

Naoki Masuda

Contact Information

Dr. Naoki Masuda
Department of Engineering Mathematics, University of Bristol
Merchant Venturers Building, Woodland Road,
Clifton, Bristol BS8 1UB, United Kingdom
Tel: +41 0117 33 15176
Email: naoki.masuda@bristol.ac.uk
Website: www.naokimasuda.net

Employment

03/2014–present	Senior Lecturer Department of Engineering Mathematics, University of Bristol, UK
09/2008–02/2014	Associate Professor Department of Mathematical Informatics, University of Tokyo
10/2006–08/2008	Lecturer Department of Mathematical Informatics, University of Tokyo
04/2004–09/2006	Special Postdoctoral Fellow Amari Research Unit, RIKEN Brain Science Institute, Japan
04/2003–03/2004	Research Fellow (PD) Japan Society for the Promotion of Science, at Yokohama National University, Japan
10/2002–03/2003	Research Fellow (PD) Japan Society for the Promotion of Science, at University of Tokyo, Japan
04/2000–09/2002	Research Fellow (DC1) Japan Society for the Promotion of Science, at University of Tokyo, Japan
10/2008–03/2012	Researcher (part-time appointment) Japan Science and Technology Agency, Basic Research Programs PRESTO, Japan
07/2004–03/2006	Group Leader (part-time appointment) Japan Science and Technology Agency, ERATO Aihara Complexity Modelling Project, Japan

Academic Qualifications

09/2002	Ph.D. in Engineering, University of Tokyo, Japan (Department of Mathematical Engineering and Information Physics) Thesis title: “Duality of Information Coding in Pulse-coupled Neural Networks” Thesis supervisor: Prof. Kazuyuki Aihara
03/2000	M.Sc. in Engineering, University of Tokyo, Japan (Department of Mathematical Engineering and Information Physics) Thesis title: “Cryptosystems with Discretized Chaotic Maps” Thesis supervisor: Prof. Kazuyuki Aihara
03/1998	B.Sc. in Engineering, University of Tokyo, Japan (Department of Mathematical Engineering and Information Physics)

Citation Statistics

[Naoki Masuda at Google Scholar Citations](#)

Number of citations: 2943 (Google Scholar Citations)

h-index: 29 (Google Scholar Citations)

Grants

09/2016–03/2017

EPSRC Institutional Sponsorship

Subject: Phase transitions in neuroimaging data

Amount: £7,234

Role PI (CoI: Elohim Fonseca dos Reis, University of Campinas, Brazil)

10/2013–03/2019

CREST, Japan Science and Technology Agency

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

Amount: JPY 53,450,000 (to my group)

Role: CoI (PI: Kenji Yamanishi, University of Tokyo, Japan)

04/2013–02/2014

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

Subject: TempoNet: theoretical foundations of temporal networks

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

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

04/2013–03/2014

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

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

Amount: JPY 1,000,000

Role: Sole PI

04/2011–02/2014

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

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

Amount: JPY 10,100,000

Role: Sole PI

11/2008–03/2013

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

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

Amount: JPY 33,930,000

Role: PI (coI: Jun Ohkubo)

10/2008–03/2012

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

Subject: Modeling of epidemic dynamics on networks with group structure

Amount: JPY 49,332,600

Role: Sole PI

04/2008–03/2011

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

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

Amount: JPY 4,030,000

Role: Sole PI

04/2008–11/2009

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

Subject: Neurocomputational modelling of cooperative behavior (originally in Japanese. Transla-

tion by NM)

Amount: JPY 1,787,269

Role: Sole PI

26/04/2007–26/05/2007

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

Subject: A computational study of improvement in behavioral performance by attention

Amount: JPY 570,000

Role: Visiting investigator (Host: Center for Neural Science, New York University)

04/2004–09/2006

Special Postdoctoral Researcher, RIKEN Brain Science Institute, Japan (research grant)

Subject: 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

Role: Sole recipient

04/2003–03/2004

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

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

Amount: JPY 1,200,000

Role: Sole recipient

04/2000–03/2003

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

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

Amount: JPY 3,000,000

Role: Sole recipient

Professional Activities

Referee for Peer-Reviewed Journals

More than 50 journals including *Biology Letters*, *Journal of Neurophysiology*, *Journal of the Royal Society Interface*, *Nature Communications*, *Nature Physics*, *Physical Review Letters*, *Physical Review X*, *PLOS Computational Biology*, *Proceedings of the Royal Society B*, and *Trends in Neurosciences*. For a full list, see www.naokimasuda.net/publ.html.

