, Naoki Masuda, Kazuyuki Aihara.
Dynamic switching of optimal neural codes in networks with gap junctions.
Neural Networks, 19, 1463–1466 (2006).
27. Naoki Masuda, Norio Konno.
Multi-state epidemic processes on complex networks.
Journal of Theoretical Biology, 243, 64–75 (2006).
26. Kazumichi Ohtsuka, Norio Konno, Naoki Masuda, Kazuyuki Aihara.
Phase diagrams and correlation inequalities of a three-state stochastic epidemic model on the square lattice.
International Journal of Bifurcation and Chaos, 16, 3687–3693 (2006).
25. Naoki Masuda, Norio Konno.
VIP-club phenomenon: emergence of elites and masterminds in social networks.
Social Networks, 28, 297–309 (2006).
24. Naoki Masuda, Goce Jakimoski, Kazuyuki Aihara, Ljupco Kocarev.
Chaotic block ciphers: from theory to practical algorithms.
IEEE Transactions on Circuits and Systems Part I, 53, 1341–1352 (2006).
23. Naoki Masuda.
Simultaneous rate-synchrony codes in populations of spiking neurons.
Neural Computation, 18, 45–59 (2006).
22. N. Masuda, K.-I. Goh, B. Kahng.
Extremal dynamics on complex networks: Analytic solutions.
Physical Review E, 72, 066106 (2005).
21. Norio Konno, Naoki Masuda, Rahul Roy, Anish Sarkar.
Rigorous results on the threshold network model.
Journal of Physics A: Mathematical and General, 38, 6277–6291 (2005).
20. Naoki Masuda, Brent Doiron, André Longtin, Kazuyuki Aihara.
Coding of temporally varying signals in networks of spiking neurons with global delayed feedback.
Neural Computation, 17, 2139–2175 (2005).
19. Naoki Masuda, Hiroyoshi Miwa, Norio Konno.
Geographical threshold graphs with small-world and scale-free properties.
Physical Review E, 71, 036108 (2005).
18. Naoki Masuda, Hiroyoshi Miwa, Norio Konno.
Analysis of scale-free networks based on a threshold graph with intrinsic vertex weights.
Physical Review E, 70, 036124 (2004).

17. Naoki Masuda, Norio Konno.
Subcritical behavior in the alternating supercritical Domany-Kinzel dynamics.
European Physical Journal B, 40, 313–319 (2004).
16. Naoki Masuda, Norio Konno.
Return times of random walk on generalized random graphs.
Physical Review E, 69, 066113 (2004).
15. Naoki Masuda, Kazuyuki Aihara.
Dual coding and effects of global feedback in multilayered neural networks.
Neurocomputing, 58–60, 33–39 (2004).
14. Naoki Masuda, Norio Konno, Kazuyuki Aihara.
Transmission of severe acute respiratory syndrome in dynamical small-world networks.
Physical Review E, 69, 031917 (2004).
13. Naoki Masuda, Kazuyuki Aihara.
Self-organizing dual coding based on spike-time-dependent plasticity.
Neural Computation, 16, 627–663 (2004).
12. Naoki Masuda, Kazuyuki Aihara.
Global and local synchrony of coupled neurons in small-world networks.
Biological Cybernetics, 90, 302–309 (2004).
11. Naoki Masuda, Kazuyuki Aihara.
Spatial prisoner’s dilemma optimally played in small-world networks.
Physics Letters A, 313, 55–61 (2003).
10. Naoki Masuda, Kazuyuki Aihara.
Filtered interspike interval encoding by class II neurons.
Physics Letters A, 311, 485–490 (2003).
9. Naoki Masuda, Kazuyuki Aihara.
Ergodicity of spike trains: when does trial averaging make sense?
Neural Computation, 15, 1341–1372 (2003).
8. Naoki Masuda, Kazuyuki Aihara.
Duality of rate coding and temporal spike coding in multilayered feedforward networks.
Neural Computation, 15, 103–125 (2003).
7. Naoki Masuda, Kazuyuki Aihara.
Bridging rate coding and temporal spike coding by effect of noise.
Physical Review Letters, 88, 248101 (2002).
6. Naoki Masuda, Kazuyuki Aihara.
Spatiotemporal spike encoding of a continuous external signal.
Neural Computation, 14, 1599–1628 (2002).
5. Naoki Masuda, Kazuyuki Aihara.
Dynamical characteristics of discretized chaotic permutations.
International Journal of Bifurcation and Chaos, 12, 2087–2103 (2002).
4. Naoki Masuda, Kazuyuki Aihara.
Cryptosystems with discretized chaotic maps.
IEEE Transactions on Circuits and Systems Part I, 49, 28–40 (2002).

3. Naoki Masuda, Kazuyuki Aihara.
Synchronization of pulse-coupled excitable neurons.
Physical Review E, 64, 051906 (2001).
2. Henry D. I. Abarbanel, Naoki Masuda, M. I. Rabinovich, Evren Tumer.
Distribution of mutual information.
Physics Letters A, 281, 368–373 (2001).
1. Naoki Masuda, Yasunori Okabe.
Time series analysis with wavelet coefficients.
Japan Journal of Industrial and Applied Mathematics, 18, 129–158 (2001).

Editorial

1. Teruyoshi Kobayashi, Naoki Masuda.
Introduction to the special issue “Economics and Complex Networks”.
Japanese Economic Review, 72, 1–4 (2021).

Commentary

2. Naoki Masuda.
Predicting tipping points in complex systems.
(American Physical Society) Viewpoint (Physics), 17, 110 (2024).

This is a viewpoint article for: Zijia Liu, Xiaozhu Zhang, Xiaolei Ru, Ting-Ting Gao, Jack Murdoch Moore, Gang Yan.
Early predictor for the onset of critical transitions in networked dynamical systems.
Physical Review X, 14, 031009 (2024).
1. Naoki Masuda, Francisco C. Santos.
A mathematical look at empathy.
eLife, 8, e47036 (2019).

Articles for Young Adults (Refereed)

1. Naoki Masuda, Mason A. Porter.
The waiting-time paradox.
Frontiers for Young Minds, 8, 582433 (2021).

Books

4. Naoki Masuda, Christian L. Vestergaard.
Gillespie Algorithms for Stochastic Multiagent Dynamics in Populations and Networks.
Cambridge Elements, Cambridge University Press, Cambridge, UK (2022).
3. Naoki Masuda, Renaud Lambiotte.
A Guide to Temporal Networks (second edition).
World Scientific, Singapore (2020).
(The first edition was published in 2016.)

2. Naoki Masuda, Kwang-Il Goh, Tao Jia, Junichi Yamanoi, Hiroki Sayama. (Editors)
 Proceedings of NetSci-X 2020: Sixth International Winter School and Conference on Network Science.
 Springer, Cham, Switzerland (2020).
1. Naoki Masuda, Petter Holme. (Editors)
 Temporal Network Epidemiology.
 Springer, Singapore (2017).

Book Chapters

4. Tomokatsu Onaga, James P. Gleeson, Naoki Masuda.
 The effect of concurrency on epidemic threshold in time-varying networks.
 In: Temporal Network Theory, Petter Holme and Jari Saramäki (Eds.), Springer, Cham, Switzerland (2019). pp. 253–267.
 The same chapter is in pp. 259–274 of Second Edition (2023).
3. Naoki Masuda, Petter Holme.
 Introduction to temporal network epidemiology.
 In: Temporal Network Epidemiology, Naoki Masuda and Petter Holme (Eds.), Springer, Singapore (2017), pp. 1–16.
2. Leo Speidel, Konstantin Klemm, Víctor M. Eguíluz, Naoki Masuda.
 Epidemic threshold in temporally-switching networks.
 In: Temporal Network Epidemiology, Naoki Masuda and Petter Holme (Eds.), Springer, Singapore (2017), pp. 161–177.
1. Naoki Masuda, Taro Takaguchi, Nobuo Sato, Kazuo Yano.
 Self-exciting point process modeling of conversation event sequences.
 In: Temporal Networks, P. Holme and J. Saramäki (Eds.), Springer-Verlag, Berlin (2013), pp. 245–264.

Refereed Conference Papers

10. Masaki Ogura, Junpei Tagawa, Naoki Masuda.
 Distributed agreement on activity driven networks.
 2018 American Control Conference.
 Wisconsin Center, Milwaukee, Wisconsin, USA, 6/27/2018–6/29/2018
 In: Proceedings, 4147–4152.
 [Oral presentation]
9. Xia Cui, Sadamori Kojaku, Naoki Masuda, Danushka Bollegala.
 Solving feature sparseness in text classification using core-periphery decomposition.
 The Seventh Joint Conference on Lexical and Computational Semantics (*SEM 2018).
 New Orleans, Louisiana, USA, 6/5/2018–6/6/2018
 In: Proceedings, 255–264.
 [Oral presentation; 42% acceptance]
8. Naoki Masuda, Konstantin Klemm, Víctor M. Eguíluz.
 Slowing down of linear consensus dynamics on temporal networks: some theoretical extensions.
 4th IFAC Conference on Analysis and Control of Chaotic Systems.
 Tokyo, Japan, 8/26/2015–8/28/2015

In: IFAC-PapersOnLine, 48–18, 187–192 (2015).
[Oral presentation]

7. Kodai Saito, Naoki Masuda.
Two types of Twitter users with equally many followers.
The 2013 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2013).
Niagara Falls, Canada, 8/25/2013–8/28/2013
In: Proceedings, 1425–1426.
[Poster presentation; 36% acceptance (28% oral + 8% poster)]
6. Naoki Masuda, Tetsuya Fujie, Kazuo Murota.
Application of semidefinite programming to maximize the spectral gap produced by node removal.
4th Workshop on Complex Networks (CompleNet 2013).
Berlin, Germany, 3/13/2013–3/15/2013
In: Complex Networks IV, Studies in Computational Intelligence, 476, 155–163 (2013).
[Poster presentation]
5. Naoki Masuda, Hiroshi Kori.
STDP enhances frequency synchrony in neural networks with a pacemaker.
International Joint Conference on Neural Networks (IJCNN 2007).
Orlando, Florida, USA, 8/12/2007–8/17/2007
In: Proceedings of International Joint Conference on Neural Networks, 96–101 (2007).
[Poster presentation]
4. Naoki Masuda, Shun-ichi Amari.
Modeling memory transfer and savings in cerebellar motor learning.
Neural Information Processing Systems (NIPS) 2005.
Vancouver, Canada, 12/5/2005–12/10/2005
In: Advances in Neural Information Processing Systems (Eds. Y. Weiss, B. Scholkopf, J. Platt), 18, 859–866 (2006).
[Poster presentation; 25% acceptance]
3. Naoki Masuda, Kazuyuki Aihara.
Collective behavior of pulse-coupled FitzHugh-Nagumo neurons.
The 8th International Conference on Neural Information Processing (ICONIP 2001).
Shanghai, China, 11/14/2001–11/18/2001
In: Proceedings of ICONIP2001, Vol. 2, 910–915.
[Oral presentation]
2. Naoki Masuda, Kazuyuki Aihara.
Cryptosystems based on space-discretization of chaotic maps.
The IEEE International Symposium on Circuits and Systems, 2001 (ISCAS 2001).
Sydney, Australia, 5/6/2001–5/9/2001
In: Proceedings of ISCAS 2001, III, 321–324 (2001).
[Oral presentation]
1. Naoki Masuda, Kazuyuki Aihara.
Cryptosystem based on a finite-state baker's map and its security analysis.
1999 International Symposium on Nonlinear Theory and its Applications (NOLTA99).
Hilton Waikoloa Village, Waikoloa, Hawaii, USA, 11/28/1999–12/2/1999
In: Proceedings of NOLTA'99, 613–616.
[Oral presentation]

Institutional Journal Papers (refereed)

2. Aoi Naito, [Naoki Masuda](#), Tatsuya Kameda.
Collective intelligence under a volatile task environment: A behavioral experiment using social networks and computer simulations.
Interdisciplinary Information Sciences, 30, 1–12 (2024).
1. Akihiro Fujihara, Yusuke Ide, Norio Konno, [Naoki Masuda](#), Hiroyoshi Miwa, Masato Uchida.
Limit theorems for the average distance and the degree distribution of the threshold network model.
Interdisciplinary Information Sciences, 15, 361–366 (2010).

