CURRICULUM VITAE
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EDUCATION

Degree	Institute	Year
Ph.D.	Department of Multidisciplinary Studies, University of Tokyo	1997
M.S.	Department of Multidisciplinary Studies, University of Tokyo	1992
B.A.	Department of Natural and Artificial Systems, University of Tokyo	1990

RESEARCH EXPERIENCE

Position	Institute	Period
Team Leader	RIKEN Center for Brain Science *Laboratory for Integrated Theoretical Neuroscience*	04/2018–present
Senior Team Leader	RIKEN Brain Science Institute *Laboratory for Integrated Theoretical Neuroscience*	04/2014–03/2018
Team Leader	RIKEN Brain Science Institute *Laboratory for Integrated Theoretical Neuroscience*	01/2006–03/2014
Staff Scientist	RIKEN Brain Science Institute *Laboratory for Mathematical Neuroscience*	04/2005–12/2005
Research Scientist	RIKEN Brain Science Institute *Laboratory for Mathematical Neuroscience*	04/2000–03/2005
Special Postdoctoral Researcher	RIKEN Brain Science Institute *Laboratory for Information Synthesis*	04/1997–03/2000
Visiting Graduate	University of California, San Diego *Department of Cognitive Science*	12/1993–04/1996

TEACHING EXPERIENCE (Selected)

Position	Institute	Period
Adjunct Professor	Kyoto University	06/2015–present

	Graduate School of Informatics, Department of Intelligence Science and Technology	
Visiting Lecturer	Tokyo Medical and Dental University	04/2013–03/2015
	Graduate School of Medical and Dental Sciences	
Adjunct Professor	Tokyo Institute of Technology	10/2007–03/2012
	Interdisciplinary Graduate School of Science and Engineering, Department of Computational Intelligence and Systems Science	
Visiting Lecturer (Professor status)	Waseda University	09/2007–07/2009
	Department of Life Science and Medical Bioscience	
Visiting Associate Professor	Japan Advanced Institute of Science and Technology	10/2000–03/2003
	Department of Knowledge System Science, School of Knowledge Science	
Visiting Lecturer	Meiji University	04/1998–03/2001
	Graduate School of Science and Technology	
Teaching Assistant	University of Tokyo	09/1992–09/1993
	Department of Natural and Artificial Systems	

AWARDS and FELLOWSHIPS (Selected)

Award/Fellowship	*Organization*	*Year/Period*
JSAI SIG Research Award 2017	Japanese Society for Artificial Intelligence	2017
Young Investigator Award	Japan Neuroscience Society	2004
Special Postdoctoral Fellowship	RIKEN	1997–2000
JSPS Research Fellowship	Japan Society for the Promotion of Science for Young Scientists	1996–1997
Rotary International Ambassadorial Scholarship	Rotary One Foundation	1994–1995
Study Abroad Fellowship	University of Tokyo	1993–1994

SERVICES (Selected)

External	*Year/Period*
The Japanese Society for Artificial Intelligence, Council member	2017/04–present
Human Imaging Study Group (in Japan), Committee member	2017/04–present
RLDM2017 (The University of Michigan, Ann Arbor, Michigan, USA) Program (Reviewing) Committee member	2017
A section writer for the report "Panoramic View of the Systems and Information Science and Technology Field (2017)" by Center for Research and Development Strategy Japan Science and Technology Agency	2016
A guest talk and discussion on artificial intelligence and a brain science for a meeting of Ministry of Internal Affairs and Communications	2016/04