Editorial Work

05/2014–present Editorial Board, *PLOS ONE*

01/2014–present Editorial Board, *Scientific Reports*

06/2013–present Review Editor for *Frontiers Interdisciplinary Physics*

Referee for Grant Applications

National Science Foundation, USA

Fund for Scientific Research-FNRS, Belgium

Japan Society for the Promotion of Science, Japan

Academic Services

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 (SI 2016) San Francisco, USA, August 18 (2016).

Organiser (coorganised with Juyong Park)

Satellite workshop: Competition networks and centrality

NetSci 2016

Seoul, Korea, May 30 (2016).

Organiser (coorganised 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).

Coorganiser

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

Kopenhagen, 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, Hokkaido, March 8-10 (2008).

Coorganizer

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)

Membership

17/10/2012–present F1000 Faculty Member

Teaching

University of Bristol

Numerical Methods in MATLAB (for second year undergraduate, EMAT 20920) 10 CPs
Autumn 2014, Autumn 2015, Autumn 2016

Nonlinear Dynamics and Chaos (for third year undergraduate, EMAT 33100) 10 CPs
Autumn 2015, Autumn 2016 (50%, unit organiser: Thilo Gross)

Optimisation Theory and Applications (for third year undergraduate, EMAT 30670) 10 CPs
Autumn 2016 (50%, unit organiser: Rosalyn Moran)

University of Tokyo

4860-1005: Mathematical Structures in Informatics (for Ph.D. and M.Sc students):
Spring 2013 (in English), Spring 2011, and Spring 2009 (in Japanese). 2 credit hours, 1 semester

03-541530: Topology (3rd year undergrad. Originally in Japanese. Translation by NM):
Autumn 2007–2013. 1.5 credit hours, 1 semester

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

Spring 2007, 2008, 2010, 2011, 2013. 1.5 credit hours (co-taught with another faculty), 1 semester

Other

Part-time Lecturer

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

Tokyo Institute of Technology, Japan

Spring 2008–2013. 2 credit hours

Research Advising

Thesis supervision

09/2016–present	Alfie Wearn, University of Bristol (co-supervision with Elizabeth Coulthard and Risto K)
09/2015–present	Simon Godwin, University of Bristol (co-supervision with Lucia Marucci)
09/2015–present	Christelle Van Anterpen, University of Bristol (20% co-supervision; supervised 80% by Jade Thai)
04/2010–03/2013	Taro Takaguchi, University of Tokyo (sole supervision by NM)
04/2010–03/2013	Mitsuhiro Nakamura, University of Tokyo (sole supervision by NM)
09/2014–05/2016	2 MEng students, University of Bristol (one year project)
04/2007–02/2014	13 M.Sc students, University of Tokyo (two year project)
10/2006–02/2013	17 B.Sc students, University of Tokyo (one semester project)

As host researcher

Dr. Friederike Greb (Georg-August-Universität Göttingen, Germany), June 11–August 21, 2013, hosted at University of Tokyo
Summer Program, Japan Society for the Promotion of Science

Dr. Paul Expert (Imperial College, UK), February 3–March 2, 2012, hosted at University of Tokyo
Postdoctoral Fellowships for Foreign Researchers (short-term), Japan Society for the Promotion of Science