Media articles featuring my work and related activity

4. [Vendor offering citations for purchase is latest bad actor in scholarly publishing.](#)
[ScienceInsider](#) (online news from Science), 2/12/2024
Quoting my comments that are distantly related to Sadamori Kojaku, Giacomo Livan, Naoki Masuda.
Detecting citation cartels in journal networks.
Scientific Reports, 11, 14524 (2021).
3. [Riconoscimento o gratitudine, le due ricompense dell'altruista.](#)
[le Scienze](#) (in Italian), 3/5/2014
Featuring Takamitsu Watanabe, Masanori Takezawa, Yo Nakawake, Akira Kunimatsu, Hidenori Yamasue, Mitsuhiro Nakamura, Yasushi Miyashita, Naoki Masuda.
Two distinct neural mechanisms underlying indirect reciprocity.
Proceedings of the National Academy of Sciences of the United States of America, 111, 3990–3995 (2014).
2. [Social networks, suicide and statistics.](#)
[I Programmer news](#), 7/6/2012
Featuring Naoki Masuda, Issei Kurahashi, Hiroko Onari.
Suicide ideation of individuals in online social networks.
PLoS ONE, 8, e62262 (2013).
1. [Spotting suicidal tendencies on social networks.](#)
[MIT Technology Review](#), 7/5/2012
Featuring the same article.

Conference/workshop Invited Presentations (without refereed proceeding papers)

52. [Naoki Masuda](#).
Node-state dynamics view of temporal networks.
Satellite Workshop: TENET (TEmporal NETworks), NetSci 2025.
Maastricht, Netherlands, 6/2/2025–6/6/2025
[Keynote talk]
51. [Naoki Masuda](#).
Early warning indicators for regime shifts in network dynamics.
Emergent Behavior in Complex Systems of Interacting Agents. Institute for Mathematical and Statistical Innovation workshop, University of Chicago, Chicago, IL, 3/17/2025–3/21/2025

50. Naoki Masuda.
Competition in dynamic populations and networks: skaters, pigeons, and cooperators.
Mathematics & Social Sciences Workshop
Institut d'Études Avancées, Paris, France, 2/24/2025–2/26/2025
[Invited talk (this was an invitation-only workshop)]
49. Naoki Masuda.
Fraud detection in network data: illegal online transactions and citation cartels.
The First Social Intelligence Conference (translation by NM).
Dalian, China, 9/13/2024
[Invited talk]
48. Naoki Masuda.
Network science, temporal networks, and interaction among manga characters.
(Workshop part of) the First Social Intelligence Conference and Workshop (translation by NM).
Dalian University of Technology, Dalian, China, 9/12/2024
[Invited talk]
47. Naoki Masuda.
Reinforcement learning and games in sports: Football coach's decision making and skater's dilemma.
2024 Evolutionary Game Theory and Artificial Intelligence International Conference (translation by NM).
Vision Hotel Beijing, Beijing, China, 8/5/2024–8/8/2024
[Plenary talk]
46. Naoki Masuda.
Recurrence view of temporal network data.
SIAM UB (University at Buffalo) Student Chapter Applied Mathematics Workshop.
Online, 4/26/2024
[Invited talk]
45. Naoki Masuda.
Correlation network analysis.
Session on Network Analysis and Subsampling Methods. UPSTAT 2024 — Statistical Science at a Crossroads.
Rochester Institute of Technology, Rochester, NY, 4/13/2024
[Invited talk]
44. Naoki Masuda.
Fixation dynamics on multilayer networks.
Workshop on Modeling and Applications of Evolutionary Game Theory.
Online, 12/8/2023
[Invited talk]
43. Naoki Masuda.
Fixation probability in opinion formation dynamics on higher-order networks.
The Future of Mathematical Social Science Workshop.
Online (hosted by University of Pennsylvania), Philadelphia, PA, 4/10 – 4/11/2023
[Invited talk]
42. Naoki Masuda.
Modeling and analysis of temporal networks and dynamical processes on them.
International Conference on Emerging Trends in Mathematical Sciences & Computing (IEMSC-23).

Online (hosted by IEM Kolkata, India), February 3–5, 2023.
[Plenary talk]

41. Naoki Masuda.
Long-tailed distributions of inter-event times as mixtures of exponentials.
KIAS International Workshop: Theoretical Challenges in Network Science.
KIAS, Seoul, South Korea, September 26–30, 2022.
[Invited talk]
40. Naoki Masuda.
State dynamics view of temporal network data: Recurrence and embedding.
Blockchain Kaigi 2022 (BCK22).
Tohoku University, Sendai, Japan, August 4–5, 2022.
[Invited talk]
39. Naoki Masuda.
Recurrence view of temporal network data: System-state dynamics, recurrence plot, and embedding.
NetSci 2022.
Online, July 25–29, 2022.
[Invited talk]
38. Naoki Masuda.
Recurrence quantification analysis and energy landscape analysis of dynamic brain networks. The
BIRS workshop on Multiplex Brain Networks.
Banff International Research Station, Banff, Canada, 4/22/2022–4/24/2022.
[Invited talk]
37. Naoki Masuda.
System-state dynamics and recurrence of temporal networks.
American Physical Society March Meeting, Chicago, IL, USA, 3/14/2022–3/18/2022.
[Invited talk]
36. Naoki Masuda.
Network analysis on correlation matrices: Alternatives to threshold networks.
International Conference on AI and Data Science: Mathematics and Applications.
Suwon, South Korea, 11/4/2019–11/5/2019.
[Keynote talk]
35. Naoki Masuda.
Network science: Static and temporal networks.
2019 Big Data Analysis and Complex Science Management Summer School (translation by NM).
Harbin Institute of Technology (Weihai), Weihai, China, July 25–31, 2019.
[Invited lectures]
34. Naoki Masuda.
Network dynamics: Epidemic processes and energy landscape analysis.
2019 Annual Meeting, Society for Mathematical Biology.
Université de Montréal, Montreal, Canada, July 22–26, 2019.
[Plenary speaker]
33. Naoki Masuda. Networks from correlation matrices: An alternative to thresholding. Threshold
Networks. University of Nottingham, Nottingham, UK, July 22–24, 2019.
[Invited talk]

32. Naoki Masuda.
Lecture 1: Fundamentals of random walks on networks.
Lecture 2: Applications of random walks on networks.
CCSS (Center for Computational Social Science) School on Computational Social Science.
Kobe University, Japan, June 20–22, 2019.
[Invited lectures]
31. Naoki Masuda.
Contagion processes on temporal networks: Epidemic threshold, commutator, and concurrency.
Centre for Business Network Analysis (CBNA) Summer School in Social Network Analysis 2019.
University of Greenwich, London, UK, June 10–14, 2019.
[Invited talk]
30. Naoki Masuda.
A configuration model for correlation matrices.
4th Workshop on Statistical Physics for Financial and Economic Networks.
NetSci 2019, University of Vermont, Burlington, VA, USA, May 27–31, 2019
[Invited talk]
29. Naoki Masuda.
Opening Symposium of the Dutch Network Science Society.
TU Delft, Delft, Netherlands, 7 May, 2019.
[10 min pitch talk]
28. Naoki Masuda.
Epidemic processes on dynamically switching networks: Effects of commutator and concurrency.
Young European Probabilists (YEP) XV “Information Diffusion on Random Networks” Workshop.
TU Eindhoven, Eindhoven, Netherlands, March 25–29, 2019.
[Invited talk]
27. Naoki Masuda.
Epidemic processes and random walks on time-varying graphs.
Fundamentals of complex networks: From static towards evolving.
University of Duisburg-Essen, Essen, Germany, March 6–8 (2019).
[Invited mini lecture talks; 4 talks \times 1 hr]
26. Naoki Masuda.
Random walks on networks.
Online Winter School on Spectral Methods for Complex Systems.
Webinar, 1/21/2019–1/30/2019.
[Video lecture presentation]
25. Naoki Masuda.
Directed acyclic graphs in network science.
International Workshop on Theoretical Perspectives in Network Science.
Seoul National University, Seoul, South Korea, 12/7/2018–12/9/2018.
[Invited talk]
24. Naoki Masuda.
Network epidemiology.
Summer Boot Camp of Infectious Disease Modeling, 2018.
The Institute of Statistical Mathematics, Tachikawa, Japan, 8/3/2018.
[Invited lecture]

23. Naoki Masuda.
A Gillespie algorithm for simulating interacting non-Markovian point processes.
2nd Symposium on Spatial Networks.
University of Oxford, UK. September 13–14 (2017).
[Invited talk]
22. Naoki Masuda.
Network epidemiology.
Summer Boot Camp of Infectious Disease Modeling, 2017.
The Institute of Statistical Mathematics, Tachikawa, Japan, 8/3/2017
[Invited lecture]
21. Naoki Masuda.
Reinforcement learning behaviour by football managers.
Push the Envelope of Statistical Physics: Econo, Social, Bio and Beyond.
POSTECH, Pohang, Korea, 12/12/2016–12/13/2016.
[Invited talk]
20. Naoki Masuda.
Highly heterogeneous performances across human individuals: quantifications and implications.
Push the Envelope of Statistical Physics: Econo, Social, Bio and Beyond.
POSTECH, Pohang, South Korea, 12/12/2016–12/13/2016.
[Ignite talk]
19. Naoki Masuda.
Network analysis: An overview.
Systems-NET/IDC in Systems Workshop: At the Intersect between Network Science and Systems Engineering.
University of Bristol, Bristol, UK, 9/12/2016.
[Invited talk]
18. Leo Speidel, Konstantin Klemm, Victor M. Eguíluz, Naoki Masuda.
Dynamical switching of networks facilitates endemicity in the susceptible-infected-susceptible epidemic model.
Asia-Pacific Econophysics Conference 2016.
University of Tokyo, Tokyo, August 24–26 (2016).
[Invited talk]
17. Naoki Masuda.
Cooperation under indirect reciprocity: evidence from neuroimaging.
The Third International Workshop on Market Design Technologies for Sustainable Development.
Keio University, Yokohama, Japan, August 21–22 (2015).
[Invited talk]
16. Naoki Masuda.
Opinion control in the voter model on networks.
Satellite Symposium: Information, Self-Organizing Dynamics and Synchronization (ISDOS) on Networks II. NetSci 2015.
Zaragoza, Spain, June 1–5 (2015).
[Invited talk]
15. Naoki Masuda.
Dynamics of opinion formation and cooperation in populations composed of heterogeneous agents.

The 3rd Sociophysics Workshop “From Opinion Dynamics to Voting, Conflict and Terrorism”.
CEVIPOF, CNRS, Paris, 3/30/2015–3/31/2015.

[Invited talk]

14. Naoki Masuda.
Dominance hierarchy of worker ants as directed networks.
NetSci 2014.
Berkeley, CA, USA, June 2–6 (2014).
[Invited talk]
13. Naoki Masuda.
Laplacian dynamics slows down on temporal networks.
Network Frontier Workshop.
Northwestern University, Evanston, IL, USA, December 4–6 (2013).
[Invited talk]
12. Naoki Masuda, Konstantin Klemm, Víctor M. Eguíluz.
Laplacian dynamics on temporal networks.
International Workshop on Phase Transition, Critical Phenomena and Related Topics in Complex Networks.
Hokkaido University, Sapporo, Japan, September 9–11 (2013).
[Invited talk]
11. Naoki Masuda.
Laplacian-driven dynamics on temporal networks.
Workshop: Temporal and Dynamic Networks: From Data to Models. NetSci 2013.
Danish Technical University, Lyngby, Denmark, June 3–7 (2013).
[Invited talk]
10. Naoki Masuda.
Temporal networks: Introduction.
School. NetSci2013.
Danish Technical University, Lyngby, Denmark, June 3–7 (2013).
[Invited lecture]
9. Naoki Masuda.
Quantifying importance of interaction events in temporal networks.
Toward Mathematical Foundations of Complex Network Theory.
Kyoto University, Kyoto, Japan, September 14–16 (2012).
[Invited speaker]
8. Naoki Masuda.
Laplacian-based centrality in directed graphs.
Discrete Geometric Analysis.
Kyoto University, Kyoto, Japan, August 27–31 (2012).
[Invited talk]
7. Naoki Masuda.
Dependence of oscillation regularity on structure of networks.
Anomalous Statistics, Generalized Entropies and Information Geometry.
Nara Women’s University, Nara, Japan, March 6–10 (2012).
[Invited talk]

6. Naoki Masuda, Jin Seop Kim, Byungnam Kahng.
 Priority queues with scale-free arrivals of incoming tasks.
 Applications of Physics in Financial Analysis 7th International Conference (APFA).
 Tokyo Institute of Technology, Tokyo, March 1–5 (2009).
 [Invited talk]
5. Naoki Masuda.
 How to set payoff matrices for evolutionary games on heterogeneous networks?
 3rd International Nonlinear Science Conference.
 Tokyo, Japan, March 13–15 (2008).
 [Invited talk]
4. Naoki Masuda.
 Evolutionary game dynamics on networks: cost normalization perspective.
 NSC Winter Workshop 2008: Complex Nonlinear Dynamics Ranging from Biology to Engineering.
 Hokkaido University, Sapporo, Japan, March 8–9 (2008).
 [Invited talk]
3. Naoki Masuda, Norio Konno.
 Multi-state interacting particle systems on scale-free networks.
 International Symposium on Topological Aspects of Critical Systems and Networks.
 Hokkaido University, Sapporo, Japan, February 13–14 (2006).
 In: Proceedings of the International Symposium on Topological Aspects of Critical Systems and Networks, 11–17.
 [Invited talk]
2. Naoki Masuda.
 Multi-state epidemic dynamics on complex networks.
 International Workshop on Complex Networks.
 Seoul National University, Seoul, South Korea, June 23–24 (2005).
 [Invited talk]
1. Naoki Masuda, Kazuyuki Aihara.
 Dependence of neural ergodicity on noise strength.
 International Symposium on Nonlinear Theory and its Applications (NOLTA2004).
 Fukuoka, Japan, November 29 – December 3 (2004).
 In: Proceedings of NOLTA2004, 35–38.
 [Invited talk]

Research Talks in Seminars (external only)

Illinois Mathematical Biology Seminar,
 University of Illinois Urbana-Champaign, Champaign, IL, 4/2/2025

Applied Math Colloquium,
 University of North Carolina, Chapel Hill, NC, 10/16/2024

[Delivered online] Colloquium, Graduate School of Culture Technology, Korea Advanced Institute of Science and Technology (KAIST), 9/10/2024

School of Economics and Management, Dalian University of Technology, Dalian, China, 9/6/2024

College of Engineering, Peking University, Beijing, China, 8/13/2024

Mathematical Institute, University of Oxford, Oxford, UK, 5/23/2024

Student Mathematics Colloquium, Niagara University, Niagara, NY, USA, 3/27/2024

Seminar, Santa Fe Institute, Santa Fe, NM, USA, 2/19/2024

CoCo Seminar, Binghamton University, Binghamton, NY, USA, 2/9/2024

Department of Mathematical Sciences Colloquium, New Mexico State University, Las Cruces, NM, USA, 12/1/2023

Seminar for Bioinformatics and Mathematics Colloquium, Florida State University, Tallahassee, FL, USA, 10/11/2023 and 10/13/2023, respectively

Applied Mathematics and Computation Seminar, University of Massachusetts Amherst, Amherst, MA, USA, 9/26/2023

College of Engineering, Peking University, Beijing, China, 6/16/2023

Tsinghua Laboratory of Brain and Intelligence Seminar Series, Tsinghua University, Beijing, China, 6/15/2023

University of Michigan, MI, USA, 2/8/2023

Graduate School of Medicine, Yonsei University, Seoul, South Korea, 9/28/2022

Center for Brain Science, RIKEN, Wako, Japan, 7/15/2022

Okinawa Institute of Science and Technology Graduate University, Onna, Japan, 7/6/2022

Clarkson Center for Complex Systems Science seminar, Clarkson University, Potsdam, NY, USA, 4/8/2022

Network Science Institute, Northeastern University, Boston, MA, USA, 12/3/2021

CoCo Seminar, Binghamton University, Binghamton, NY, USA, 9/29/2021

[Delivered online] Mathematical Biology Seminar, University of Pennsylvania, Philadelphia, PA, USA, 3/2/2021

[Delivered online] IMT School For Advanced Studies Lucca, Lucca, Italy, 1/22/2021

[Delivered online] WINPEC Seminar / Causal Inference and Data Science Research Group Seminar, Waseda University, Tokyo, Japan, 7/21/2020

Colloquium, Department of Physics and Astronomy, University of Rochester, Rochester, NY, USA, 11/13/2019.

Forum, Center for Brain Science, RIKEN, Wako, Japan, 7/12/2019

Graduate School of Information Sciences, Tohoku University, Sendai, Japan, 7/10/2019

Department of Public Health and Primary Care, Imperial College London, UK, 6/26/2019

Department of Intelligent Systems, TU Delft, Netherlands, 5/9/2019

Disease Ecology Seminar, Center for the Ecology of Infectious Diseases, University of Georgia, GA, USA, 3/20/2019

School of Natural Sciences and Humanities, Harbin Institute of Technology (Shenzhen), Shenzhen, China, 2/27/2019

School of Science, Harbin Institute of Technology (Shenzhen), Shenzhen, China, 2/26/2019

Department of Mathematics, Imperial College London, UK, 11/20/2018

Department of Computer Science, University of Exeter, UK, 10/25/2018

Institute for Cross-Disciplinary Physics and Complex Systems (IFISC), University of the Balearic

Islands, Palma de Mallorca, Spain, 9/20/2018
 Faculty of Management and Economics, Dalian University of Technology, Dalian, China, 9/5/2018
 Graduate School of Informatics, Kyoto University, Kyoto, Japan, 7/20/2018
 Institute of Industrial Science, University of Tokyo, Tokyo, Japan, 7/3/2018
 School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore, 6/28/2018
 Faculty of Management and Economics, Dalian University of Technology, Dalian, China, 4/26/2018
 LSI (Living Systems Institute) Seminar, University of Exeter, Exeter, UK, 3/20/2018
 Network Science Institute, Northeastern University, Boston, MA, USA, 3/9/2018
 School of Biological Sciences Research Seminar Series, University of Reading, UK, 1/23/2018
 Centre for Water Systems, University of Exeter, UK, 10/20/2017
 EPSRC Centre for Predictive Modelling in Healthcare, University of Exeter, UK, 4/3/2017
 Department of Computer Science, University of Liverpool, UK, 3/14/2017
 Department of Mathematics, University of Sussex, UK, 2/9/2017
 Complex Systems Seminar, School of Mathematical Sciences, Queen Mary University of London, UK, 2/7/2017
 MACSI seminar, Department of Mathematics and Statistics, University of Limerick, Ireland, 1/9/2017
 Math Colloquium, Dartmouth College, USA, 11/17/2016
 Networks and Collective Behaviour seminar series, University of Bath, UK, 2/18/2016
 Networks Journal Club, Mathematical Institute, University of Oxford, UK, 2/4/2016
 LAND Seminar, School of Mathematics, University of Leeds, UK, 6/23/2015
 Cambridge Networks Network Seminar, University of Cambridge, UK, 12/2/2014
 Centre for Neuroimaging Sciences, King's College London, UK, 9/19/2014
 School of Computing Science, Newcastle University, UK, 5/29/2014
 Department of Energy Science, Sungkyunkwan University, South Korea, 8/1/2012

Contributed Conference/Workshop Oral Presentations (excluding those listed above)

150. Naoki Masuda.
 Anticipating regime shifts in biological complex systems using network analysis.
 Special Symposium: Monitoring, Modelling and Predicting Biological Oscillations: From Genes to Ecosystems.
 Joint Conference of Asian Conference on Mathematical Biology and Annual Meeting of Japanese Society for Mathematical Biology.
 Kyoto Terrsa, Kyoto, Japan, 7/7/2025–7/11/2025
149. Saiful Islam, Alber Aqil, Faraz Hach, Ibrahim Numanagić, Naoki Masuda, Omer Gokcumen.
 Understanding segmental duplications and genomic evolvability through network analysis.
 Great Lakes Bioinformatics Conference (GLBIO).
 University of Minnesota, Minneapolis, MN, USA, 5/12/2025–5/15/2025
148. Ruodan Liu, Jnanajyoti Bhaumik, Naoki Masuda.
 Fixation dynamics on various networks.
 NetSci 2025
 Maastricht, Netherlands, 6/2/2025–6/6/2025

147. Shilong Yu, Neil G. MacLaren, [Naoki Masuda](#).
Using sample cross covariance to potentially improve early warning signals for network dynamics.
NetSci 2025
Maastricht, Netherlands, 6/2/2025–6/6/2025
146. Hiroki Sayama, [Naoki Masuda](#).
Deriving dynamical model equations from temporal network data using a graph rewriting framework:
A project update.
Satellite Workshop: TENET (TEmporal NETworks), NetSci 2025.
Maastricht, Netherlands, 6/2/2025–6/6/2025
145. [Naoki Masuda](#).
Eco-evolutionary game dynamics in a network with two communities.
SIAM Conference on Dynamical Systems.
Evolutionary Dynamics in Ecological, Biological and Social Systems minisymposium.
Denver, CO, 5/11/2025–5/15/2025
144. Chirantha Piyamal Tharusha Bandara, [Naoki Masuda](#).
Enhancing spatial early warning signals: Optimized node selection for tipping point detection.
Eighth Northeast Regional Conference on Complex Systems.
Binghamton University, Vestal, NY, 4/9/2025–4/11/2025
143. Bisna Mary Eldo, Sarbendu Rakshit, [Naoki Masuda](#).
Dimension reduction for graphon nonlinear dynamical systems.
Eighth Northeast Regional Conference on Complex Systems.
Binghamton University, Vestal, NY, 4/9/2025–4/11/2025
142. Saiful Islam, Alber Aqil, Omer Gokcumen, [Naoki Masuda](#).
Interpretable community detection in multilayer gene co-expression networks.
Eighth Northeast Regional Conference on Complex Systems.
Binghamton University, Vestal, NY, 4/9/2025–4/11/2025
141. Neil Maclaren, Kazuyuki Aihara, [Naoki Masuda](#).
Spatial early warning signals for dynamics on complex networks.
Eighth Northeast Regional Conference on Complex Systems.
Binghamton University, Vestal, NY, 4/9/2025–4/11/2025
140. Sarbendu Rakshit, [Naoki Masuda](#).
Low-dimensional approximations in hypergraph dynamical systems.
Eighth Northeast Regional Conference on Complex Systems.
Binghamton University, Vestal, NY, 4/9/2025–4/11/2025
[Presented online]
139. Chanon Thongprayoon, [Naoki Masuda](#).
Tie-decay networks with splines.
Eighth Northeast Regional Conference on Complex Systems.
Binghamton University, Vestal, NY, 4/9/2025–4/11/2025
[Best Oral Presentation Award (the first prize among 45 oral presentations)]
138. Shilong Yu, Neil MacLaren, [Naoki Masuda](#).
Using cross-covariance of node states to potentially improve early warning signals.
Eighth Northeast Regional Conference on Complex Systems.
Binghamton University, Vestal, NY, 4/9/2025–4/11/2025

137. Jnanajyoti Bhaumik, [Naoki Masuda](#).
Effects of edge weights on evolutionary dynamics.
NetSci-X, Indore, India, 1/15/2025–1/17/2025
136. Bisna Mary Eldo, Sarbendu Rakshit, [Naoki Masuda](#).
Dimensional reduction of dynamical systems on graphons.
2024 SIAM New York-New Jersey-Pennsylvania Section Conference.
Rochester Institute of Technology, Rochester, NY, 11/1/2024–11/3/2024.
135. Saiful Islam, [Naoki Masuda](#).
Detecting interpretable communities in multilayer correlation networks.
2024 SIAM New York-New Jersey-Pennsylvania Section Conference.
Rochester Institute of Technology, Rochester, NY, 11/1/2024–11/3/2024.
134. Sarbendu Rakshit, [Naoki Masuda](#).
Dimensional reduction for hypergraph dynamical systems.
2024 SIAM New York-New Jersey-Pennsylvania Section Conference.
Rochester Institute of Technology, Rochester, NY, 11/1/2024–11/3/2024.
133. Maisha Islam Sejunti, Dane Taylor, [Naoki Masuda](#).
Parrondo's paradox in the dynamics of the susceptible-infectious-susceptible epidemic model over periodic temporal networks.
2024 SIAM New York-New Jersey-Pennsylvania Section Conference.
Rochester Institute of Technology, Rochester, NY, 11/1/2024–11/3/2024.
132. Shilong Yu, [Naoki Masuda](#).
Using off-diagonal entries of the covariance matrix to determine an optimized node set for early warning signals.
2024 SIAM New York-New Jersey-Pennsylvania Section Conference.
Rochester Institute of Technology, Rochester, NY, 11/1/2024–11/3/2024.
131. Hang-Hyun Jo, Tibebe Birhanu, [Naoki Masuda](#).
Temporal scaling theory for bursty time series with clusters of arbitrarily many events.
2024 Korean Physical Society Fall Meeting.
Yeosu Expo Convention Center, Yeosu, South Korea, 10/22/2024–10/26/2024
130. Jnanajyoti Bhaumik, [Naoki Masuda](#).
Constant selection on weighted networks.
American Mathematical Society 2024 Fall Eastern Sectional Meeting.
University at Albany, Albany, NY, 10/19/2024–10/20/2024
129. [Naoki Masuda](#).
Modeling of animal collective behavior: many-wrongs hypothesis for pigeons and social brain hypothesis for primates. Special Session on Agent-Based and Mean-Field Modeling for Complex Social Systems.
American Mathematical Society 2024 Fall Eastern Sectional Meeting.
University at Albany, Albany, NY, 10/19/2024–10/20/2024
128. Neil G. MacLaren, Baruch Barzel, [Naoki Masuda](#).
Approximating dynamics on networks: Hub nodes make poor sentinels.
NetSci 2024, Quebec City, Canada, 6/16/2024–6/21/2024

127. Sarbendu Rakshit, [Naoki Masuda](#).
Dimensional reduction for hypergraph dynamical systems.
NetSci 2024, Quebec City, Canada, 6/16/2024–6/21/2024
126. Hiroki Sayama, [Naoki Masuda](#).
Deriving dynamical model equations from temporal network data using a graph rewriting framework.
NetSci 2024, Quebec City, Canada, 6/16/2024–6/21/2024
125. Kashin Sugishita, [Naoki Masuda](#).
Social network analysis of Japanese manga.
NetSci 2024, Quebec City, Canada, 6/16/2024–6/21/2024
124. Neil MacLaren, Prosenjit Kundu, [Naoki Masuda](#).
Early warning signals for dynamics on networks.
SIAM Conference on the Life Sciences.
Portland, OR, 6/10/2024–6/13/2024
123. Saiful Islam, [Naoki Masuda](#).
Detection of interpretable communities in multilayer biological networks using a penalized sparse factor model.
Session on Network Analysis and Subsampling Methods. UPSTAT 2024 — Statistical Science at a Crossroads.
Rochester Institute of Technology, Rochester, New York, 4/13/2024
122. [Naoki Masuda](#).
Early warning signals for dynamics on networks.
Special session on “Complex Systems in the Life Sciences” at the American Mathematical Society (AMS) 2024 Spring Eastern Sectional Meeting.
Howard University, Washington DC, 4/6/2024–4/7/2024
121. Katherine Betz, Feng Fu, [Naoki Masuda](#).
Group-structured evolutionary game dynamics with environmental feedback.
NERCCS 2024: Seventh Northeast Regional Conference on Complex Systems.
Clarkson University, Potsdam, NY, 3/20/2024–3/22/2024
120. Si Thu Aung, Mintao Liu, Uttara Tipnis, Kauser Abbas, Joaquín Goñi, [Naoki Masuda](#).
Evaluating trajectories derived from dynamic functional connectivity across fMRI conditions.
NERCCS 2024: Seventh Northeast Regional Conference on Complex Systems.
Clarkson University, Potsdam, NY, 3/20/2024–3/22/2024
119. Jnanajyoti Bhaumik, [Naoki Masuda](#).
Evolutionary dynamics on switching networks.
SIAM-NNP (New York-New Jersey-Pennsylvania) Conference.
New Jersey Institute of Technology, Newark, NJ, 10/20/2023–10/22/2023
118. Chanon Thongprayoon, [Naoki Masuda](#).
Online and offline network embedding using landmarks.
SIAM-NNP (New York-New Jersey-Pennsylvania) Conference.
New Jersey Institute of Technology, Newark, NJ, 10/20/2023–10/22/2023
117. Hiroki Sayama, [Naoki Masuda](#).
Deriving dynamical model equations from temporal network data using a graph rewriting framework.
Satellite session: Recent Advances in Learning and Data-driven Modeling of Complex Systems.

Conference on Complex Systems 2023.
Salvador, Brazil, 10/16/2023–10/20/2023

116. Naoki Masuda.
Epidemic threshold of a susceptible-infectious-susceptible model when node interaction obeys non-Poissonian statistics.
Special Session on Difference and Differential Equations: Modeling, Analysis, and Applications to Mathematical Biology.
American Mathematical Society, 2023 Fall Eastern Sectional Meeting.
State University of New York at Buffalo, Buffalo, NY, 9/9/2023–9/10/2023
115. Elohim Fonseca dos Reis, Naoki Masuda.
Metapopulation network models explain non-Poissonian statistics of intercontact times.
10th International Congress on Industrial and Applied Mathematics (ICIAM).
Waseda University, Tokyo, Japan, 8/20/2023–8/25/2023
114. Naoki Masuda.
Early warning signals for multistage transitions in tipping dynamics on networks.
Minisymposium: DNB Theory and its Applications, 10th International Congress on Industrial and Applied Mathematics (ICIAM).
Waseda University, Tokyo, Japan, 8/20/2023–8/25/2023
113. Naoki Masuda, Prosenjit Kundu.
Dimension reduction of dynamical systems on networks using various eigenvectors of adjacency matrices.
SIAM Conference on Applications of Dynamical Systems.
Portland, OR, 5/14/2023–5/18/2023
112. Naoki Masuda, Prosenjit Kundu.
Reducing the dimension of dynamical systems on networks using non-leading eigenvectors of adjacency matrices.
CompleNet 2023.
Universidade de Aveiro, Aveiro, Portugal, 4/25/2023–4/28/2023
111. Yiding Cao, Suraj Rajendran, Prathic Sundararajan, Royal Law, Sarah Bacon, Steven Sumner, Naoki Masuda.
Twitter following networks of individuals with adverse childhood experiences.
NERCCS 2023: Sixth Northeast Regional Conference on Complex Systems.
Clarkson University, Potsdam, NY, 3/22/2023–3/24/2023
110. Ruodan Liu, Naoki Masuda.
Fixation probability on hypergraphs.
NERCCS 2023: Sixth Northeast Regional Conference on Complex Systems.
Clarkson University, Potsdam, NY, 3/22/2023–3/24/2023
109. Neil MacLaren, Baruch Barzel, Naoki Masuda.
Low-dimensional approximations to nonlinear dynamics on networks: A sentinel node approach.
NERCCS 2023: Sixth Northeast Regional Conference on Complex Systems.
Clarkson University, Potsdam, NY, 3/22/2023–3/24/2023
108. Jnanajyoti Bhaumik, Naoki Masuda.
Fixation probability of switching networks.
11th International Conference on Complex Networks and Their Applications.
Palermo, Italy, 11/8/2022–11/10/2022

107. Prosenjit Kundu, Hiroshi Kori, [Naoki Masuda](#).
Validity of a one-dimensional reduction of dynamical systems on networks.
11th International Conference on Complex Networks and Their Applications.
Palermo, Italy, 11/8/2022–11/10/2022
106. Neil Maclaren, Prosenjit Kundu, [Naoki Masuda](#).
Early warning signals of multistage state transitions on complex networks.
11th International Conference on Complex Networks and Their Applications.
Palermo, Italy, 11/8/2022–11/10/2022
105. Kazuki Nakajima, Kazuyuki Shudo, [Naoki Masuda](#).
Random hypergraph models preserving degree correlation and local clustering.
11th International Conference on Complex Networks and Their Applications.
Palermo, Italy, 11/8/2022–11/10/2022
104. Maisha Islam Sejunti, [Naoki Masuda](#), Dane Taylor.
Floquet theory for spreading dynamics over periodically switching networks.
11th International Conference on Complex Networks and Their Applications.
Palermo, Italy, 11/8/2022–11/10/2022
103. Qiong Zhang, Noha Abdel-Mottaleb, Kashin Sugishita, [Naoki Masuda](#).
Bio-inspired design to enhance water distribution network performance.
Symposium Honoring John Crittenden at ACS Fall National Meeting, George Pullman (Marriott Marquis Chicago), Chicago, IL, 8/21/2022–8/25/2022
102. Elohim Fonseca dos Reis, [Naoki Masuda](#).
Emergent non-Poissonian statistics of interevent times from metapopulation models.
NERCCS 2022: Fifth Northeast Regional Conference on Complex Systems.
Buffalo, NY, 3/30/2022–4/1/2022
101. Ruodan Liu, Masaki Ogura, Elohim Fonseca Dos Reis, [Naoki Masuda](#).
Impacts of concurrency on epidemic spreading in Markovian temporal networks.
NERCCS 2022: Fifth Northeast Regional Conference on Complex Systems.
Buffalo, NY, 3/30/2022–4/1/2022
100. Neil Maclaren, Siobhán Mattison, [Naoki Masuda](#).
A maximum entropy approach to the multivariate “space” of social networks.
NERCCS 2022: Fifth Northeast Regional Conference on Complex Systems.
Buffalo, NY, 3/30/2022–4/1/2022
[Honorable Mention of the Best Oral Presentation Award]
99. Kazuki Nakajima, Kazuyuki Shudo, [Naoki Masuda](#).
Higher-order rich-club phenomenon in research funding.
NERCCS 2022: Fifth Northeast Regional Conference on Complex Systems.
Buffalo, NY, 3/30/2022–4/1/2022
98. Maisha Islam Sejunti, [Naoki Masuda](#), Dane Taylor.
Floquet theory for spreading dynamics over periodically switching networks.
NERCCS 2022: Fifth Northeast Regional Conference on Complex Systems.
Buffalo, NY, 3/30/2022–4/1/2022
97. [Naoki Masuda](#).
A state-dynamics view of bursts in contact networks, with applications to epidemic processes and metapopulation models.

Special Session for Mathematical Methods for Ecology and Evolution in Structured Populations,
Spring Eastern Virtual Sectional Meeting.

American Mathematical Society Spring Eastern Virtual Sectional Meeting. Online. 3/19/2022–
3/20/2022

96. Ruodan Liu, Masaki Ogura, Elohim Fonseca dos Reis, [Naoki Masuda](#).
Modeling effects of concurrency on epidemic spreading in Markovian temporal networks.
Networks 2021: A Joint Sunbelt and NetSci Conference.
Online, 7/5/2021–7/10/2021
95. Chanon Thongprayoon, Lorenzo Livi, [Naoki Masuda](#).
Continuous-time trajectory of tie-decay temporal networks.
Networks 2021: A Joint Sunbelt and NetSci Conference.
Online, 7/5/2021–7/10/2021
94. Noha Abdel-Mottaleb, Qiong Zhang, Kashin Sugishita, [Naoki Masuda](#).
Can bio-inspired network design improve the performance of water distribution networks (WDNs)?
2021 World Environmental & Water Resources Congress.
Online, 6/7/2021–6/11/2021
93. Alessio Cardillo, [Naoki Masuda](#).
Tipping point in evolutionary games on networks triggered by zealots.
CompleNet Live 2021, Online, 5/24/2021–5/26/2021
92. Irene Malvestio, Alessio Cardillo, [Naoki Masuda](#).
Interplay between k-core and communities in networks.
CompleNet Live 2021, Online, 5/24/2021–5/26/2021
91. [Naoki Masuda](#), Victor M. Preciado, Masaki Ogura.
Analysis of the susceptible-infected-susceptible model in finite networks using the non-backtracking
matrix.
Minisymposium on Latest Advances in Spectral Linear Algebra in Network Science, the SIAM
Conference on Applied Linear Algebra (LA21).
Online, 5/17/2021–5/21/2021
90. Hang-Hyun Jo, [Naoki Masuda](#).
Finite-size effects on the convergence time in continuous-opinion dynamics.
2021 Korean Physical Society Spring Meeting. Online, 4/21/2021–4/23/2021
89. Lingqi Meng, [Naoki Masuda](#).
Epidemic threshold for metapopulation model networks with a second-order mobility rule.
NERCCS 2021: Fourth Northeast Regional Conference on Complex Systems.
Online, 3/31/2021–4/2/2021
88. Mengyuan J. Sun, [Naoki Masuda](#).
COVID-19 impacts on domestic airlines via multilayer network analysis.
NERCCS 2021: Fourth Northeast Regional Conference on Complex Systems.
Online, 3/31/2021–4/2/2021
87. Chanon Thongprayoon, Lorenzo Livi, [Naoki Masuda](#).
Visualizing trajectory of tie-decay temporal networks.
NERCCS 2021: Fourth Northeast Regional Conference on Complex Systems.
Online, 3/31/2021–4/2/2021

86. Lingqi Meng, [Naoki Masuda](#).
Diffusion speed of the node2vec random walk on networks
COMPLEX20 (Conference on Complex Systems 2020).
Online, 12/4/2020–12/11/2020
85. Xiuxiu Zhan, Ziyu Li, [Naoki Masuda](#), Petter Holme, Huijuan Wang.
Susceptible-infected-spreading-based network embedding in static and temporal networks.
9th International Conference on Complex Networks and their Applications.
Online, 12/1/2020–12/3/2020
84. Sadamori Kojaku, Giacomo Livan, [Naoki Masuda](#).
Detecting citation cartels in journal citation networks.
NetSci 2020.
Online (due to COVID-19), 9/17/2020–9/25/2020
83. Irene Malvestio, Alessio Cardillo, [Naoki Masuda](#).
Interplay between k -core and community structure in networks.
NetSci 2020.
Online (due to COVID-19), 9/17/2020–9/25/2020
82. Kashin Sugishita, [Naoki Masuda](#).
Structural evolution of US airline networks.
NetSci 2020.
Online (due to COVID-19), 9/17/2020–9/25/2020
81. Hang-Hyun Jo, Takayuki Hiraoka, [Naoki Masuda](#), Aming Li.
Modeling temporal networks with bursty activity patterns of nodes and links.
2020 Korean Physical Society Spring Meeting.
Online, 7/13/2020–7/15/2020
80. Marinho A. Lopes, Jiaxiang Zhang, Dominik Krzemiński, Khalid Hamandi, Qi Chen, Lorenzo Livi, [Naoki Masuda](#).
Recurrence analysis of dynamic functional brain networks.
Third Northeast Regional Conference on Complex Systems.
Online, 4/1/2020–4/3/2020
79. Elohim Fonseca dos Reis, Aming Li, [Naoki Masuda](#).
Interacting human dynamics as a mixture of Poisson processes.
Third Northeast Regional Conference on Complex Systems.
Online, 4/1/2020–4/3/2020
78. Alessio Cardillo, [Naoki Masuda](#).
Critical mass effect in evolutionary games on networks triggered by zealots.
NetSci-X 2020.
Tokyo, Japan, 1/20/2020–1/23/2020
77. Kashin Sugishita, Mason A. Porter, Mariano Beguerisse-Díaz, [Naoki Masuda](#).
Opinion dynamics in tie-decay networks.
NetSci-X 2020.
Tokyo, Japan, 1/20/2020–1/23/2020
76. Marinho A. Lopes, Jiaxiang Zhang, Dominik Krzemiński, Khalid Hamandi, Lorenzo Livi, [Naoki Masuda](#).
Recurrence analysis of dynamic brain networks: Characterisation of the spatio-temporal dynamics of magnetoencephalographic recordings.

- 8th International Conference on Complex Networks and their Applications.
Lisbon, Portugal, 12/10/2019–12/12/2019
75. Elohim Fonseca dos Reis, Mark Viney, Naoki Masuda.
Network structure of wild and laboratory mice immune states.
International Conference on AI and Data Science: Mathematics and Applications.
Suwon, South Korea, 11/4/2019–11/5/2019
 74. J. Miyata, A. Sasamoto, T. Ezaki, N. Masuda, Y. Mori, M. Isobe, T. Aso, T. Murai, H. Takahashi.
Conservative and hasty decision styles are differently associated with static and dynamic functional connectivity in healthy and schizophrenia people.
Society for Neuroscience, Chicago, IL, 10/19/2019–10/23/2019
 73. Aoi Naito, Naoki Masuda, Tatsuya Kameda.
Social network and collective intelligence under nonstationary uncertain environment.
7th International Conference on Cognitive Neurodynamics.
Alghero, Italy, 9/29/2019–10/2/2019.
 72. Takayuki Hiraoka, Naoki Masuda, Aming Li, Hang-Hyun Jo.
Modeling temporal networks with bursty node and link activity.
Conference on Complex Systems 2019.
Nanyang Technological University, Singapore, 9/30/2019–10/4/2019.
 71. Elohim Fonseca dos Reis, Naoki Masuda, Mark Viney.
Immune networks in wild mice, *Mus musculus domesticus*.
Parasitic Helminths: New Perspectives in Biology and Infection.
Hydra, Greece, September 1–6, 2019.
 70. Sadamori Kojaku, Giulio Cimini, Guido Caldarelli, Naoki Masuda.
Structural changes in an interbank market across the financial crisis: A multiple core-periphery analysis.
NetSci 2019, University of Vermont, Burlington, VA, USA, May 27–31, 2019.
 69. Jun Miyata, Akihiko Sasamoto, Takahiro Ezaki, Naoki Masuda, Yasuo Mori, Masanori Isobe, Toshihiko Aso, Toshiya Murai, Hidehiko Takahashi.
Is jumping to conclusions bias associated with frequent “jumping” to salience-related functional brain states?
2019 Congress of the Schizophrenia International Research Society, Orlando, Florida, USA, April 10–14, 2019.
 68. Elohim Fonseca dos Reis, Mark Viney, Naoki Masuda.
Immune state networks of wild and laboratory mice.
10th International Conference on Complex Networks (COMPLNET’19).
Tarragona, Spain, March 18–21, 2019.
 67. Naoki Masuda.
Energy landscape analysis of multivariate time series data.
New Trends in Statistical Physics.
Lucca, Italy, March 15 (2019).
 66. Sadamori Kojaku, Mengqiao Xu, Haoxiang Xia, Naoki Masuda.
Multiscale core-periphery structure in a global liner shipping network.
The 7th International Conference on Complex Networks and Their Applications.
University of Cambridge, Cambridge, UK, December 11–13 (2018).

65. Takamitsu Watanabe, Geraint E. Rees, [Naoki Masuda](#).
Neural retainability in autism.
Society for Neuroscience 2018.
San Diego, CA, November 3–7 (2018).
64. [Naoki Masuda](#).
Energy landscape modelling of network dynamics.
GW4 Biomed MRC DTP, Interdisciplinary Advanced Training Workshop, Computational Modelling.
University of Bristol, Bristol, UK, 10/17/2018.
63. Takahiro Ezaki, Michiko Sakaki, Takamitsu Watanabe, [Naoki Masuda](#).
Energy landscape analysis of age-related changes in human brain activity.
Conference on Complex Systems (CCS 2018).
Thessaloniki, Greece, September 23–28 (2018).
62. Genki Ichinose, [Naoki Masuda](#).
Zero-determinant strategies in repeated prisoner’s dilemma games.
ALIFE.
Tokyo, Japan, 7/23/2018–7/27/2018.
61. Tomokatsu Onaga, James P. Gleeson, [Naoki Masuda](#).
Concurrency-induced transitions in epidemic processes on temporal networks.
NetSci 2018.
Paris, France, June 11–15 (2018).
60. [Naoki Masuda](#).
Reinforcement learning explains conditional cooperation and its moody cousin in games on networks.
Sattelite meeting: GAMENET: Games on Networks, NetSci 2018.
Paris, France, June 11–15 (2018).
59. [Naoki Masuda](#).
Detecting sequences of system states in temporal networks.
Symposium on Networks, Time and Causality.
ETH, Zurich, Switzerland, April 13 (2018).
58. Anne-Lene Sax, Liz Coulthard, [Naoki Masuda](#).
Epidemic dynamics of disease progression in dementia – A numerical study.
Brain Networks and Neurological Disorders: from Theory to Clinic.
University of Exeter, Exeter, UK, April 10 (2018).
57. [Naoki Masuda](#), Michiko Sakaki, Takahiro Ezaki, Takamitsu Watanabe.
Clustering coefficients for correlation matrices and their application to neuroimaging data.
NetSci-X.
Hangzhou, China, Jan 5–8 (2018).
56. Sadamori Kojaku, [Naoki Masuda](#).
Core-periphery structure in degree-heterogeneous networks.
NetSci-X.
Hangzhou, China, Jan 5–8 (2018).
55. [Naoki Masuda](#).
How do people sense population density to make migration decisions?

Maths and the City Workshop.
University of Bristol, Bristol, UK, January 19 (2017).

54. Sadamori Kojaku, [Naoki Masuda](#).
Finding multiple core/periphery structure with random walks.
The 5th International Workshop on Complex Networks and Their Applications.
Milan, Italy, 11/30/2016–12/2/2016.
53. Kohei Tamura, [Naoki Masuda](#).
Effects of spatial interaction on migration flows.
Asia-Pacific Econophysics Conference 2016.
University of Tokyo, Tokyo, Japan, August 24–26 (2016).
52. Teruyoshi Kobayashi, [Naoki Masuda](#).
A community-based collective influence algorithm for immunizing networks.
Asia-Pacific Econophysics Conference 2016.
University of Tokyo, Tokyo, Japan, August 24–26 (2016).
51. [Naoki Masuda](#), Luis E. C. Rocha.
Exact simulation of interacting non-Markovian renewal processes using the Laplace transform.
NetSci 2016.
Seoul, South Korea, 5/30/2016–6/3/2016.
50. [Naoki Masuda](#).
Immunizing networks by targeting collective influencers at a community level.
Satellite workshop: When complex networks meet complex data: Higher-order models in network science. NetSci 2016.
Seoul, South Korea, 5/30/2016–6/3/2016.
49. [Naoki Masuda](#).
Ranking professional tennis players using a temporal network centrality measure.
Satellite workshop: Competition networks and centrality, NetSci 2016.
Seoul, South Korea, 5/30/2016–6/3/2016.
48. [Naoki Masuda](#).
Reinforcement learning explains conditional cooperation and its moody cousin.
GW4 Game Theory Workshop: Incentives for Conflict and Cooperation.
University of Bristol, Bristol, UK, May 9–10 (2016).
47. [Naoki Masuda](#).
Individual-based approach to the susceptible-infected-recovered epidemic processes on arbitrary dynamic networks.
Dynamical Networks and Network Dynamics.
International Centre for Mathematical Sciences, Edinburgh, UK, January 18–22 (2016).
46. Luis E. C. Rocha, [Naoki Masuda](#).
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Seoul, South Korea, 12/19/2008–12/22/2008.
 13. Naoki Masuda, Brent Doiron.
Signal discrimination performed by population of spiking neurons enhanced by background gamma oscillations.
The Annual Computational Neuroscience Meeting (CNS2008).
Portland, Oregon, USA, July 19–24 (2008).
 12. Taro Ueno, Naoki Masuda.
Effective intervention and vaccination strategies against nosocomial infection based on network analysis.
13th International Society for Infectious Diseases.
Kuala Lumpur, Malaysia, June 19–22 (2008).
In: International Journal of Infectious Diseases. 12 (Supplement 1), E347–E348 (2008).
 11. Naoki Masuda, Shun-ichi Amari.
Modeling memory transfer in cerebellar vestibulo-ocular-reflex learning.
The Annual Computational Neuroscience Meeting (CNS2006).
Edinburgh, UK, 7/16/2006–7/20/2006.
 10. Michael Gutmann, Naoki Masuda, Fusao Kato, Kazuyuki Aihara.
Bursting pacemaker models for the preBotzinger complex.

Japan-Germany Symposium on Computational Neuroscience.
RIKEN Brain Science Institute, Wako, Japan, 2/1/2006–2/4/2006.

9. Michael Gutmann, Naoki Masuda, Kazuyuki Aihara.
Bifurcations in respiratory neuronal pacemaker models.
International Symposium on Complexity Modelling and its Applications 2005.
University of Tokyo, Tokyo, Japan, November 21–23 (2005).
8. Kazumichi Ohtsuka, Norio Konno, Naoki Masuda, Kazuyuki Aihara.
Phase transition and indirect effects of the four-state stochastic model on the square lattice.
European Conference on Mathematical and Theoretical Biology (ECMTB) 2005.
Dresden, Germany, 7/18/2005–7/22/2005.
In: Proceedings, v.2, p.277.
7. Naoki Masuda, Masato Okada, Kazuyuki Aihara.
Spatial filtering by locally connected neurons.
The Annual Computational Neuroscience Meeting (CNS2005).
Madison, Wisconsin USA, July 17–21 (2005).
6. Kazumichi Ohtsuka, Norio Konno, Naoki Masuda, Kazuyuki Aihara.
Phase transition and coexistence of three-state stochastic models on the two-dimensional lattice space.
5th International Conference on Biological Physics (ICBP 2004).
Gothenburg, Sweden, August 23–27 (2004).
5. Naoki Masuda, Kazuyuki Aihara.
Encoding multiple temporal waveforms by neural population with spike-time-dependent plasticity.
The Annual Computational Neuroscience Meeting (CNS2004).
Baltimore, Maryland, USA, July 17–22 (2004).
4. Naoki Masuda, Hiroyoshi Miwa, Norio Konno.
Emergence of power law in dynamical thresholding network models with intrinsic vertex weights.
International Conference on Statistical Physics (Statphys Kolkata V).
Kolkata, India, 6/27/2004–7/1/2004.
3. Naoki Masuda, Kazuyuki Aihara.
Dual coding and effects of global feedback in multilayered neural networks.
The Annual Computational Neuroscience Meeting (CNS2003).
Alicante, Spain, July 5–9 (2003).
2. Naoki Masuda, Kazuyuki Aihara.
Dual coding and clustering in feedforward neural networks.
The 2003 Latsis Symposium on Neural Coding and Modeling.
EPFL, Lausanne, Switzerland, February 17–19 (2003).
1. Naoki Masuda, Kazuyuki Aihara.
Population rate coding and synchrony-based temporal coding dually appearing in feedforward neural networks.
7th Tamagawa Dynamic Brain Forum.
Visegrad, Hungary, September 8–11 (2002).
In: Proceedings p.36.

Professional Service

Editorial Work

Regular

12/2024–present	Associate Editor, SIAM Journal on Applied Mathematics
11/2023–present	Editor, Journal of Computational Science
10/2022–present	Associate Editor, Frontiers in Complex Systems, Complex Networks section
10/2020–present	Academic Editor, Complexity
6/2020–present	Associate Editor, Frontiers in Physics, Social Physics section
6/2019–present	Editor, Journal of Computational Social Science
1/2019–present	Associate Editor, Journal of Complex Networks
1/2014–1/2025	Editorial Board, Scientific Reports
3/2018–2/2023	Editorial Board, Journal of Physics Communications
5/2014–11/2023	Editorial Board, PLoS ONE
6/2013–12/2019	Review Editor, Frontiers in Physics, Interdisciplinary Physics section

Ad-hoc

2020	Guest Editor, Japanese Economic Review Special Issue: Economics and Complex Networks (co-edited with Teruyoshi Kobayashi)
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Organization of Conferences and Workshops

Program Committee Member

NetSci 2013, 2016 (Program Co-Chair), 2017, 2018 (Senior Program Committee Member), 2019, 2020, 2022, 2023, 2024, 2025

Program Committee Member

NetSci-X 2015, 2016, 2017, 2018, 2020 (Program Chair), 2022, 2023, 2024, 2026

Program Committee Member

Northeast Regional Conference on Complex Systems, 2020 (also Poster Chair), 2021 (General Co-Chair), 2022 (General Co-Chair), 2025

Program Committee Member

CompleNet 2019, 2020, 2021, 2023, 2024, 2025

International Advisory Committee Member

28th IUPAP International Conference on Statistical Physics (STATPHYS28)
Tokyo, Japan, 8/7/2023–8/11/2023

Vice Chair

2022 IEEE International Conference on Big Data
Osaka, Japan, 12/17/2022–12/20/2022

Program Committee Member

Conference on Complex Systems (CCS2022)
Palma de Mallorca, Spain, 10/17/2022–10/21/2022

Organizer (Coorganized with Tomomi Kito and Kazuki Nakajima)

Socioeconomic Networks and Network Science Workshop 2022
Online, 8/1/2022–8/2/2022

Organizer (Coorganized with Tomomi Kito and Kazuki Nakajima)

Science of Innovation and Success Workshop
Waseda University, Japan (hybrid format), 8/2/2021–8/3/2021

Poster Chair

Tenth International Conference on Complex Systems (ICCS 2020)

Online, 7/27/2020–7/31/2020

Organizer (Coorganized with Tomomi Kito and Yuka Fujiki)

Socioeconomic Networks and Network Science Workshop

Waseda University, Japan (held online due to COVID-19), 7/3/2020–7/4/2020

Program Committee Member

8th Annual SIAM Workshop on Network Science (NS20)

Toronto, Ontario, Canada, 7/9/2020–7/10/2020

Organizer (Coorganized with Guido Caldarelli, Hiroyasu Inoue, and Carolina Mattsson)

NetSci-X Special Workshop on Economic & Financial Networks.

Tokyo, Japan, 1/23/2020

Program Committee Member

International Conference on Social Informatics 2017, 2018, 2019, 2020 (Senior Program Committee Member)

Program Committee Member

Workshop on Social Influence 2014, 2016, 2017, 2018

Program Committee Member

Annual International Conference on Computational Social Science 2018, 2019, 2020

Organizer (Coorganized with Nicola Perra and Vincenzo Nicosia)

2nd UK Network Science Workshop

University of Greenwich, London, UK, 10/26/2018

Program Committee Member

SIAM Workshop on Network Science 2018 (SIAMNS 2018)

Portland, OR, USA, 7/12/2018–7/13/2018

Program Committee Member

Integration of Empirical Data in Network Epidemiology (iodine)

A satellite symposium in NetSci 2018, Paris, France, 6/12/2018

Organizer

UK Network Science Workshop

University of Bristol, Bristol, UK, 5/11/2018

Program Committee Member

International Workshop on Complex Networks and Their Applications, 2014, 2015, 2016, 2017, 2018, 2019

Organizer

Engineering Applications of Networks Workshop

University of Bristol, Bristol, UK, 11/1/2017

Program Committee Member

CCS2017 Satellite Meeting Modeling of Disease Contagion Processes 6th Edition

Cancun, Mexico, 9/17/2017–9/22/2017

Program Committee Member

4th European Network Intelligence Conference 2017 (ENIC'17)

Duisburg, Germany, 9/11/2017–9/12/2017.

Organizer (coorganized with Juyong Park)

Satellite workshop: Competition networks and centrality

NetSci 2016

Seoul, Korea, 5/30/2016

Organizer (coorganized with Byungnam Kahng and Zengru Di)

Satellite workshop: Network science research in Asia: Fundamentals and applications

NetSci 2016

Seoul, Korea, 5/30/2016–5/31/2016

Coorganizer

Special Session: Epidemic dynamics: mathematical modeling and data analysis

4th IFAC Conference on Analysis and Control of Chaotic Systems

Tokyo, Japan, 8/26/2015–8/28/2015

Program Committee Member

Second International Workshop on Complex Networks and their Applications

Kyoto, Japan, 12/2/2013–12/5/2013

Program Committee Member

First Workshop on Rational, Secure and Private Ad-hoc Networks (RASEP'11)

Crete, Greece, 10/16/2011–10/21/2011

Program Committee Member

The 9th Asia-Pacific Complex Systems Conference (Complex'09)

Tokyo, Japan, 11/4/2009–11/7/2009

Program Committee Member

Special Session: Evolutionary Games on Complex Networks

IEEE Congress on Evolutionary Computation (CEC 2009)

Trondheim, Norway, 5/18/2009–5/21/2009

Coorganizer

NSC Winter Workshop 2008: Complex Nonlinear Dynamics ranging from Biology to Engineering

Sapporo, Japan, 3/8/2008–3/10/2008

Organizer (Coorganized with Martin Hasler, Kazuyuki Aihara, and Oscar De Feo)

Special Session: Nonlinear Analysis and Modeling of Neural Signal Processing and Coding

International Symposium on Nonlinear Theory and its Applications (NOLTA2004)

Fukuoka, Japan, 11/29/2004–12/3/2004

Award Judge

Japanese Society for Mathematical Biology Early Career Award, 2019 (Head of the Committee), 2022, 2023.

10/2020–09/2022 Judge for Akira Okubo Prize,

jointly administered by the Society for Mathematical Biology and the Japanese Society for Mathematical Biology.

Member of Erdős-Rényi Prize Committee, 2020, Network Science Society.

Young Scientist Award in Socio- and Econophysics 2020 and 2025

Division of socio-economic physics, German Physical Society.

Referee for Grant Applications

National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Special Emphasis Panel, ZDK1 GRB-S (M2), member, 2/2025

Army Research Office

Air Force Office of Scientific Research

National Science Foundation (panelist)

Concerted Research Actions (CRA) 2024, A university in Belgium

Research Foundation Flanders (FWO), Belgium, including FWO Review College panel membership in 2023–2025

Austrian Science Fund (FWF)

Swiss National Science Foundation

Engineering and Physical Sciences Research Council (EPSRC), UK

National Science Centre, Poland

Fund for Scientific Research-FNRS, Belgium ...

Programma per Giovani Ricercatori – Rita Levi Montalcini, Italy

Japan Society for the Promotion of Science, Japan

MATH AmSud, cooperation between France and Latin America

Referee for Peer-Reviewed Journals

More than 100 journals including Nature Communications, Nature Physics, Physical Review Letters, Physical Review X, Proceedings of the National Academy of Sciences of the United States of America, Science Advances, and SIAM Review.

For a full list, see naokimas.github.io/naokimasuda.github.io/publ_e.html.

Membership in Invitation-Based Organizations

10/2012–present H1Connect (formerly, Faculty Opinions and F1000 Faculty) Member

Membership in Other Professional Organizations

Network Science Society

Society for Industrial and Applied Mathematics (SIAM)

American Mathematical Society

Society for Mathematical Biology

American Physical Society

Japanese Society for Mathematical Biology

Enterprise Partnership

- 3/2023–12/2023 Subject Matter Expert, Freelancer Technology Pty Limited
(Project with Logistic Management Institute (LMI),
Center for Disease Control and Prevention (CDC), and
National Aeronautics and Space Administration (NASA))
- 10/2021–6/2022 Subject Matter Expert, Freelancer Technology Pty Limited
(Project with Center for Disease Control and Prevention (CDC) and
National Aeronautics and Space Administration (NASA))
- 4/2020–present Lecture speaker (in Japanese) on academic writing, Enago
- 12/2018–present Technical Advisor, Nodes & Links Limited

Evaluator for Promotion and Tenure for Other Institutions

- Six times for R1 universities and one time for an R2 university in the US
- One Russell Group University in the UK
- One university in Japan

University Service

State University of New York at Buffalo

- 12/2024–3/2025: committee member, 2024-25 Excellence in Teaching Award for Graduate Teaching Assistants, Graduate School
- 12/2023–: SUNY Office of Research, Innovation and Economic Development Reviewer Panel
(This is a State University of New York systemwide service.)
- 9/2023–3/2024: member, Graduate School Executive Committee sub-committee on International Graduate Student Language Assessment
- 7/2023–1/2024: Chair of the Applied Mathematics Hiring Committee, Department of Mathematics
- 2023: Ad-hoc committee for faculty's promotion, Department of Mathematics
- 4/2023–present: Diversity, Equity and Inclusive Committee, Department of Mathematics
- 2023–: faculty advisor, American Mathematical Society graduate student chapter at University at Buffalo
- 2022–2023: Hiring Committee for the External Chair, Department of Mathematics
- 7/2022–6/2025: Graduate School Director, Department of Mathematics
- 2022–2023: Executive Committee, Department of Mathematics
- 1/2022–2/2022: Ad-hoc Committee for graduate student admission for Computational and Data Enabled Science and Engineering (CDSE) Program
- 2021–2022: Applied Mathematics Hiring Committee, Department of Mathematics
- 2021: Ad-hoc Committee for the Creation of a Departmental Disciplinary Excellence Proposal
- 2020, 2021: Graduate Studies Awards Committee
- 2020: Ad-hoc Committee for Faculty's Reappointment, Department of Mathematics
- 2020: Chairmanship Committee, Department of Mathematics

2019: Applied Mathematics Hiring Committee, Department of Mathematics

2019–: Department of Mathematics Area Committee in Applied Mathematics

2019–: Department of Mathematics Graduate Studies Committee

University of Bristol, United Kingdom

10/2018–8/2019: Year 2 (Undergraduate) Tutor

10/2016–8/2019: Study Abroad Academic Director

9/2014–8/2019: Personal Tutor (≈ 20 undergraduate and master course students each year)

University of Tokyo, Japan (all roles are officially in Japanese; translation by NM)

2012: Curriculum Coordinator (Graduate)

2012: Coordinator for Departmental Brochures

2011: Committee Member for the Tenth Anniversary Event of the Graduate School

2008–2011: Curriculum Coordinator (Undergraduate)

2008–2011: Library Committee Member

2007, 2008, 2010, 2012: Organizer, Colloquium on Mathematical Informatics

2007: Minute taker

2007: Coordinator of Factory Tours (Undergraduate)

Teaching

State University of New York at Buffalo

MTH 550: Network Theory (for graduate students), also listed as MTH 463 (Spring 2021) and MTH 450 (Fall 2022) for undergraduate students

3 credit hours

Spring 2021, Fall 2022

MTH 563: Topics in Applied Math: Stochastic Processes on Networks (for graduate students)

3 credit hours

Spring 2020, Spring 2022, Spring 2023

MTH 306: Introduction to Differential Equations (for undergraduate students)

4 credit hours

Spring 2020, Spring 2021, Spring 2022

MTH 537: Introduction to Numerical Analysis I (for graduate students)

3 credit hours

Fall 2019, Fall 2020, Fall 2021

University of Bristol, United Kingdom

EMAT 20920: Numerical Methods in MATLAB (for second year undergraduate)

10 CPs

Autumn 2014, 2015, 2016, and 2017

EMAT 33100: Nonlinear Dynamics and Chaos (for third year undergraduate)

10 CPs

Autumn 2015, Autumn 2016 (50% of teaching)

EMATM001: Advanced Nonlinear Dynamics and Chaos (for masters)

10 CPs

Autumn 2018 (50% of teaching)

EMAT 30670: Optimisation Theory and Applications (for third year undergraduate)

10 CPs

Autumn 2016 (50% of teaching), Autumn 2017 (50%), Autumn 2018 (100%)

EMAT 22220: Mathematical and Data Modelling 2 (for second year undergraduate)

20 CPs

Autumn 2014, 2015, 2016, 2017, 2018

Role: supervision and marking of 3–4 group projects of 4 weeks

EMAT 30005: Mathematical and Data Modelling 3 (for third year undergraduate)

30 CPs

2017/18, 2018/19 (25% of teaching) Role: organization, supervision, and marking of group projects for a semester with other teaching staff

University of Tokyo, Japan

4860-1005: Mathematical Structures in Informatics (for Ph.D. and M.Sc students)

2 credit hours, 1 semester

Spring 2009 and Spring 2011 (in Japanese), Spring 2013 (in English)

Role: Instructor (solo)

03-541530: Topology (3rd year undergrad. Originally in Japanese. Translation by NM)

1.5 credit hours, 1 semester

Fall 2007–2013.

Role: Instructor (solo)

03-541620 Group Journal Club (4th year undergrad. Originally in Japanese. Translation by NM)

1.5 credit hours (co-taught with another faculty), 1 semester

Spring 2007, 2008, 2010, 2011, 2013

Role: Sole unit organizer

Other

Lecturing (on temporal networks)

“Advanced Complex Networks” in the Master of Physics of Complex Systems.

Programa d’Impuls i Internacionalització per a Estudis de Postgrau.

University of Balearic Islands, Spain, 5/29/2017–6/2/2017

Part-time Lecturer

7735: Social Simulations (3rd year undergraduate. Originally in Japanese. Translation by NM)

Tokyo Institute of Technology, Japan

Spring 2008–2013. 2 credit hours

Research Advising

PhD thesis supervision — current

University of Michigan

- 2/2024–present Shilong Yu
(transferred from SUNY Buffalo, 8/2025)
Department of Mathematics
(supervision by NM, the second advisor to be determined)
- 8/2023–present Bisna Mary Eldo
(transferred from SUNY Buffalo, 8/2025)
Department of Mathematics
(supervision by NM, the second advisor to be determined)

State University of New York at Buffalo

- 8/2022–present Katherine Betz
Department of Mathematics
(sole supervision by NM)
- 4/2021–present Jnanajyoti Bhaumik
Department of Mathematics
(sole supervision by NM)

PhD thesis supervision — completed

State University of New York at Buffalo

- 8/2021–8/2025 Saiful Islam
Computational and Data-Enabled Sciences PhD Program
(sole supervision by NM)
- 7/2020–2/2025 Chanon Thongprayoon
Department of Mathematics
(sole supervision by NM)
- 2/2020–5/2024 Ruodan Liu
Department of Mathematics
(sole supervision by NM)
- 8/2019–5/2022 Lingqi Meng
Department of Mathematics
(sole supervision by NM)
- 1/2018–5/2022 Elohim Fonseca dos Reis
(transferred from University of Bristol, 8/2019)
Department of Mathematics
(sole supervision by NM)

University of Bristol, United Kingdom

- 9/2015–8/2019 Simon Godwin
Department of Engineering Mathematics
(2nd supervisor, 50%; co-supervised with Lucia Marucci)
- 9/2015–11/2018 Christelle Langley
Doctorate in Philosophy (in Cognitive Neuroscience)
(2nd supervisor, 20%; co-supervised with Jade Thai)

University of Tokyo, Japan

- 4/2010–3/2013 Taro Takaguchi
Department of Mathematical Informatics
(sole supervision by NM)
- 4/2010–3/2013 Mitsuhiro Nakamura
Department of Mathematical Informatics
(sole supervision by NM)

PhD student supervision — terminated

State University of New York at Buffalo

- 8/2023–6/2025 Nurjahan Akter Nepa
Department of Mathematics
(sole supervision by NM;
terminated in the middle because of NM's move to University of Michigan)
- 8/2023–5/2025 Quoc Chuong Nguyen
Department of Mathematics
(sole supervision by NM;
terminated in the middle because of NM's move to University of Michigan)
- 8/2021–8/2025 Maisha Islam Sejunti
Department of Mathematics
(co-supervision with Dane Taylor till 8/2023;
co-supervision terminated because DT moved to University of Wyoming;
NM's supervision terminated because of NM's move to University of Michigan;
MIS transferred to University of Wyoming to be advised by DT)
- 8/2021–12/2023 Madison Russell
Department of Mathematics
(sole supervision by NM;
graduated with a master (MA) degree)
- 1/2021–6/2021 Luca Sicuso
Department of Mathematics
(sole supervision by NM)

University of Bristol, United Kingdom

- 4/2019–8/2019 Maximilian Kloucek
Department of Physics
(2nd/3rd supervisor; co-supervised with Paddy Royall)
(terminated in the middle because of NM's move to Buffalo)
- 9/2017–8/2019 Robert Eyre
Department of Engineering Mathematics)
(20% supervision; co-supervised with Filippo Simini)
(terminated in the middle because of NM's move to Buffalo)
- 9/2016–8/2019 Alfie Wearn
PhD program in Neural Dynamics
(2nd supervisor, 50%, co-supervised with Elizabeth Coulthard and Risto Kauppinen)
(terminated in the middle because of NM's move to Buffalo)

Master thesis supervision

University of Bristol, United Kingdom, Department of Engineering Mathematics

- 1/2019–8/2019 Daiying Zhu (MSc)
“Project networks: data analysis and mathematical modelling”
- 1/2018–8/2018 Victor Küpper (MSc)
“Recurrence quantification analysis of recurrence plots with application to MEG data”
- 1/2018–8/2018 Longxin Wang (MSc)
“Epidemic dynamics modelling of disease progression in Alzheimer disease”
- 9/2018–5/2019 Arthur Dodson (MEng)
“Network-based early warning signals for financial markets”
- 9/2017–5/2018 Duncan Cassells (MEng)
“Energy landscape of financial markets”
- 9/2016–5/2017 Sophie Landon (MEng)
“Analysis and further development of an agent-based model for nest selection in the ant *Temnothorax albipennis*”
- 9/2016–5/2017 Ryan Stuart (MEng)
“Autistic brain networks”
- 9/2015–5/2016 Jamie Wright (MEng)
“Network based sports rankings in international football”
- 9/2014–5/2015 Bobby East (MEng)
“Network-based ranking systems — An analysis of formula 1 driver ability”

University of Tokyo, Japan, Department of Mathematical Informatics, MSc

(The thesis title is in Japanese so not shown.)

- 4/2012–2/2014 Yuta Ohashi
- 4/2012–2/2014 Kodai Saito
- 4/2012–2/2014 Daiki Takeuchi
- 4/2011–3/2013 Rintaro Ishii
- 4/2011–3/2013 Hiroaki Tomita
- 4/2011–3/2013 Shun Motegi
- 4/2010–3/2012 Takaoki Ohnishi
- 4/2010–3/2012 Shinya Kato
- 4/2009–3/2011 Kazuya Ugayama
- 4/2009–3/2011 Yasushi Kawase
- 4/2009–3/2011 Ryogo Sekine
- 4/2008–3/2010 Hiroto Tateishi
- 4/2007–3/2009 Masashi Tsubosaka

Undergraduate student research supervision

State University of New York at Buffalo

8/2021–5/2022 Yanyan Li (Senior Thesis)
 Department of Mathematics
 (sole supervision by NM)

7/2020–5/2021 Mengyuan (Jason) Sun (Senior Thesis)
 Department of Mathematics
 (sole supervision by NM)

University of Bristol, United Kingdom

9/2016–5/2017 Yiyoun Kim (BEng)
 Department of Engineering Mathematics
 “Immunising networks”

University of Tokyo, Japan, Department of Mathematical Engineering and Information Physics
 (The thesis title is in Japanese so not shown.)

9/2013–2/2014 Yuni Iwamasa
 9/2013–2/2014 Jun Kato
 9/2012–3/2013 Yusuke Enomoto
 9/2012–3/2013 Tomonori Murakoshi
 9/2012–3/2013 Chihiro Watanabe
 9/2011–3/2012 Kota Ishihara
 9/2011–3/2012 Yuki Okano
 9/2010–3/2011 Takatoshi Sakakibara
 9/2010–3/2011 Shoma Tanabe
 9/2010–3/2011 Naotaka Yamada
 9/2009–3/2010 Kotaro Itoyama
 9/2009–3/2010 Yoshiyuki Oiwa
 9/2009–3/2010 Jotaro Doi
 9/2008–3/2009 Michiru Akita
 9/2008–3/2009 Akio Iwagami
 9/2007–3/2008 Yuko Takahashi
 9/2007–3/2008 Ken Tsukada

Rotation and summer project (or similar) supervision

State University of New York at Buffalo

1/2024–12/2024 HyunAh Lee
 Department of Biostatistics
 (effective co-supervision with Ekaterina Noyes, one-year funded project)

University of Bristol, United Kingdom, PhD program in Neural Dynamics

01/2019–04/2019 Arthur Spencer (co-advised with Ela Chakkarapani and Jon Brooks)
 05/2018–08/2018 Oscar Davy (co-advised with Jade Thai)
 01/2018–04/2018 Anne-Lene Sax (co-advised with Elizabeth Coulthard)
 01/2016–04/2016 Alfie Wearn (co-advised with Elizabeth Coulthard and Risto Kauppinen)
 05/2015–08/2015 Felicity Inkpen (co-advised with Risto Kauppinen)

Junior faculty mentor**State University of New York at Buffalo**

8/2023–8/2025 Sarbendu Rakshit
 Department of Mathematics
 Visiting Assistant Professor (full time)
 1/2021–12/2022 Prosenjit Kundu
 Department of Mathematics
 Visiting Assistant Professor (full time)

Fellowship sponsor**University of Bristol, United Kingdom**

4/2017–3/2019 Dr. Christos Ellinas
 “Application of complex networks to project robustness and resilience”
 EPSRC Doctoral Prize Fellowship

Postdoc supervision

University of Michigan

8/2024– Tharusha Bandara (funded by Japan Science and Technology Agency)
(transferred from SUNY Buffalo, 8/2025)

State University of New York at Buffalo

1/2025– Fathima Nuzla Ismail (funded by Japan Science and Technology Agency)

5/2023–10/2024 Si Thu Aung (funded by Japan Science and Technology Agency)

1/2022–7/2024 Neil G. MacLaren (funded by Japan Science and Technology Agency)

12/2021–11/2023 Pitambar Khanra (funded by Japan Science and Technology Agency)

8/2020–5/2021 Rupam Acharyya (funded by JP Morgan Chase)

4/2019–3/2021 Kashin Sugishita (funded by Japan Society for the Promotion of Science;
transferred from University of Bristol, 08/2019)

University of Bristol, United Kingdom

9/2019–2/2020 Irene Malvestio (funded by Cookpad Limited)

6/2019–1/2020 Marinho Antunes Lopes (funded by GW4, UK)

7/2018–7/2019 Alessio Cardillo (funded by Cookpad Limited)

4/2016–3/2019 Sadamori Kojaku (funded by CREST, Japan Science and Technology Agency (JST))

5/2015–3/2016 Kohei Tamura (funded by CREST, JST)

University of Tokyo, Japan

4/2013–2/2014 Takuya Machida (funded by Research Fellowships for Young Scientists (PD)
Japan Society for the Promotion of Science (JSPS))

4/2012–10/2012 Ryosuke Nishi (funded by Kakenhi, Japan)

4/2011–3/2012 Jun Nakabayashi (funded by Kakenhi, Japan)

4/2011–3/2012 Etsuo Segawa (funded by JST, Presto)

4/2011–3/2012 Shuhei Furuya (funded by Research Fellowships for Young Scientists (PD), JSPS)

4/2009–3/2011 Yoshimi Yoshino (funded by Kakenhi, Japan)

3/2009–3/2011 Takehisa Hasegawa (funded by JST, Presto)

As host researcher (at least 1 month)

State University of New York at Buffalo

- 6/5/2023–8/4/2023 Carlos Vázquez-de Jesus (undergraduate student,
University of Puerto Rico at Cayey)
- 1/18/2023–2/25/2023 Jiyoung Kang (Assistant Professor,
& 12/27/2024–2/17/2025 Pukyong National University, South Korea)
- 8/24/2021–4/21/2022 Kazuki Nakajima (PhD student, Tokyo Institute of Technology, Japan)
& 9/28/2022–3/21/2023

University of Bristol, United Kingdom

- 5/13/2019–8/31/2019 Bruna Campos Guedes (undergraduate student,
Polytech Marseille — Aix-Marseille Université, France)
- 9/13/2018–3/12/2019 Shun Kodate (PhD student, Tohoku University, Japan)
visit funded by Graduate Program in Data Science, Tohoku University
- 3/5/2018–4/6/2018 Jorge P. Rodríguez (PhD student, University of Balearic Islands, Spain)
visit funded by Short Term Scientific Mission (STSM), COST Action: CA15109,
EU Framework Programme Horizon 2020 on
European Cooperation for Statistics of Network Data Science
- 1/19/2017–3/17/2017 Elohim Fonseca dos Reis (PhD student, University of Campinas, Brazil)
visit funded by EPSRC, UK

University of Tokyo, Japan

- 7/16/2013–8/30/2013 Yanru Chen (undergraduate student, Tsinghua University, China)
visit funded by Tsinghua University
- 6/11/2013–8/21/2013 Friederike Greb (postdoc, Georg-August-Universität Göttingen, Germany)
visit funded by Summer Program, Japan Society for the Promotion of Science
- 2/3/2012–3/2/2012 Paul Expert (postdoc, Imperial College, UK)
visit funded by Postdoctoral Fellowships for Foreign Researchers (short-term),
Japan Society for the Promotion of Science
- 5/1/2009–2/28/2010 Toshihiro Tanizawa (Associate Professor,
Kochi National College of Technology, Japan)
visit funded by KOSEN National Institute of Technology, Japan

PhD Thesis Examiner (except for students under my supervision)

11/2023–	External dissertation committee member, Xiliang Mao, University of South Florida, USA
4/2024	Pre-examiner, Javier Urena-Carrion, Aalto University, Finland
8/2023	External PhD examiner, Kiefer Joe Burgess, University of Waterloo, Canada
5/2023	Internal PhD examiner, Bengier Ülgen Kılıç, State University of New York at Buffalo, USA
11/2021	Internal PhD examiner, Zhao Song, State University of New York at Buffalo, USA
5/2021	External PhD evaluator, Pitambar Khanra, National Institute of Technology Durgapur, India
4/2021	External PhD examiner, Xingru Chen, Dartmouth College, USA
5/2019	External PhD examiner, Prateek Verma, Indian Institute of Science Education and Research (IISER) Kolkata, India
1/2019	External PhD examiner, Jeroen van Lidth de Jeude, IMT School of Advanced Studies, Italy also serving as member (secretary) of the Graduation Committee for Jeroen van Lidth de Jeude, Federica Parisi, and Giacomo Rapisardi, 03/2019
9/2018	External PhD examiner (president), Jorge P. Rodríguez, University of Balearic Islands, Spain
5/2018	External PhD examiner, Neil Sherborne, University of Sussex, UK
12/2017	External PhD examiner, Se-Wook Oh, University of Oxford, UK
10/2017	External PhD examiner, Balasundaram Kadirvelu, University of Reading, UK
7/2016	Internal PhD examiner, Christopher John McWilliams, University of Bristol, UK
4/2016	Internal PhD examiner, Holly Silk, University of Bristol, UK
2008–2014	PhD examiner for 20 candidates University of Tokyo, Department of Mathematical Informatics NB: By convention, no notion of internal/external examiner
2011–2014	PhD examiner for 6 candidates, University of Tokyo (other departments)

Miscellaneous

Languages: Japanese (native), English (fluent), and Spanish (fluent).

Herd member: Saving Endangered Species Int'l Playwriting Prize (winning plays announced 02/2016)

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