The 40th Annual Meeting of the Japan Neuroscience Society, Program Committee member	2016–2017
RLDM2015 (The University of Alberta., Edmonton, Alberta, Canada), Program (Reviewing) Committee member	2015
Mechanism of Brain and Mind Workshop, Deputy Chair	2015–present
Mechanism of Brain and Mind Workshop, Planning Committee	2014–2015
The 21st International Conference on Neural Information Processing (Kuching, Sarawak, Malaysia) Program Committee	2014
Shonan meeting ("Deep Learning: Theory, Algorithms, and Applications"), Neurobiology section chair	2014
RLDM2013 (the 1st Multidisciplinary Conference on Reinforcement Learning and Decision Making; Princetion Univ., New Jersey, USA), Program (Reviewing) Committee member	2013
The 20th International Conference on Neural Information Processing (Daegu, Korea) Program member	2013
International workshop "Modeling Neural Activity: Statistics, Dynamical Systems, and Networks" (Hawaii, USA)　Co-organizer	2013/06
Board Member of the Japanese Neural Network Society	2013–2017
1st-stage Referee for Grant-in-Aids for Scientific Research and for Young Scientisists in the field, Basic / Social brain science	2012–2013, 2013–2014
Symposium Organizer ("Functional architecture of collective neural activities and their networks: new advances in experimental and theoretical approaches"), Japanese Neuroscience Society Meeting	2012
Fellowship Review Committee Member for the Human Frontier Science Program	2011–2012
Symposium Organizer ("New perspectives on value-based decision making"), Japanese Neuroscience Society Meeting	2010
1st-stage Referee for doctoral/postdoctoral fellowships by Japan Society for The Promotion Science (JSPS)	2010–2011
1st-stage Referee for Grant-in-Aid for Scientific Research on Innovative Areas (Research in a Proposed Research Project)	2009
Planning Group Member (Medical/Neuroscience Section), the 3rd Japanese-French Frontiers of Science Symposium	2009
Co-organizer of the International Workshop "Open Problems in Neuroscience of Decision Making," OIST, Okinawa	2008
Editor for *Neural Networks*	2003–2005, 2008–present
Editor for *Biological Cybernetics*	2007–2017
Editor for *Computational Intelligence and Neuroscience*	2006–present
Committee member of the Neurocomputing Technical Group, Information and Systems Society, The Institute of Electronics, Information, and Communication Engineers	2002–2008
Assistant Secretary of the Neurocomputing Technical Group, Information and Systems Society, The Institute of Electronics, Information, and	2000–2002

Communication Engineers

57th RIKEN evening seminar lecture	12/2018
Organizing a summer school (domestic in Japan) on artificial intelligence and brain science at RIKEN BSI, under a grant group organization ("Correspondence and Fusion of Artificial Intelligence and Brain Science")	08/2017
Preparation Member for RIKEN BSI－Omron Collaboration Center	12/2016‑present
3rd BSI panel talk session in 20th anniversary memorial event (public event)	11/2016
Brain Science Café talk (public lecture on a RIKEN open day)	04/2016
Member for BSI Future Strategic Planning Discussion Group	05/2015‑02/2016
Organizing mini-symposium series on Cognition, Decision-making and Social function (2014/10, 2015/01, 2015/04, 2016/10)	2014–present
Organizing mini-symposium series on Computations, Brains and Machines (2014/07, 2015/07, 2016/03, 2016/07)	2014–present
Brain Science Training Program lecture	2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019
Referee Member for "Special Postdoctoral Researchers" fellowships	2007
BSI International Summer School lecture (BSI lecture)	2006, 2012
BSI Tutorial Series lecture	2006, 2007, 2008
BSI Retreat Organizing Committee	2001, 2010, 2011
BSI International Summer School, Organizing Committee Member	2000

JOURNAL PUBLICATIONS

Fukuda H, Ma N, Suzuki S, Harasawa N, Ueno K, Gardner JL, Ichinohe N, Haruno M, Cheng K, **Nakahara H.** (2019) Computing Social Value Conversion in the Human Brain. *Journal of Neuroscience*. 39 (26): 5153-5172.

Kass RE, Amari S, …., **Nakahara H**, …., Kramer MA. [25 authors in total] (2018) Computational neuroscience: Mathematical and statistical perspectives. *Annual Review of Statistics and Its Application*. 5: 183-214.

Terada S, Sakurai Y, **Nakahara H**, Fujisawa S. (2017) Temporal and rate coding for discrete event sequences in the hippocampus. *Neuron*. 94(6): 1248-1262.

Kaveri S, **Nakahara H**. (2014) Dual reward prediction components yield pavlovian sign- and goal-tracking. *Plos One*. 9(10): e108142.

Nakahara H. (2014) Multiplexing signals in reinforcement learning with internal models and dopamine. *Current Opinion in Neurobiology*. 25: 123-129.

Kim CH, Tsujino H, **Nakahara H**. (2013) Reinforcement learning system based on heuristics free state focusing. *Advanced Robotics*. 27(10): 749-758.

Nakamura K, Santos GS, Matsuzaki R, **Nakahara H**. (2012) Differential reward coding in the subdivisions of the primate caudate during an oculomotor task. *The Journal of Neuroscience*. 32(45): 15963–15982.

Nakahara H, Hikosaka O. (2012) Learning to represent reward structure: a key to adapting to complex environments. *Neuroscience Research*. 74(3-4): 177–183.

Suzuki S, Harasawa H, Ueno K, Gardner JL, Ichinohe N, Haruno M, Cheng K, **Nakahara H**. (2012) Learning to simulate others' decisions. *Neuron*. 74: 1125–1137.

Santos GS, Nagasaka Y, Fujii N, **Nakahara H**. (2012) Encoding of social state information by neuronal activities in the macaque caudate nucleus. *Social Neuroscience*. 7(1): 42–58.

Yu S, Yang H, **Nakahara H**, Santos GS, Nikolić D, Plenz D. (2011) Higher-order interactions characterized in cortical activity. *The Journal of Neuroscience*. 31(48): 17514–17526.

Nakahara H, Kaveri S. (2010) Internal-time temporal difference model for neural value-based decision making. *Neural Computation*. 22(12): 3062–3106.

Bromberg-Martin ES, Matsumoto M, **Nakahara H**, Hikosaka O. (2010) Multiple timescales of memory in lateral habenula and dopamine neurons. *Neuron*. 67(3): 499–510.

Santos GS, Gireesh ED, Plenz D, **Nakahara H**. (2010) Hierarchical interaction structure of neural activities in cortical slice cultures. *The Journal of Neuroscience*. 30(26): 8720–8733.

Bissmark F, **Nakahara H**, Doya K, Hikosaka O. (2008) Combining modalities with different latencies for optimal motor control. *Journal of Cognitive Neuroscience*. 20(11): 1966–1979.

Plessy C, Fagiolini M, Wagatsuma A, Harasawa N, Kuji T, Asaka-Obam A, Kanzaki Y, Fujishima S, Waki K, **Nakahara H**, Hensch TK, Carninci P. (2008) A resource for transcriptomic analysis in the mouse brain. *PLoS ONE*. 3(8): e3012.

Takenaka K, Nagasaka Y, Hihara S, **Nakahara H**, Iriki A, Kuniyoshi Y, Fujii N. (2007) Linear discrimination analysis of monkey behavior in an alternative free choice task. *Journal of Robotics and Mechatronics*. 19(4): 416–422.

Nakahara H, Nakamura K, Hikosaka O. (2006) Extended LATER model can account for trial-by-trial variability of both pre- and post-processes. *Neural Networks*. 19(8): 1027–1046.

Nakahara H, Morita K, Wurtz RH, Optican LM. (2006) Saccade-related spread of activity across superior colliculus may arise from asymmetry of internal connections. *Journal of Neurophysiology*. 96(2): 765–774.

Amari S, **Nakahara H**. (2006) Correlation and independence in the neural code. *Neural Computation*. 18(6): 1259–1267.

Hikosaka O, Nakamura K, **Nakahara H**. (2006) Basal ganglia orient eyes to reward. *Journal of Neurophysiology*. 95(2): 567–584.

Nakahara H, Amari S, Richmond BJ. (2006) A comparison of descriptive models of a single spike train by information-geometric measure. *Neural Computation*. 18(3): 545–568.

Nelson B, Nishimura S, Kanuka H, KuranagaE, Inoue M, Hori G, **Nakahara H**, Miura M. (2005) Isolation of gene sets affected specifically by polyglutamine expression: Implication of the TOR signaling pathway in neurodegeneration. *Cell Death and Differentiation*. 12(8): 1115–1123.

Amari S, **Nakahara H**. (2005) Difficulty of singularity in population coding. *Neural Computation*. 17(4): 839–858.

Inoue M, Nishimura S, Hori G, **Nakahara H**, Saito M, Yoshihara Y, Amari S. (2004) Improved parameter estimation for variance-stabilizing transformation of gene-expression microarray data. *Journal of Bioinformatics and Computational Biology*. 2(4): 669–679.

Wu S, Amari S, **Nakahara H**. (2004) Information processing in a neuron ensemble with the multiplicative correlation structure. *Neural Networks*. 17(2): 205–214.

Nakahara H, Itoh H, Kawagoe R, Takikawa Y, Hikosaka O. (2004) Dopamine neurons can represent context-dependent prediction error. *Neuron*. 41(2): 269–280.

Kasai H, Matsuzaki M, Noguchi J, Yasumatsu N, **Nakahara H**. (2003) Structure-stability-function relationships of dendritic spines. *Trends in Neurosciences*. 26(7): 360–368.

Nakahara H, Nishimura S, Inoue M, Hori G, Amari S. (2003) Gene interaction in DNA microarray data is decomposed by information geometric measure. *Bioinformatics*. 19(9): 1124–1131.

Itoh H, **Nakahara H**, Hikosaka O, Kawagoe R, Takikawa Y, Aihara K. (2003) Correlation of primate caudate neural activity and saccade parameters in reward-oriented behavior. *Journal of Neurophysiology*. 89(4): 1774–1783.

Amari S, **Nakahara H**, Wu S, Sakai Y. (2003) Synchronous firing and higher-order interactions in neuron pool. *Neural Computation*. 15(1): 127–142.

Nakahara H, Amari S. (2002) Information geometric measure for neural spikes. *Neural Computation*. 14(10): 2269–2316.

Wu S, Amari S, **Nakahara H**. (2002a) Asymptotic behaviors of population codes. *Neurocomputing*. 44-46: 697–702.

Wu S, Amari S, **Nakahara H**. (2002b) Population coding and decoding in a neural field: a computational study. *Neural Computation*. 14(5): 999–1026.

Takikawa Y, Kawagoe R, Ito H, **Nakahara H**, Hikosaka O. (2002) Modulation of saccadic eye movements by predicted reward outcome. *Experimental Brain Research*. 142(2): 284–291.

Nakahara H, Amari S, Hikosaka O. (2002) Self-organization in the basal ganglia with modulation of reinforcement signals. *Neural Computation*. 14(4): 819–844.

Nakahara H, Amari S. (2002) Attention modulation of neural tuning through peak and base rate in correlated firing. *Neural Networks*. 15(1): 41-55.

Hikosaka O, Nakamura K, Sakai K, **Nakahara H**. (2002) Central mechanisms of motor skill learning. *Current Opinion in Neurobiology*. 12(2): 217–222.

Nakahara H, Wu S, Amari S. (2001) Attention modulation of neural tuning through peak and base rate. *Neural Computation*. 13(9): 2031–2047.

Wu S, **Nakahara H**, Amari S. (2001) Population coding with correlation and an unfaithful model. *Neural Computation*. 13(4): 775–797.

Nakahara H, Doya K, Hikosaka O. (2001) Parallel cortico-basal ganglia mechanisms for acquisition and execution of visuomotor sequences - a computational approach. *Journal of Cognitive Neuroscience*. 13(5): 626–647.

Hikosaka O, **Nakahara H**, Rand MK, Sakai K, Lu X, Nakamura K, Miyachi S, Doya K. (1999) Parallel neural networks for learning sequential procedures. *Trends in Neurosciences*. 22(10): 464–471.

Nakahara H, Doya K. (1998) Near-saddle-node bifurcation behavior as dynamics in working memory for goal-directed behavior. *Neural Computation*. 10(1): 113–132.

BOOK CHAPTERS

Sugiyama M, Tsuda K, **Nakahara H.**(2018) Transductive Boltzmann Machines. *arXiv.org*. arXiv:1805.07938.

Sugiyama M, **Nakahara H**, Tsuda K.(2018) Legendre Decomposition for Tensors. *The 32nd Annual Conference on Neural Information Processing System NIPS 2018*. 8811-8821.

Dayan P, **Nakahara H**. (2018) Models and Methods for Reinforcement Learning. *The Stevens' Handbook of Experimental Psychology*.Volume 5. 507-546.

Sugiyama M, **Nakahara H**, Tsuda K. (2017) Tensor balancing on statistical manifold. *ICML2017* . 3270-3279.

Bissmarck F, **Nakahara H**, Doya K, Hikosaka O. (2005) Responding to modalities with different latencies. In: Saul K, Weiss Y, Bottou L (Ed.), *Advances in Neural Information Processing*. 17: 169–176. Cambridge, MA: MIT Press.

Saido T, **Nakahara H**. (2003) Proteolytic degradation of Aβ by neprilysin and other peptidases. In T Saido (Ed.), *Aβ Metabolism and Alzheimer's Disease*. 61–80. Georgetown, TX: Landes Bioscience.

Nakahara H, Amari S. (2002) Information-geometric decomposition in spike analysis. In TG Dietterich, S Becker, Z Ghahramani (Eds.), *Advances in Neural Information Processing Systems*. 14: 253–260. Cambridge, MA: MIT Press.

Wu S, **Nakahara H**, Murata N, Amari S. (2000) Population decoding based on an unfaithful model. In SA Solla, TK Leen, and K Mueller (Eds.), *Advances in Neural Information Processing Systems*. 12: 192–198. Cambridge, MA: MIT Press.

Hikosaka O, Sakai K, **Nakahara H**, Lu X, Miyachi K, Nakamura K, Rand MK. (2000) Neural mechanisms for learning of sequential procedures. In MS Gazzaniga (Ed.), *The New Cognitive Neurosciences*. 553–572. Cambridge, UK: MIT Press.

Ikeda S, Amari S, **Nakahara H**. (1999) Convergence of the wake-sleep algorithm. In MS Kearns, SA Solla, DA Cohn (Eds.), *Advances in Neural Information Processing Systems*. 11: 239–245. Cambridge, MA: MIT Press.

Nakahara H, Doya, K. (1996) Dynamics of attention as near saddle-node bifurcation behavior. In DS Touretzky, MC Mozer, ME Hasselmo (Eds.), *Advances in Neural Information Processing Systems*. 8: 38–44. Cambridge, MA: MIT Press.

[*Japanese publications, including articles for periodicals and the general public*]

Nakahara H. (2017) Neural Computations Underlying Social Intelligence: Towards Realization of the Artificial Intelligence. *Journal of Japanese Society for Artificial Intelligence*. No. 32(6): pp.863-872.

Nakahara H. (2016) Neural computations for mind, emotion and social intelligence. *Human Mind*. Special issue 2016: 146-150. Tokyo, Japan:Hippon Hyron Sha co., Ltd.

Nakahara H. (2015) Reading others' minds: pursuit of social brain functions from computational perspective. *Seitai no Kagaku.* No. 66(1): 48-52. Tokyo, Japan: The Ichiro Kanehara Foundation for the Promotion of Medical Sciences and Medical Care.

Nakahara H. (2014) Perspective for neurobiology of others' minds: computational social neuroscience. *Seitai no Kagaku.* No. 65(5): 420-421. Tokyo, Japan: The Ichiro Kanehara Foundation for the Promotion of Medical Sciences and Medical Care.

Nakahara H. (2014) Computational theory of brain function: reinforcement learning and value-based decision-making. *Clinical Neuroscience.* No.32(1): 20-24. Tokyo, Japan: CHUGAI-IGAKUSHA.

Nakahara H. (2013) Social decision-making and theoretical neuroscience: prospects for human sciences and computational psychiatry. *Seitai no Kagaku.* No.64(4): 322–328. Tokyo, Japan: The Ichiro Kanehara Foundation for the Promotion of Medical Sciences and Medical Care.

Nakahara H. (2013) Reward structural learning by dopamine activity. *Brain & Nerve*. No.65(8): 973–982. Tokyo, Japan: Igaku-Shoin.

Nakahara H. (2011) Love as neural computation: from the perspective of value-based decision making. *Science Journal KAGAKU.* 81(1): 58–63. Tokyo, Japan: Iwanami Shoten.

Nakahara H. (2010) Computations and mathematics on neural networks. In S Kanba and T Kato (Eds.), *Brain Science Essentials: for the Biological Understanding of Mental Disease — Lumiere for Clinicians on Mental Disease as Medical Specialist vol 16*. 303–304. Tokyo, Japan: Nakayama Shoten.

Nakahara H. (2009) Population coding. In H Hironaka et al (Eds.), *Encyclopedia of Modern Mathematical Sciences (2nd Edition)*. 313–315. Tokyo, Japan: Maruzen Publishing.

Nakahara H. (2009) Decision making and its learning theory (Chapter 5). In S Amari, T Fukai (Eds.), *Computational Theories of the Brain (Brain Science series vol 1)*. 159–221. Tokyo, Japan: University of Tokyo Press.

Nakahara H. (2008) Computational models of the basal ganglia: reinforcement learning for reward prediction and acquisition. *Japanese Journal of Molecular Psychiatry*. 8(4): 307–313. Tokyo, Japan: Sentan Igaku-sya.

Nakahara H. (2007) Pleasure forms the brain (Chapter 11). In RIKEN BSI (Ed.), *Frontiers of Neuroscience Research (vol 2)*. 233–297. Tokyo, Japan: Kodansya.

Nakahara H. (2006) Inferring brain networks and gene networks. *Brain 21*. 9(3): 11–20. Kyoto, Japan: Kinpodo.

Nakahara H. (2005) Function of neurons and neural networks. In The Japanese Society for Artificial Intelligence (Ed.), *Encyclopedia of Artificial Intelligence*. 153–155. Tokyo, Japan: Kyoritsu Shuppan.

Nakahara H. (2005) Development and neural plasticity. In The Japanese Society for Artificial Intelligence (Ed.), ***Encyclopedia of Artificial Intelligence***. 164–165. Tokyo, Japan: Kyoritsu Shuppan.

Nakahara H. (2005) Computational models of the basal ganglia (Chapter 11). In K Doya, H Gomi, Sakaguchi, and M Kawato (Eds.), ***Computational Mechanisms of the Brain***. 140–161. Tokyo, Japan: Asakura Publishing.

Nakahara H. (2005) Dopamine activity for the appetitive system, as reinforcement learning signals. ***Seitai no Kagaku***. 56(1): 17–25. Tokyo, Japan: IGAKU-SHOIN Ltd.

Nakahara H. (2005) Population coding, spike analysis and information geometry. ***Mathematical Sciences***. 3(501): 32–38. Tokyo, Japan: Saiensu-sya.

Nakahara H, Hori G, Inoue M, & Nishimura S. (2002) Mathematical neuroscience and its relationship to gene data analysis. In S Amari (Ed.), ***Progress in Neural Information and Mathematical Sciences (Mathematical Sciences separate volume)***. 133–143. Tokyo, Japan: Saiensu-sya.

Nakahara H, Doya K, Hikosaka O. (2000) Computational theories of cortico-basal ganglia systems. ***Brain 21***. 3(3): 29–34. Kyoto, Japan: Kinpodo.

Nakahara H, Doya K, Hikosaka O. (2000) Brain global networks for learning motor sequence control. ***Brain Science***. 22(10): 101–111. Tokyo, Japan: Seiwa Shoten.

INVITED LECTURES /TALKS /SYMPOSIA (Selected)

Date	*Location*
05/2019	NII Shonan Meeting "Language as Goal-Directed Sequential Behavior: Computational Theories, Brain Mechanisms, Evolutionary Roots," Kanagawa, Japan.
05/2019	The 6th Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain Science, Tokyo, Japan (*in Japanese*).
11/2018	The 5th Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain Science, Osaka, Japan (*in Japanese*).
10/2018	KAIST Bio-IT Healthcare Initiative II Half-day workshop on brain-inspired AI: Neural Basis of Intelligence, Daejeon, Korea.
10/2018	18th China-Japan-Korea Joint Workshop on Neurobiology and Neuroinformatics (NBNI 2018), Jeju Island, Korea.
09/2018	Japanese Human Brain Imaging Meeting 2018, Tokyo, Japan (*in Japanese*).
05/2018	Joint Research Area Meeting of Scientific Research on Innovative Areas: "Adaptive Circuit Shift" and "Artificial Intelligence and Brain Science", Naha, Japan (*in Japanese*).
10/2017	The 44th Naito Conference "Sciences of Decision Making: Motivation, Prediction and Neural plasticity", Sapporo, Japan.
09/2017	The 11th International Conference on Cognitive Science (ICCS 2017), Taipei, Taiwan.
08/2017	Summer School for Artificial Intelligence and Brain Science, RIKEN BSI, Wako, Japan (*in Japanese*).
07/2017	AI-Brain Workshop, Shanghai, China.
06/2017	Workshop "Deep Learning: Theory, Algorithms, and Applications", Berlin, Germany.

05/2017	The Seventh International Symposium on "Biology of Decision Making" (SBDM), Bordeaux, France.
05/2017	Gatsby-Kaken Joint Workshop on AI and Neuroscience, London, Britain.
12/2016	Workshop "Arrowhead 10 years on: what have we learned and what is there still to learn about the neural bases of decision-making?" Sydney, Australia.
11/2016	Kyoto University, Graduate School of Medicine and Faculty of Medicine, Kyoto, Japan *(in Japanese)*.
06/2016	Workshop "Modeling Neural Activity: Statistics, Dynamical Systems, and Networks (MONA-2)", Hawaii, USA.
11/2015	University of Oxford, Department of Experimental Psychology, Oxford, UK.
11/2015	University College London, Max Planck UCL Centre for Computational Psychiatry and Ageing Research, London, UK.
10/2015	SAMSI-Boston Univerisity Workshop "Challenges in Linking Statistical and Mathematical Neuroscience 2015", Boston, USA.
07/2015	Meeting by a chapter of the System and Information division, the Society of Instrument and Control Engineers (SICE), Tokyo, Japan *(in Japanese)*.
05/2015	Kyoto University, Graduate School of Medicine and Faculty of Medicine, Kyoto, Japan *(in Japanese)*.
12/2014	The Joint Symposium by "Prediction and Decision Making" & "The Science of the Mental Time," Grant-in Aid for Scientific Research on Innovative Areas, Tokyo, Japan *(in Japanese)*.
11/2014	Autumn School for Computational Neuroscience (ASCONE2014), Nagano, Japan *(in Japanese)*.
09/2014	Workshop "One, two, and many brains", Lisbon, Portugal.
07/2014	OIST Computational Neuroscience Course (OCNC2014), Okinawa, Japan.
05/2014	NII Shonan Meeting "Deep Learning: Theory, Algorithms, and Applications," Kanagawa, Japan.
05/2014	National Yang-Ming University, Institute of Neuroscience, Taipei, Taiwan.
04/2014	National Taiwan University, Department of Economics, Taipei, Taiwan.
01/2014	Winter workshop "Mechanisms of Brain and Mind," Hokkaido, Japan.
10/2013	International Symposium "Prediction and Decision Making, " Kyoto, Japan.
06/2013	Workshop "Modeling Neural Activity: Statistics, Dynamical Systems, and Networks," Hawaii, USA.
06/2013	Tokyo Study Meeting on Clinical Brain Imaging, Tokyo, Japan.
05/2013	The University of Tokyo, Graduate School of Economics, Tokyo, Japan.
04/2013	BSI Brain Science Training Program, RIKEN Brain Science Institute, Wako, Japan.
03/2013	Workshop "Reward and Decision Making on Risk and Aversion" (in conjunction with Joint Tamagawa-Caltech Lecture Course 2013), Hawaii, USA.
02/2013	Memorial Symposium for Dr. Shun-ichi Amari as a Person of Cultural Merit at the University of Tokyo, Tokyo, Japan.

01/2013	The University of Tokyo, Graduate School of Arts and Science, Tokyo, Japan.
11/2012	California Institute of Technology, Division of Humanities & Social Sciences, Pasadena, USA.
11/2012	Stanford University, Department of Psychology, San Francisco, USA.
11/2012	Kyoto University, Department of Systems Science, Graduate School of Informatics, Integrated Systems Biology, Kyoto, Japan.
09/2012	Symposium "Functional architecture of collective neural activities and their networks: new advances in experimental and theoretical approaches," Japanese Neuroscience Society Meeting (Neuro2012), Nagoya, Japan.
11/2011	Columbia University, Center for Theoretical Neuroscience, New York, USA.
11/2011	New York University, Center for Neural Science, New York, USA.
04/2011	University of Oxford, Department of Experimental Psychology, Oxford, UK.
04/2011	University College London, Gatsby Computational Neuroscience Unit, London, UK.
04/2011	University College London, Wellcome Trust Centre for Neuroimaging (*Emotion Club Seminar*), London, UK.
04/2011	Workshop on Geometric and Algebraic Statistics 3, University of Warwick, Coventry, UK.
11/2010	California Institute of Technology, Division of Biology (*Shimojo Psychophysics Laboratory Seminar*), Pasadena, USA.
10/2010	10th China-India-Japan-Korea Joint Workshop on Neurobiology and Neuroinformatics (NBNI 2010), Kunming, China.
09/2010	Symposium "New perspectives on value-based decision making," Japanese Neuroscience Society Meeting (Neuro2010), Kobe, Japan.
08/2010	Bernstein Center for Computational Neuroscience, Berlin, Germany.
08/2010	Information Geometry and Its Applications III, Leipzig, Germany.
02/2010	Reward and Decision Making Batsheva Conference, Jerusalem, Israel.
05/2009	Waseda University, Institute for Research in Contemporary Political and Economic Affairs (Waseda Monday Seminar), Tokyo, Japan *(in Japanese)*.
02/2009	Neuro Social Science Workshop, Osaka, Japan.
12/2008	EPSRC Workshop on Computational Neuroscience, University of Warwick, Birmingham, UK.
12/2008	RIKEN BSI Tutorial Series 2008, RIKEN BSI, Wako, Japan.
10/2008	Open Problems in Neuroscience of Decision Making, OIST Seaside House, Okinawa, Japan.
09/2008	Human Forum 2008, Honda Research Institute, Wako, Japan *(in Japanese)*.
07/2008	The 3rd APCTP-KAIST Summer School for Brain Dynamics, Korea Advanced Institute of Science and Technology, Daejeon, South Korea.
01/2008	HFSP International Workshop on Neural Control of Attention, Perception, and Learning, OIST, Okinawa, Japan.
01/2008	University College London, Gatsby Computation Neuroscience Unit, London, UK.
01/2008	Paris College de France, Institut des Science Cognitives, Paris, France.

01/2008	The 2nd Japanese-French Frontiers of Science Symposium, Station Biologique, Roscoff, France.
01/2008	RIKEN BSI Tutorial Series 2007, RIKEN BSI, Wako, Japan.
11/2007	RIKEN BSI-MIT Picower Workshop 2007 (talk shared with Dr. N. Fujii), RIKEN BSI, Wako, Japan.
10/2007	Preparation Meeting for Japanese-French Frontiers of Science Symposium, Tokyo, Japan.
10/2007	Korea Advanced Institute of Science and Technology, Department of Bio and Brain Engineering, Daejeon, Korea.
10/2007	NIPS Workshop on Neural Mechanisms for Attention and Decision Making, National Institute for Physiological Sciences, Okazaki, Japan *(in Japanese)*.
07/2007	International Conference Stochastic Processes and Applications (ICSPA 2007), Indian Institute of Science, Bangalore, India.
07/2007	Workshop on Mathematical Aspects of Neuroscience, Indian Institute of Science, Bangalore, India (two talks).
06/2007	The 3rd Technical Committee on Brain Communication, Tokyo, Japan *(in Japanese)*.
04/2007	21st Century COE Program Center for Evolutionary Cognitive Sciences, The University of Tokyo, Tokyo, Japan *(in Japanese)*.
03/2007	Spring School in Computational Neuroscience, Shanghai, China.
12/2006	NIPS Workshop on Neural Mechanisms with Cerebral Cortical Units, National Institute for Physiological Sciences, Okazaki, Japan *(in Japanese)*.
11/2006	RIKEN BSI Tutorial Series 2006, RIKEN BSI, Wako, Japan.
11/2006	The 5th Study Meeting for "Neural mechanisms and computational processes for human motor control and language acquisition," Kyoto University, Kyoto, Japan *(in Japanese)*.
08/2006	RIKEN BSI International Summer School, RIKEN BSI, Wako, Japan.
07/2006	2006 "Wings of Mathematical Science" Workshop, Tokyo, Japan *(in Japanese)*.
05/2006	RIKEN Joint Retreat, Shizuoka, Japan.
11/2004	Special Session, International Symposium on Nonlinear Theory and its Applications, Fukuoka, Japan.
09/2004	The US-Japan Brain Research Collaborative Program Workshop on Bioinformatic Analysis of Brain Function, Hawaii, USA.
09/2004	Symposium "Neural correlates of action selection based on reward and goal," Japanese Neuroscience Society Meeting (Neuro2004), Osaka, Japan.
05/2004	Advanced Telecommunications Research Institute (ATR), Computational Neuroscience Laboratories, Kyoto, Japan.
04/2004	Honda Research Institute, Wako, Japan.
03/2004	The 31st NIPS International Symposium "Multidisciplinary Approaches to Sensorimotor Integration —Old Questions Meet New Concepts—," NIPS, Okazaki, Japan.
08/2003	The 4th Summer Workshop for the Mechanism of the Brain and Mind, Echigoyuzawa, Japan *(in Japanese)*.
02/2003	University of Tokyo, Graduate School of Medicine, Japan *(in Japanese)*.
12/2002	National Cancer Institute (NIH), Laboratory of Population Genetics, Bethesda, USA.

11/2002	National Eye Institute (NIH), Laboratory of Sensorimotor Research, Bethesda, USA.
11/2002	Johns Hopkins University, Department of Biomedical Engineering, Baltimore, USA.
09/2002	The 7th Tamagawa Dynamic Brain Forum, Visegrad, Hungary.
09/2002	University of Freiburg, Department of Neurobiology and Biophysics, Freiburg, Germany.
09/2002	Technical University of Berlin, Department of Electrical Engineering and Computer Science, Berlin, Germany.
09/2002	Fraunhofer FIRST, The Intelligent Data Analysis Group, Berlin, Germany.
12/2001	Public Symposium on the Basal Ganglia and Cortical Areas for Motor Control, Tokyo, Japan *(in Japanese)*.
09/2001	The 6th Tamagawa Dynamic Brain Forum, Breisach, Germany.
06/2001	NIPS Workshop on Visual and Perceptual Mechanisms, National Institute for Physiological Sciences, Okazaki, Japan *(in Japanese)*.
01/2001	NIPS Workshop on Information Synthesis in the Brain for Motor Control, National Institute for Physiological Sciences, Okazaki, Japan *(in Japanese)*.
08/2000	Neuroinformatics Summer School, Kanagawa, Japan *(in Japanese)*.
10/1999	MIT, Department of Brain and Cognitive Sciences, Boston, USA.
09/1999	Satellite Symposium on Brain Sciences at the Biophysical Society of Japan Meeting, Wako, Japan *(in Japanese)*.
06/1999	RIKEN BMC Forum, Nagoya, Japan *(in Japanese)*.
08/1998	The 3rd Summer Workshop on System-Level Understandings of Higher-Order Brain Functions, Fujiyoshida, Japan *(in Japanese)*.
02/1998	Workshop on "Present Homeostasis Approaches," University of Tokyo, Tokyo, Japan *(in Japanese)*.
04/1997	ATR, Human Information Processing Research Laboratories, Kyoto, Japan.

PATENTS

Kim CH, Tsujino H, **Nakahara H.** [inventor] (2010) Learning control system and learning control method. Series Code: 12, Serial No. 792853 (United States Patent; Application No. 20100318480. Filed date, 2010.6.3)

Kim, CH, Tsujino, H, **Nakahara, H**. [inventor] (2009) Learning control system and learning control method. Patent No. 5405252 (Japan Patent; Application No. 2009-217454; Application date, 2009.9.18; Registration date, 2013.11.8).

Kim, CH, Tsujino, H., **Nakahara, H**. [inventor] (2009) Learning control system and learning control method. Patent No. 5346701 (Japan Patent; Application No. 2009-141680; Application date, 2009.6.12; Registration date, 2013.8.23).

Hori G, **Nakahara H**, Inoue M, Nishimura S. [inventor] (2001) Chemical substance classification apparatus, chemical substance classification method, and program. Patent No. 381761 (Japan Patent; Application No. 2001-339396; Application date, 2001.11.5; Registration date, 2006.6.16).