Honors and Awards

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

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

Refereed Journal Papers

1. Luis E. C. Rocha, [Naoki Masuda](#)
Individual-based approach to epidemic processes on arbitrary dynamic contact networks. *Scientific Reports*, 6, 31456 (2016).
2. Takahiro Ezaki, Yutaka Horita, Masanori Takezawa, [Naoki Masuda](#)
Reinforcement learning explains conditional cooperation and its moody cousin. *PLOS Computational Biology*, 12, e1005034 (2016).
3. Leo Speidel, Konstantin Klemm, Víctor M. Eguíluz, [Naoki Masuda](#).
Temporal interactions facilitate endemicity in the susceptible-infected-susceptible epidemic model. *New Journal of Physics*, 18, 073013 (2016).
4. Ryosuke Nishi, Taro Takaguchi, Keigo Oka, Takanori Maehara, Masashi Toyoda, Ken-ichi Kawarabayashi, [Naoki Masuda](#).
Reply trees in Twitter: data analysis and branching process models. *Social Network Analysis and Mining*, 6, 26 (2016).
5. [Naoki Masuda](#).
Accelerating coordination in temporal networks by engineering the link order. *Scientific Reports*, 6, 22105 (2016).
6. Yutaka Horita, Masanori Takezawa, Takuji Kinjo, Yo Nakawake, [Naoki Masuda](#).
Transient nature of cooperation by pay-it-forward reciprocity. *Scientific Reports*, 6, 19471 (2016).
7. Jens Malmros, [Naoki Masuda](#), Tom Britton.
Random walks on directed networks: Inference and respondent-driven sampling. *Journal of Official Statistics*, 32, 433–459 (2016).

8. Leo Speidel, Taro Takaguchi, [Naoki Masuda](#).
Community detection in directed acyclic graphs.
European Physical Journal B, 88, 203 (2015).
9. Kohei Tamura, [Naoki Masuda](#).
Win-stay lose-shift strategy in formation changes in football.
EPJ Data Science, 4, 9 (2015).
10. Nigel Franks, Jonathan Stuttard, Carolina Doran, Julian Esposito, Maximillian Master, Ana Sendova-Franks, [Naoki Masuda](#), Nicholas Britton.
How ants use quorum sensing to estimate the average quality of a fluctuating resource.
Scientific Reports, 5, 11890 (2015).
11. [Naoki Masuda](#), Thomas A. O'Shea-Wheller, Carolina Doran, Nigel R. Franks.
Computational model of collective nest selection by ants with heterogeneous acceptance thresholds.
Royal Society Open Science, 2, 140533 (2015).
12. [Naoki Masuda](#), Feng Fu.
Evolutionary models of in-group favoritism.
F1000Prime Reports, 7, 27 (2015).
13. [Naoki Masuda](#).
Opinion control in complex networks.
New Journal of Physics, 17, 033031 (2015).
14. Petter Holme, [Naoki Masuda](#).
The basic reproduction number as a predictor for epidemic outbreaks in temporal networks.
PLOS ONE, 10, e0120567 (2015).
15. Víctor M. Eguíluz, [Naoki Masuda](#), Juan Fernández-Gracia.
Bayesian decision making in human collectives with binary choices.
PLOS ONE, 10, e0121332 (2015).
16. Leo Speidel, Renaud Lambiotte, Kazuyuki Aihara, [Naoki Masuda](#).
Steady state and mean recurrence time for random walks on stochastic temporal networks.
Physical Review E, 91, 012806 (2015).
17. Yohei Nakajima, [Naoki Masuda](#).
Evolutionary dynamics in finite populations with zealots.
Journal of Mathematical Biology, 70, 465–484 (2015).
18. Takamitsu Watanabe, [Naoki Masuda](#), Fukuda Megumi, Ryota Kanai, Geraint Rees.
Energy landscape and dynamics of brain activity during human bistable perception.
Nature Communications, 5, 4765 (2014).
19. Hiroyuki Shimoji, Masato S. Abe, Kazuki Tsuji, [Naoki Masuda](#).
Global network structure of dominance hierarchy of ant workers.
Journal of the Royal Society Interface, 11, 20140599 (2014).
20. Ryosuke Nishi, [Naoki Masuda](#).
Dynamics of social balance under temporal interaction.
EPL, 107, 48003 (2014).
21. Yuni Iwamasa, [Naoki Masuda](#).
Networks maximizing the consensus time of voter models.
Physical Review E, 90, 012816 (2014).

22. Naoki Masuda.
Voter model on the two-clique graph.
Physical Review E, 90, 012802 (2014).
23. Takamitsu Watanabe, Shigeyuki Kan, Takahiko Koike, Masaya Misaki, Seiki Konishi, Satoru Miyauchi, Yasushi Miyashita, Naoki Masuda.
Network-dependent modulation of brain activity during sleep.
NeuroImage, 98, 1–10 (2014).
24. Luis E. C. Rocha, Naoki Masuda.
Random walk centrality for temporal networks.
New Journal of Physics, 16, 063023 (2014).
25. Takamitsu Watanabe, Masanori Takezawa, Yo Nakawake, Akira Kunimatsu, Hidenori Yamasue, Mitsuhiro Nakamura, Yasushi Miyashita, Naoki Masuda.
Two distinct neural mechanisms underlying indirect reciprocity.
Proceedings of the National Academy of Sciences of the United States of America, 111, 3990–3995 (2014).
26. Naoki Masuda.
Evolution via imitation among like-minded individuals.
Journal of Theoretical Biology, 349, 100–108 (2014).
27. Koji Oishi, Manuel Cebrian, Andres Abeliuk, Naoki Masuda.
Iterated crowdsourcing dilemma game.
Scientific Reports, 4, 4100 (2014).
28. Takamitsu Watanabe, Satoshi Hirose, Hiroyuki Wada, Yoshio Imai, Toru Machida, Ichiro Shirouzu, Seiki Konishi, Yasushi Miyashita, Naoki Masuda.
Energy landscapes of resting-state brain networks.
Frontiers in Neuroinformatics, 8, 12 (2014).
29. Kodai Saito, Naoki Masuda.
Two types of well followed users in the followership networks of Twitter.
PLOS ONE, 9, e84265 (2014).
30. Shoma Tanabe, Naoki Masuda.
Complex dynamics of a nonlinear voter model with contrarian agents.
Chaos, 23, 043136 (2013).
31. Naoki Masuda, Konstantin Klemm, Víctor M. Eguíluz.
Temporal networks: slowing down diffusion by long lasting interactions.
Physical Review Letters, 111, 188701 (2013).
32. Naoki Masuda.
Voter models with contrarian agents.
Physical Review E, 88, 052803 (2013).
33. Takehisa Hasegawa, Taro Takaguchi, Naoki Masuda.
Observability transitions in correlated networks.
Physical Review E, 88, 042809 (2013).
34. Makoto Hiroi, Masamichi Ohkura, Junichi Nakai, Naoki Masuda, Koichi Hashimoto, Kiichi Inoue, André Fiala, Tetsuya Tabata.
Principal component analysis of odor coding at the level of third order olfactory neurons in *Drosophila*.
Genes to Cells, 18, 1070–1081 (2013).

35. Ryosuke Nishi, [Naoki Masuda](#).
A collective opinion formation model under Bayesian updating and confirmation bias.
Physical Review E, 87, 062123 (2013).
36. Taro Takaguchi, [Naoki Masuda](#), Petter Holme.
Bursty communication patterns facilitate spreading in a threshold-based epidemic dynamics.
PLOS ONE, 8, e68629 (2013).
37. [Naoki Masuda](#), Issei Kurahashi, Hiroko Onari.
Suicide ideation of individuals in online social networks.
PLOS ONE, 8, e62262 (2013).
38. Masayoshi Ito, [Naoki Masuda](#), Kazunori Shinomiya, Keita Endo, Kei Ito.
Systematic analysis of neural projections reveals clonal composition of the *Drosophila* brain.
Current Biology, 23, 644–655 (2013).
39. [Naoki Masuda](#), Petter Holme.
Predicting and controlling infectious disease epidemics using temporal networks.
F1000Prime Reports, 5, 6 (2013).
40. Shun-ichi Amari, Hiroyasu Ando, Taro Toyozumi, [Naoki Masuda](#).
State concentration exponent as a measure of quickness in Kauffman-type networks.
Physical Review E, 87, 022814 (2013).
41. Takamitsu Watanabe, Satoshi Hirose, Hiroyuki Wada, Yoshio Imai, Toru Machida, Ichiro Shirouzu, Seiki Konishi, Yasushi Miyashita, [Naoki Masuda](#).
A pairwise maximum entropy model accurately describes resting-state human brain networks.
Nature Communications, 4, 1370 (2013).
42. Ryo Fujie, Kazuyuki Aihara, [Naoki Masuda](#).
A model of competition among more than two languages.
Journal of Statistical Physics, 151, 289–303 (2013).
43. Shoma Tanabe, Hideyuki Suzuki, [Naoki Masuda](#).
Indirect reciprocity with trinary reputations.
Journal of Theoretical Biology, 317, 338–347 (2013).
44. Mitsuhiro Nakamura, [Naoki Masuda](#).
Groupwise information sharing promotes ingroup favoritism in indirect reciprocity.
BMC Evolutionary Biology, 12, 213 (2012).
45. Shun Motegi, [Naoki Masuda](#).
A network-based dynamical ranking system for competitive sports.
Scientific Reports, 2, 904 (2012).
46. [Naoki Masuda](#).
Evolution of cooperation driven by zealots.
Scientific Reports, 2, 646 (2012).
47. Taro Takaguchi, Nobuo Sato, Kazuo Yano, [Naoki Masuda](#).
Importance of individual events in temporal networks.
New Journal of Physics, 14, 093003 (2012).
48. [Naoki Masuda](#), Mitsuhiro Nakamura.
Coevolution of trustful buyers and cooperative sellers in the trust game.
PLOS ONE, 7(9), e44169 (2012).

49. Naoki Masuda.
Ingroup favoritism and intergroup cooperation under indirect reciprocity based on group reputation.
Journal of Theoretical Biology, 311, 8–18 (2012).
50. Taro Ueno, Naoki Masuda, Shoen Kume, Kazuhiko Kume.
Dopamine modulates the rest period length without perturbation of its power law distribution in *Drosophila melanogaster*.
PLOS ONE, 7(2), e32007 (2012).
51. Hiroshi Kori, Yoji Kawamura, Naoki Masuda.
Structure of cell networks critically determines oscillation regularity.
Journal of Theoretical Biology, 297, 61–72 (2012).
52. Shoma Tanabe, Naoki Masuda.
Evolution of cooperation facilitated by reinforcement learning with adaptive aspiration levels.
Journal of Theoretical Biology, 293, 151–160 (2012).
53. Naoki Masuda.
Clustering in large networks does not promote upstream reciprocity.
PLOS ONE, 6(10), e25190 (2011).
54. Taro Takaguchi, Naoki Masuda.
Voter model with non-Poissonian inter-event intervals.
Physical Review E, 84, 036115 (2011).
55. Takehisa Hasegawa, Naoki Masuda.
Robustness of networks against propagating attacks under vaccination strategies.
Journal of Statistical Mechanics, P09014 (2011).
56. Taro Takaguchi, Mitsuhiro Nakamura, Nobuo Sato, Kazuo Yano, Naoki Masuda.
Predictability of conversation partners.
Physical Review X, 1, 011008 (2011).
57. Mitsuhiro Nakamura, Naoki Masuda.
Indirect reciprocity under incomplete observation.
PLOS Computational Biology, 7(7), e1002113 (2011).
58. C. -K. Yun, N. Masuda, B. Kahng.
Diversity and critical behavior in prisoner’s dilemma game.
Physical Review E, 83, 057102 (2011).
59. Naoki Masuda, Mitsuhiro Nakamura.
Numerical analysis of a reinforcement learning model with the dynamic aspiration level in the iterated Prisoner’s Dilemma.
Journal of Theoretical Biology, 278, 55–62 (2011).
60. Takehisa Hasegawa, Norio Konno, Naoki Masuda.
Numerical study of a three-state host-parasite system on the square lattice.
Physical Review E, 83, 046102 (2011).
61. Yuri Ogiso, Kazuhide Tsuneizumi, Naoki Masuda, Makoto Sato, Tetsuya Tabata.
Robustness of the Dpp morphogen activity gradient depends on negative feedback regulation by the inhibitory Smad, Dad.
Development Growth and Differentiation, 53, 668–678 (2011).
62. Naoki Masuda, S. Redner.
Can partisan voting lead to truth?
Journal of Statistical Mechanics, L02002 (2011).

63. Naoki Masuda, Hiroshi Kori.
Dynamics-based centrality for directed networks.
Physical Review E, 82, 056107 (2010).
64. Takamitsu Watanabe, Naoki Masuda.
Enhancing the spectral gap of networks by node removal.
Physical Review E, 82, 046102 (2010).
65. Jun Ohkubo, Kazushi Yoshida, Yuichi Iino, Naoki Masuda.
Long-tail behavior in locomotion of *Caenorhabditis elegans*.
Journal of Theoretical Biology, 267, 213–222 (2010).
66. Naoki Masuda.
Effects of diffusion rates on epidemic spreads in metapopulation networks.
New Journal of Physics, 12, 093009 (2010).
67. Naoki Masuda, Yoji Kawamura, Hiroshi Kori.
Collective fluctuations in networks of noisy components.
New Journal of Physics, 12, 093007 (2010).
68. Ralf Töenjes, Naoki Masuda, Hiroshi Kori.
Synchronization transition of identical phase oscillators in a directed small-world network.
Chaos, 20, 033108 (2010).
69. Naoki Masuda, N. Gibert, S. Redner.
Heterogeneous voter models.
Physical Review E, 82, 010103(R) (2010).
70. Akio Iwagami, Naoki Masuda.
Upstream reciprocity in heterogeneous networks.
Journal of Theoretical Biology, 265, 297–305 (2010).
71. Yusuke Ide, Norio Konno, Naoki Masuda.
Statistical properties of a generalized threshold network model.
Methodology & Computing in Applied Probability, 12, 361–377 (2010).
72. Naoki Masuda.
Immunization of networks with community structure.
New Journal of Physics, 11, 123018 (2009).
73. Naoki Masuda, Yoji Kawamura, Hiroshi Kori.
Impact of hierarchical modular structure on ranking of individual nodes in directed networks.
New Journal of Physics, 11, 113002 (2009).
74. Naoki Masuda, Yoji Kawamura, Hiroshi Kori.
Analysis of relative influence of nodes in directed networks.
Physical Review E, 80, 046114 (2009).
75. Naoki Masuda, Hisashi Ohtsuki.
A theoretical analysis of temporal difference learning in the iterated Prisoner's Dilemma game.
Bulletin of Mathematical Biology, 71, 1818–1850 (2009).
76. Naoki Masuda.
Selective population rate coding: a possible computational role of gamma oscillations in selective attention.
Neural Computation, 21, 3335–3362 (2009).

77. Yuko K. Takahashi, Hiroshi Kori, Naoki Masuda.
Self-organization of feedforward structure and entrainment in excitatory neural networks with spike-timing-dependent plasticity.
Physical Review E, 79, 051904 (2009).
78. Naoki Masuda, Hisashi Ohtsuki.
Evolutionary dynamics and fixation probabilities in directed networks.
New Journal of Physics, 11, 033012 (2009).
79. Naoki Masuda.
Directionality of contact networks suppresses selection pressure in evolutionary dynamics.
Journal of Theoretical Biology, 258, 323–334 (2009).
80. N. Masuda, J. S. Kim, B. Kahng.
Priority queues with bursty arrivals of incoming tasks.
Physical Review E, 79, 036106 (2009).
81. Taro Ueno, Naoki Masuda.
Controlling nosocomial infection based on structure of hospital social networks.
Journal of Theoretical Biology, 254, 655–666 (2008).
82. Naoki Masuda.
Oscillatory dynamics in evolutionary games are suppressed by heterogeneous adaptation rates of players.
Journal of Theoretical Biology, 251, 181–189 (2008).
83. Naoki Masuda, Shun-ichi Amari.
A computational study of synaptic mechanisms of partial memory transfer in cerebellar vestibulo-ocular-reflex learning.
Journal of Computational Neuroscience, 24, 137–156 (2008).
84. Nobuaki Sugimine, Naoki Masuda, Norio Konno, Kazuyuki Aihara.
On global and local critical points of extended contact process on homogeneous trees.
Mathematical Biosciences, 213, 13–17 (2008).
85. Naoki Masuda, Brent Doiron.
Gamma oscillations of spiking neural populations enhance signal discrimination.
PLOS Computational Biology, 3(11), e236, 2348–2355 (2007).
86. Naoki Masuda.
Participation costs dismiss the advantage of heterogeneous networks in evolution of cooperation.
Proceedings of the Royal Society B: Biological Sciences, 274, 1815–1821 (2007).
87. Naoki Masuda, Hiroshi Kori.
Formation of feedforward networks and frequency synchrony by spike-timing-dependent plasticity.
Journal of Computational Neuroscience, 22, 327–345 (2007).
88. Naoki Masuda, Masato Okada, Kazuyuki Aihara.
Filtering of spatial bias and noise inputs by spatially structured neural networks.
Neural Computation, 19, 1854–1870 (2007).
89. Naoki Masuda, Kazuyuki Aihara.
Dual coding hypotheses for neural information representation.
Mathematical Biosciences, 207, 312–321 (2007).

90. Naoki Masuda, Hisashi Ohtsuki.
Tag-based indirect reciprocity by incomplete social information.
Proceedings of the Royal Society B: Biological Sciences, 274, 689–695 (2007).
91. Yong-Yeol Ahn, Hawoong Jeong, Naoki Masuda, Jae Dong Noh.
Epidemic dynamics of two species of interacting particles on scale-free networks.
Physical Review E, 74, 066113 (2006).
92. Naoki Masuda, Norio Konno.
Networks with dispersed degrees save stable coexistence of species in cyclic competition.
Physical Review E, 74, 066102 (2006).
93. Yuichi Katori, Naoki Masuda, Kazuyuki Aihara.
Dynamic switching of optimal neural codes in networks with gap junctions.
Neural Networks, 19, 1463–1466 (2006).
94. Naoki Masuda, Norio Konno.
Multi-state epidemic processes on complex networks.
Journal of Theoretical Biology, 243, 64–75 (2006).
95. Kazumichi Ohtsuka, Norio Konno, Naoki Masuda, Kazuyuki Aihara.
Phase diagrams and correlation inequalities of a three-state stochastic epidemic model on the square lattice.
International Journal of Bifurcation and Chaos, 16, 3687–3693 (2006).
96. Naoki Masuda, Norio Konno.
VIP-club phenomenon: emergence of elites and masterminds in social networks.
Social Networks, 28, 297–309 (2006).
97. 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).
98. Naoki Masuda.
Simultaneous rate-synchrony codes in populations of spiking neurons.
Neural Computation, 18, 45–59 (2006).
99. N. Masuda, K.-I. Goh, B. Kahng.
Extremal dynamics on complex networks: Analytic solutions.
Physical Review E, 72, 066106 (2005).
100. 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).
101. 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).
102. Naoki Masuda, Hiroyoshi Miwa, Norio Konno.
Geographical threshold graphs with small-world and scale-free properties.
Physical Review E, 71, 036108 (2005).
103. 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).

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

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

Books

1. Naoki Masuda, Renaud Lambiotte.
A Guide to Temporal Networks.
World Scientific, Singapore (2016).

Book Chapters

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.

Conference Presentations

Summary: 76 presentations in international conferences including poster presentations.
The following is the list of presentations in conferences with the acceptance ratio being less than 50%.

1. 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). [poster. Acceptance ratio = 36%]
2. 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). [poster. Acceptance ratio = 25%]
In: Advances in Neural Information Processing Systems (Eds. Y. Weiss, B. Scholkopf, J. Platt), 18, 859-866 (2006).

Miscellaneous

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

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

<http://www.sesprize.com/>

Hobbies: Piano (Beethoven, Chopin etc.), salsa (dance), jogging (half marathon: 1h43m), and swimming.