

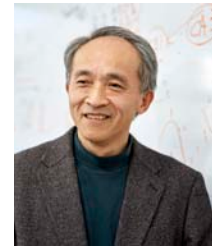
April 1st, 2018

CURRICULUM VITAE

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Personal Data

Date of Birth: January 8, 1958
Nationality: Japanese
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Educational

B.Sc. (Mar 1980) Department of Physics, Waseda University
M.Sc. (Mar, 1982) Department of Physics, Waseda University
Ph.D. (Mar 1985) Particle Physics Theory, Department of Physics,
Waseda University, Tokyo, Japan

Research and Teaching Job Experiences

Apr 1985 – Mar 1986: Research Fellow, Waseda University
Apr 1985 – Jul 1986: Lecturer, Liberal Education (Mathematics),
Seikei University
Aug 1986–Aug 1988: Visiting Researcher, Theoretical Physics Group
Tata Institute of Fundamental Research (Bombay)
Sep 1988 – Mar 1989: Lecturer, Center for Foreign Student Educations,
Tokai University
Apr 1989 – Mar 1991: Lecturer, Management and Information Science Department,
Gumma Women's College
Apr 1991 – Mar 1992: Lecturer, Department of Electronic Engineering,
Tokai University
Apr 1992 – Sep 1999: Associate Professor, Department of Electronic
Engineering, Tokai University
Dec 1992 – Mar 1998: Visiting Researcher, RIKEN Brain Science Institute
Oct 1999 – Mar 2001: Associate Professor, Department of
Information-Communication Engineering, Tamagawa
University
Apr 2001 – Mar 2005: Professor, Department of Intelligent Information
Engineering & Brain Science Research Center,

Oct 1998 – Nov 2003: Tamagawa University
 Project leader, Crest, JST (Core Research for
 Evolutional Science and Technology, