

# Naoki Masuda

## Contact Information

Naoki Masuda

Email: [naokimas@buffalo.edu](mailto:naokimas@buffalo.edu)

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

## Employment

|                        |  |
|------------------------|--|
| 9/2021–                | Professor<br>Department of Mathematics, State University of New York at Buffalo, USA<br>Graduate School Director since 7/2022  |
| 8/19/2019–8/2021       | Associate Professor<br>Department of Mathematics, State University of New York at Buffalo, USA   |
| 8/19/2019–             | Institute for Artificial Intelligence and Data Science<br>(incorporating the Computational and Data-Enabled Sciences and Engineering Program,<br>which I have been core faculty of, in 4/2021)<br>State University of New York at Buffalo, USA |
| 8/1/2019–<br>8/18/2019 | Associate Professor<br>Department of Engineering Mathematics, University of Bristol, United Kingdom  |
| 3/2014–7/2019          | Senior Lecturer<br>Department of Engineering Mathematics, University of Bristol, United Kingdom  |
| 9/2008–2/2014          | Associate Professor<br>Department of Mathematical Informatics, University of Tokyo, Japan  |
| 10/2006–8/2008         | Lecturer<br>Department of Mathematical Informatics, University of Tokyo, Japan   |
| 4/2004–9/2006          | Special Postdoctoral Fellow<br>Amari Research Unit, RIKEN Brain Science Institute, Japan   |
| 4/2003–3/2004          | Research Fellow (PD)<br>Japan Society for the Promotion of Science,<br>at Yokohama National University, Japan  |
| 10/2002–3/2003         | Research Fellow (PD)<br>Japan Society for the Promotion of Science, at University of Tokyo, Japan  |
| 4/2000–9/2002          | Research Fellow (DC1)<br>Japan Society for the Promotion of Science, at University of Tokyo, Japan   |

## Visiting and Term Appointments

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

## Academic Qualifications

|               |  |
|---------------|--|
| 9/2002        | Ph.D. in Engineering, University of Tokyo, Japan<br>(Department of Mathematical Engineering and Information Physics)<br>Thesis title: “Duality of Information Coding in Pulse-coupled Neural Networks”<br>Thesis supervisor: Prof. Kazuyuki Aihara |
| 3/2000        | M.Sc. in Engineering, University of Tokyo, Japan<br>(Department of Mathematical Engineering and Information Physics)<br>Thesis title: “Cryptosystems with Discretized Chaotic Maps”<br>Thesis supervisor: Prof. Kazuyuki Aihara                    |
| 3/1998        | B.Sc. in Engineering, University of Tokyo, Japan<br>(Department of Mathematical Engineering and Information Physics)   |
| 9/2000–6/2001 | Academic Year Abroad<br>Department of Physics, University of California, San Diego, USA  |

## Citation Statistics

[Google Scholar Citations profile](#)

Number of citations: 10,100 (Google Scholar Citations)

h-index: 55 (Google Scholar Citations)

## Grants

### State University of New York at Buffalo, USA

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).

9/2022–9/2025

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

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

Amount: \$444,842

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

[I am only named Senior Personnel] 9/2022–2/2024

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

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)

8/2022–8/2025

National Science Foundation (Applied Mathematics Program)

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)

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

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, Uni-

versity 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 Saryüce, 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

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))

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))

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))

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))

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, UK**

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

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, Jade Ngoc 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 Sariyüce.  
Temporal motifs in patent opposition and collaboration networks. *Scientific Reports*, 12, 1917 (2022).

178. Kazuki Nakajima, Kazuyuki Shudo, [Naoki Masuda](#).  
Randomizing hypergraphs preserving degree correlation and local clustering.  
IEEE Transactions on Network Science and Engineering, 9, 1139–1153 (2022).
177. Lingqi Meng, [Naoki Masuda](#).  
Epidemic dynamics on metapopulation networks with node2vec mobility.  
Journal of Theoretical Biology, 534, 110960 (2022).
176. Marie Saitou, [Naoki Masuda](#), Omer Gokcumen.  
Similarity-based analysis of allele frequency distribution among multiple populations identifies adaptive genomic structural variants.  
Molecular Biology and Evolution, 39, msab313 (2022).
175. Christos Ellinas, Christos Nicolaides, [Naoki Masuda](#).  
Mitigation strategies against cascading failures within a project activity network.  
Journal of Computational Social Science, 5, 383–400 (2022).  
  
Correction to: Mitigation strategies against cascading failures within a project activity network.  
Journal of Computational Social Science, 5, 1097–1098 (2022).
174. Arthur P. C. Spencer, Jonathan C. W. Brooks, [Naoki Masuda](#), Hollie Byrne, Richard Lee-Kelland, Sally Jary, Marianne Thoresen, Marc Goodfellow, Frances M. Cowan, Ela Chakkarapani.  
Motor function and white matter connectivity in children cooled for neonatal encephalopathy.  
NeuroImage: Clinical, 32, 102872 (2021).
173. Kashin Sugishita, Noha Abdel-Mottaleb, Qiong Zhang, [Naoki Masuda](#).  
A growth model for water distribution networks with loops.  
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 477, 20210528 (2021).
172. Takahiro Ezaki, Yu Himeno, Takamitsu Watanabe, [Naoki Masuda](#).  
Modeling state-transition dynamics in resting-state brain signals by the hidden Markov and Gaussian mixture models.  
European Journal of Neuroscience, 54, 5404–5416 (2021).
171. Hang-Hyun Jo, [Naoki Masuda](#).  
Finite-size effects on the convergence time in continuous-opinion dynamics.  
Physical Review E, 104, 014309 (2021).
170. Kashin Sugishita, Mason A. Porter, Mariano Beguerisse-Díaz, [Naoki Masuda](#).  
Opinion dynamics on tie-decay networks.  
Physical Review Research, 3, 023249 (2021).
169. [Naoki Masuda](#), Joel C. Miller, Petter Holme.  
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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, June 27–29 (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, June 5–6 (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, August 26–28 (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, August 25–28 (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, March 13-15 (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, August 12–17 (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, December 5–10 (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, November 14–18 (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, May 6–9 (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, November 28 – December 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 Kunitatsu, 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)

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)

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)**

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, April 6–7, 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, March 20–22, 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, March 20–22, 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, October 20–22, 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, October 20–22, 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, October 16–20, 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, September 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, August 20–25 (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, August 20–25 (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, May 14–18 (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, April 25–28, 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, March 22–24, 2023.
110. Ruodan Liu, Naoki Masuda.  
Fixation probability on hypergraphs.  
NERCCS 2023: Sixth Northeast Regional Conference on Complex Systems.  
Clarkson University, Potsdam, NY, March 22–24, 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, March 22–24, 2023.
108. Jnanajyoti Bhaumik, Naoki Masuda.  
Fixation probability of switching networks.  
11th International Conference on Complex Networks and Their Applications.  
Palermo, Italy, November 8–10 (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, November 8–10 (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, November 8–10 (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, November 8–10 (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, November 8–10 (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, August 21–25 (2022).
102. [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. March 19–20, 2022.
101. 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, March 30 – April 1, 2022.
100. 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, March 30 – April 1, 2022.
99. 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, March 30 – April 1, 2022.  
[Honorable Mention of the Best Oral Presentation Award]
98. 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, March 30 – April 1, 2022.



97. 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, March 30 – April 1, 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, July 5–10, 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, July 5–10, 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, June 7–11, 2021.
93. Alessio Cardillo, [Naoki Masuda](#).  
Tipping point in evolutionary games on networks triggered by zealots.  
CompleNet Live 2021, Online, May 24–26, 2021.
92. Irene Malvestio, Alessio Cardillo, [Naoki Masuda](#).  
Interplay between k-core and communities in networks.  
CompleNet Live 2021, Online, May 24–26, 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, May 17–21, 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, April 21–23, 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, 2021.

86. Lingqi Meng, [Naoki Masuda](#).  
Diffusion speed of the node2vec random walk on networks  
COMPLEX20 (Conference on Complex Systems 2020).  
Online, December 4–11, 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, December 1–3, 2020.
84. Sadamori Kojaku, Giacomo Livan, [Naoki Masuda](#).  
Detecting citation cartels in journal citation networks.  
NetSci 2020.  
Online (due to COVID-19), September 17–25, 2020.
83. Irene Malvestio, Alessio Cardillo, [Naoki Masuda](#).  
Interplay between  $k$ -core and community structure in networks.  
NetSci 2020.  
Online (due to COVID-19), September 17–25, 2020.
82. Kashin Sugishita, [Naoki Masuda](#).  
Structural evolution of US airline networks.  
NetSci 2020.  
Online (due to COVID-19), September 17–25, 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, July 13–15, 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, April 1–3, 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, April 1–3, 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. 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, October 19–23, 2019.
74. 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, November 4–5, 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.  
Individual-based approximation to the susceptible-infected-recovered model on temporal networks.  
NetSci-X 2016.  
Wroclaw, Poland, January 11–13 (2016).

45. Naoki Masuda, Konstantin Klemm, Víctor M. Eguíluz.  
Laplacian dynamics on temporally switching networks.  
IEEE International Meeting on Analysis and Applications of Nonsmooth Systems (AANS2014).  
Como, Italy, September 10–12 (2014).
44. Hiroyuki Shimoji, Masato S. Abe, Kazuki Tsuji, Naoki Masuda.  
Dominance hierarchy networks of ant workers.  
The Joint Annual Meeting of the Japanese Society for Mathematical Biology and the Society for Mathematical Biology.  
Osaka, Japan, July 28 – August 1 (2014).
43. Naoki Masuda.  
Neural underpinning of cooperation under indirect reciprocity.  
Making of Humanities: Biological Roots of Mathematics and Cooperation.  
Hokkaido University, Sapporo, Japan, July 28 (2014).
42. Naoki Masuda.  
Analysis of diffusive processes on temporal networks.  
The 3rd International Symposium on Innovative Mathematical Modelling.  
University of Tokyo, Tokyo, Japan, November 12–15 (2013).
41. Naoki Masuda.  
Indirect reciprocity and ingroup favoritism: mathematical models.  
International Workshop on Social Computing 2013 – Perspectives in Socio-Cultural Complexity.  
Graduate School's Seoul Office, Seoul, South Korea, July 27 (2013).
40. Naoki Masuda.  
Social spike trains: where computational neuroscience and computational social science can meet.  
Modeling Neural Activity: Statistics, Dynamical Systems, and Networks.  
Lihue, Hawaii, June 26–28 (2013).
39. Naoki Masuda.  
Suicide ideation in online social networks.  
Workshop: NetSciEd2. NetSci2013.  
Danish Technical University, Lyngby, Denmark, June 3–7 (2013).
38. Mitsuhiro Nakamura, Naoki Masuda.  
Sharing information in groups yields ingroup favoritism in indirect reciprocity.  
Modelling Biological Evolution 2013: Recent Progress, Current Challenges and Future Directions.  
University of Leicester, Leicester, UK, May 1–3 (2013).
37. Hiroshi Kori, Yoji Kawamura, Naoki Masuda.  
Network structure dependence of collective enhancement of temporal precision in coupled noisy oscillators.  
The First Annual Winter q-bio Meeting.  
Waikiki, Hawaii, USA, February 18–21 (2013).
36. Hiroshi Kori, Yoji Kawamura, Naoki Masuda.  
Dependence of oscillation regularity on network structure in coupled noisy oscillators.  
European Conference on Complex Systems (ECCS'12).  
Brussel, Belgium, September 3–7 (2012).
35. Taro Takaguchi, Nobuo Sato, Kazuo Yano, Naoki Masuda.  
A centrality measure for interaction events in temporal networks.

- European Conference on Complex Systems (ECCS'12).  
Brussel, Belgium, September 3–7 (2012).
34. Taro Takaguchi, Naoki Masuda, Petter Holme.  
Effect of bursty communication patterns on contagion in a threshold-based epidemic dynamics.  
European Conference on Complex Systems (ECCS'12). Satellite meeting: Data-driven modeling of contagion processes.  
Brussel, Belgium, September 3–7 (2012).
  33. Taro Takaguchi, Nobuo Sato, Kazuo Yano, Naoki Masuda.  
Detecting important interaction events in temporal networks.  
NetSci 2012.  
Northwestern University, Evanston, Illinois, USA, June 20–22 (2012).
  32. Shoma Tanabe, Hideyuki Suzuki, Naoki Masuda.  
Indirect reciprocity with three reputation values.  
The 2nd International Symposium on Innovative Mathematical Modelling.  
University of Tokyo, Tokyo, Japan, May 14–19 (2012).
  31. Ryo Fujie, Kazuyuki Aihara, Naoki Masuda.  
Conditions for stable coexistence of multiple species in consensus dynamics.  
The 2nd International Symposium on Innovative Mathematical Modelling.  
University of Tokyo, Tokyo, Japan, May 14–19 (2012).
  30. Hiroshi Kori, Yoji Kawamura, Naoki Masuda.  
Network structure dependence of oscillation regularity in coupled noisy oscillators.  
Engineering of Chemical Complexity.  
Berlin, Germany, July 4–8 (2011).
  29. Hiroshi Kori, Yoji Kawamura, Naoki Masuda.  
Design principle of precise neural clocks.  
The 3rd International Conference on Cognitive Neurodynamics (ICCN 2011).  
Hilton Niseko Village, Hokkaido, Japan, June 9–13 (2011).
  28. Takamitsu Watanabe, Naoki Masuda.  
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Visegrad, Hungary, September 8–11 (2002).  
In: Proceedings p.36.

## Professional Service

### Editorial Work

Regular

|                 |  |
|-----------------|--|
| 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–present  | 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<br>Special Issue: Economics and Complex Networks (co-edited with Teruyoshi Kobayashi) |
|------|--|

**Organization of Conferences and Workshops**

Program Committee Member

NetSci 2025

Maastricht, Netherlands, 6/2/2025–6/6/2025

Reviewer

CompleNet 2025

Fortaleza, Brazil, 4/22/2025–4/25/2025

Reviewer

Eighth Northeast Regional Conference on Complex Systems

Binghamton, NY, USA, 4/9/2025–4/11/2025

Program Committee Member and judge of “Best Presentation by an Early Career Scientist (ECR)” award

NetSci 2024

Québec, Canada, June 17–21 (2024).

Program Committee Member

CompleNet 2024

Exeter, UK, April 23–26 (2024).

Program Committee Member

NetSci-X 2024

Venice, Italy, January 22–25 (2024).

Program Committee Member

NetSci 2023

Vienna, Austria, July 10–14 (2023).

Program Committee Member

CompleNet 2023

Aveiro, Portugal, April 25–28 (2023).

Program Committee Member

NetSci-X 2023

Buenos Aires, Argentina, February 7–10 (2023).

Vice Chair

2022 IEEE International Conference on Big Data

Osaka, Japan, December 17–20, (2022).

Program Committee Member  
Conference on Complex Systems (CCS2022)  
Palma de Mallorca, Spain, October 17–21 (2022).

International Advisory Committee Member  
28th IUPAP International Conference on Statistical Physics (STATPHYS28)  
Tokyo, Japan, August 7–11 (2023).

Organizer (Coorganized with Tomomi Kito and Kazuki Nakajima)  
Socioeconomic Networks and Network Science Workshop 2022  
Online, August 1–2 (2022).

Program Committee Member  
NetSci 2022  
Online, July 25–29 (2022).

General Co-Chair  
Fifth Northeast Regional Conference on Complex Systems  
Buffalo and other satellite locations, March 30 – April 1 (2022).

Program Committee Member  
NetSci-X 2022  
Porto Portugal, February 8–11 (2022).

Organizer (Coorganized with Tomomi Kito and Kazuki Nakajima)  
Science of Innovation and Success Workshop  
Waseda University, Japan (hybrid format), August 2–3 (2021).

Program Committee Member  
2021 Online Conference on Complex Networks (CompleNet Live 2021)  
Online, May 24–26 (2021).

General Co-Chair  
Fourth Northeast Regional Conference on Complex Systems  
Online, March 31 – April 2 (2021).

Senior Program Committee Member  
The 12th International Conference on Social Informatics  
Pisa, Italy, October 6–9 (2020).

Program Committee Member  
NetSci 2020  
Rome, Italy (held online due to COVID-19), September 17–25 (2020).

Poster Chair  
Tenth International Conference on Complex Systems (ICCS 2020)  
Online, July 27–31 (2020).

Organizer (Coorganized with Tomomi Kito and Yuka Fujiki)  
Socioeconomic Networks and Network Science Workshop  
Waseda University, Japan (held online due to COVID-19), July 3–4 (2020).

Program Committee Member  
6th Annual International Conference on Computational Social Science (IC2S2 2020)  
Cambridge, MA, USA (held online due to COVID-19), July 17–20 (2020).

Program Committee Member

8th Annual SIAM Workshop on Network Science (NS20)  
Toronto, Ontario, Canada, July 9–10 (2020).

Poster Chair and Program Committee Member  
Third Northeast Regional Conference on Complex Systems  
University at Buffalo, USA (held online due to COVID-19), April 1–3 (2020).

Program Committee Member  
11th International Conference on Complex Networks (CompleNet 2020)  
Exeter, UK, March 31 – April 3 (2020).

Program Chair  
NetSci-X 2020  
Tokyo, Japan, January 20–23 (2020).

Organizer (Coorganized with Guido Caldarelli, Hiroyasu Inoue, and Carolina Mattsson)  
NetSci-X Special Workshop on Economic & Financial Networks.  
Tokyo, Japan, January 23 (2020).

Program Committee Member  
Eighth International Conference on Complex Networks and Their Applications  
Lisbon, Portugal, December 10–12 (2019).

Program Committee Member  
The 11th International Conference on Social Informatics  
Doha, Qatar, November 18–21 (2019).

Program Committee Member  
5th Annual International Conference on Computational Social Science (IC2S2 2019)  
Amsterdam, the Netherlands, July 17–20 (2019).

Program Committee Member  
NetSci 2019  
Burlington, VT, USA, May 27–31 (2019).

Program Committee Member  
11th International Conference on Complex Networks (CompleNet 2019)  
Tarragona, Spain, March 18–21 (2019).

Program Committee Member  
Seventh International Conference on Complex Networks and Their Applications  
Cambridge, UK, December 11–13 (2018).

Organizer (Coorganized with Nicola Perra and Vincenzo Nicosia)  
2nd UK Network Science Workshop  
University of Greenwich, London, UK, October 26 (2018).

Program Committee Member  
The 10th International Conference on Social Informatics  
St. Petersburg, Russia, September 24–27 (2018).

Program Committee Member  
Workshop on Social Influence 2018 (SI 2018)  
Barcelona, Spain, August 28 (2018).

Program Committee Member  
The 4th Annual International Conference on Computational Social Science (IC2S2 2018)  
Northwestern University, Evanston, USA, July 12–15 (2018).

Program Committee Member

SIAM Workshop on Network Science 2018 (SIAMNS 2018)

Portland, OR, USA, July 12–13 (2018).

Program Committee Member

Integration of Empirical Data in Network Epidemiology (iodine)

A satellite symposium in NetSci 2018, Paris, France, June 12 (2018).

Senior Program Committee Member

NetSci 2018

Paris, France, June 11–15 (2018).

Organizer

UK Network Science Workshop

University of Bristol, Bristol, UK, May 11 (2018).

Program Committee Member

NetSci-X 2018

Hangzhou, China, January 5–8 (2018).

Program Committee Member

Sixth International Workshop on Complex Networks and their Applications

Lyon, France, November 29 – December 1 (2017).

Organizer

Engineering Applications of Networks Workshop

University of Bristol, Bristol, UK, November 1 (2017).

Program Committee Member

Workshop on Social Influence 2017 (SI 2017)

Sydney, Australia, July 31 (2017).

Program Committee Member

CCS2017 Satellite Meeting Modeling of Disease Contagion Processes 6th Edition

Cancun, Mexico, September 17–22 (2017).

Program Committee Member

The 9th International Conference on Social Informatics

Oxford, UK, September 13–15 (2017).

Program Committee Member

NetSci 2017

Indianapolis, Indiana, USA, June 19–23 (2017).

Program Committee Member

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

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

Program Committee Member

NetSci-X 2017

Tel-Aviv, Israel, January 15–18 (2017).

Program Committee Member

Fifth International Workshop on Complex Networks and their Applications

Milan, Italy, November 30 – December 2 (2016).

Program Committee Member

Workshop on Social Influence 2016 (SI 2016) San Francisco, USA, August 18 (2016).

Organizer (coorganized with Juyong Park)

Satellite workshop: Competition networks and centrality

NetSci 2016

Seoul, Korea, May 30 (2016).

Organizer (coorganized with Byungnam Kahng and Zengru Di)

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

NetSci 2016

Seoul, Korea, May 30–31 (2016).

Program Co-chair

NetSci 2016

Seoul, Korea Republic, May 30 – June 3 (2016).

Program Committee Member

NetSci-X 2016

Wroclaw, Poland, January 11–13 (2016).

Program Committee Member

Fourth International Workshop on Complex Networks and their Applications

Bangkok, Thailand, November 23–27 (2015).

Coorganizer

Special Session: Epidemic dynamics: mathematical modeling and data analysis

4th IFAC Conference on Analysis and Control of Chaotic Systems

Tokyo, Japan, August 26–28 (2015).

Program Committee Member

NetSci-X 2015

Rio de Janeiro, Brazil, January 14–16 (2015).

Program Committee Member

Third International Workshop on Complex Networks and their Applications

Marrakesh, Morocco, November 23–27 (2014).

Program Committee Member

Workshop on Social Influence (SI 2014)

Barcelona, Spain, November 10 (2014).

Program Committee Member

Second International Workshop on Complex Networks and their Applications

Kyoto, Japan, December 2–5 (2013).

Program Committee Member

NetSci 2013

Copenhagen, Denmark, June 3–7 (2013).

Program Committee Member

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

Crete, Greece, October 16–21 (2011).

Program Committee Member

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

Tokyo, Japan, November 4–7 (2009).

Program Committee Member

Special Session: Evolutionary Games on Complex Networks

IEEE Congress on Evolutionary Computation (CEC 2009)

Trondheim, Norway, May 18–21 (2009).

Coorganizer

NSC Winter Workshop 2008: Complex Nonlinear Dynamics ranging from Biology to Engineering  
Sapporo, Japan, March 8–10 (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, November 29 – December 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

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](https://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 university in Japan

**University Service****State University of New York at Buffalo**

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–present: 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, UK**

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

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

9/2014–8/2019: Personal Tutor ( $\approx 20$  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, USA**

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, UK**

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

- 2/2024–present Shilong Yu, University at Buffalo  
Department of Mathematics  
(sole supervision by NM)
- 1/2024–present HyunAh Lee, University at Buffalo  
Department of Biostatistics  
(effective co-supervision with Ekaterina Noyes)
- 8/2023–present Nepa Nurjahan Akter, University at Buffalo  
Department of Mathematics  
(sole supervision by NM)
- 8/2023–present Bisna Mary Eldo, University at Buffalo  
Department of Mathematics  
(sole supervision by NM)
- 8/2023–present Quoc Chuong Nguyen, University at Buffalo  
Department of Mathematics  
(sole supervision by NM)
- 8/2022–present Katherine Betz, University at Buffalo  
Department of Mathematics  
(sole supervision by NM)
- 8/2021–present Saiful Islam, University at Buffalo  
Computational and Data Enabled Science and Engineering (CDSE) Program  
(sole supervision by NM)
- 8/2021–present Maisha Islam Sejunti, University at Buffalo  
Department of Mathematics  
(co-supervision with Dane Taylor till 8/2023;  
co-supervision terminated because Prof. Taylor moved to a different university)
- 4/2021–present Jnanajyoti Bhaumik, University at Buffalo  
Department of Mathematics  
(sole supervision by NM)

PhD thesis supervision — completed

|                |   |
|----------------|---|
| 7/2020–2/2025  | Chanon Thongprayoon, University at Buffalo<br>Department of Mathematics<br>(sole supervision by NM)   |
| 2/2020–5/2024  | Ruodan Liu, University at Buffalo<br>Department of Mathematics<br>(sole supervision by NM)  |
| 8/2019–5/2022  | Lingqi Meng, University at Buffalo<br>Department of Mathematics<br>(sole supervision by NM)   |
| 1/2018–5/2022  | Elohim Fonseca dos Reis, University at Buffalo<br>(transferred from University of Bristol, 8/2019)<br>Department of Mathematics<br>(sole supervision by NM)                     |
| 4/2019–8/2019  | Maximilian Kloucek, University of Bristol (2nd/3rd supervisor)<br>Co-supervised with Paddy Royall<br>(terminated in the middle because of NM's move to the USA)                 |
| 9/2017–8/2019  | Robert Eyre, University of Bristol (2nd supervisor, 20%)<br>Co-supervised with Filippo Simini<br>(terminated in the middle because of NM's move to the USA)                     |
| 9/2016–8/2019  | Alfie Wearn, University of Bristol (2nd supervisor)<br>Co-supervised with Elizabeth Coulthard and Risto Kauppinen<br>(terminated in the middle because of NM's move to the USA) |
| 9/2015–8/2019  | Simon Godwin, University of Bristol (2nd supervisor, 50%)<br>Co-supervised with Lucia Marucci   |
| 9/2015–11/2018 | Christelle Langley, University of Bristol (2nd supervisor, 20%)<br>Co-supervised with Jade Thai   |
| 4/2010–3/2013  | Taro Takaguchi, University of Tokyo (sole supervision by NM)  |
| 4/2010–3/2013  | Mitsuhiro Nakamura, University of Tokyo (sole supervision by NM)  |

Master thesis supervision

- 1/2019–8/2019 Daiying Zhu (MSc, University of Bristol)  
“Project networks: data analysis and mathematical modelling”
- 1/2018–8/2018 Victor Küpper (MSc, University of Bristol)  
“Recurrence quantification analysis of recurrence plots with application to MEG data”
- 1/2018–8/2018 Longxin Wang (MSc, University of Bristol)  
“Epidemic dynamics modelling of disease progression in Alzheimer disease”
- 9/2018–5/2019 Arthur Dodson (MEng, University of Bristol)  
“Network-based early warning signals for financial markets”
- 9/2017–5/2018 Duncan Cassells (MEng, University of Bristol)  
“Energy landscape of financial markets”
- 9/2016–5/2017 Sophie Landon (MEng, University of Bristol)  
“Analysis and further development of an agent-based model for nest selection in the ant *Temnothorax albipennis*”
- 9/2016–5/2017 Ryan Stuart (MEng, University of Bristol)  
“Autistic brain networks”
- 9/2015–5/2016 Jamie Wright (MEng, University of Bristol)  
“Network based sports rankings in international football”
- 9/2014–5/2015 Bobby East (MEng, University of Bristol)  
“Network-based ranking systems — An analysis of formula 1 driver ability”
- 4/2012–2/2014 Yuta Ohashi (MSc, University of Tokyo)  
(The thesis title is in Japanese. Same for below.)
- 4/2012–2/2014 Kodai Saito (MSc, University of Tokyo)
- 4/2012–2/2014 Daiki Takeuchi (MSc, University of Tokyo)
- 4/2011–3/2013 Rintaro Ishii (MSc, University of Tokyo)
- 4/2011–3/2013 Hiroaki Tomita (MSc, University of Tokyo)
- 4/2011–3/2013 Shun Motegi (MSc, University of Tokyo)
- 4/2010–3/2012 Takaoki Ohnishi (MSc, University of Tokyo)
- 4/2010–3/2012 Shinya Kato (MSc, University of Tokyo)
- 4/2009–3/2011 Kazuya Ugayama (MSc, University of Tokyo)
- 4/2009–3/2011 Yasushi Kawase (MSc, University of Tokyo)
- 4/2009–3/2011 Ryogo Sekine (MSc, University of Tokyo)
- 4/2008–3/2010 Hiroto Tateishi (MSc, University of Tokyo)
- 4/2007–3/2009 Masashi Tsubosaka (MSc, University of Tokyo)

Undergraduate student research supervision

|               |  |
|---------------|--|
| 8/2021–5/2022 | Yanyan Li, Senior Thesis, University at Buffalo<br>(sole supervision by NM)                            |
| 7/2020–5/2021 | Mengyuan (Jason) Sun, Senior Thesis (undergraduate), University at Buffalo<br>(sole supervision by NM) |
| 9/2016–5/2017 | Yiyoung Kim (BEng, University of Bristol)<br>“Immunising networks”                                     |
| 9/2013–2/2014 | Yuni Iwamasa (University of Tokyo)<br>(The thesis title is in Japanese. Same for below.)               |
| 9/2013–2/2014 | Jun Kato (University of Tokyo)   |
| 9/2012–3/2013 | Yusuke Enomoto (University of Tokyo)   |
| 9/2012–3/2013 | Tomonori Murakoshi (University of Tokyo)   |
| 9/2012–3/2013 | Chihiro Watanabe (University of Tokyo)   |
| 9/2011–3/2012 | Kota Ishihara (University of Tokyo)  |
| 9/2011–3/2012 | Yuki Okano (University of Tokyo)   |
| 9/2010–3/2011 | Takatoshi Sakakibara (University of Tokyo)   |
| 9/2010–3/2011 | Shoma Tanabe (University of Tokyo)   |
| 9/2010–3/2011 | Naotaka Yamada (University of Tokyo)   |
| 9/2009–3/2010 | Kotaro Itoyama (University of Tokyo)   |
| 9/2009–3/2010 | Yoshiyuki Oiwa (University of Tokyo)   |
| 9/2009–3/2010 | Jotaro Doi (University of Tokyo)   |
| 9/2008–3/2009 | Michiru Akita (University of Tokyo)  |
| 9/2008–3/2009 | Akio Iwagami (University of Tokyo)   |
| 9/2007–3/2008 | Yuko Takahashi (University of Tokyo)   |
| 9/2007–3/2008 | Ken Tsukada (University of Tokyo)  |

#### Rotation and summer project supervision:

##### PhD in Neural Dynamics, University of Bristol

|                 |   |
|-----------------|---|
| 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

|                |   |
|----------------|---|
| 8/2023–8/2025  | Sarbendu Rakshit<br>Visiting Assistant Professor (full time), University at Buffalo |
| 1/2021–12/2022 | Prosenjit Kundu<br>Visiting Assistant Professor (full time), University at Buffalo  |

#### Fellowship sponsor

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

#### Postdoc supervision

##### University at Buffalo

8/2024– Tharusha Bandara (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

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

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,  
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

- 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

- 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,<br>University of South Florida, USA   |
| 4/2024    | Pre-examiner, Javier Urena-Carrion,<br>Aalto University, Finland   |
| 8/2023    | External PhD examiner, Kiefer Joe Burgess,<br>University of Waterloo, Canada   |
| 5/2023    | Internal PhD examiner, Bengier Ülgen Kılıç,<br>State University of New York at Buffalo, USA  |
| 11/2021   | Internal PhD examiner, Zhao Song,<br>State University of New York at Buffalo, USA  |
| 5/2021    | External PhD evaluator, Pitambar Khanra,<br>National Institute of Technology Durgapur, India   |
| 4/2021    | External PhD examiner, Xingru Chen,<br>Dartmouth College, USA  |
| 5/2019    | External PhD examiner, Prateek Verma,<br>Indian Institute of Science Education and Research (IISER) Kolkata, India   |
| 1/2019    | External PhD examiner, Jeroen van Lidth de Jeude,<br>IMT School of Advanced Studies, Italy<br>also serving as member (secretary) of the Graduation Committee for<br>Jeroen van Lidth de Jeude, Federica Parisi, and Giacomo Rapisardi, 03/2019 |
| 9/2018    | External PhD examiner (president), Jorge P. Rodríguez,<br>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<br>University of Tokyo, Department of Mathematical Informatics<br>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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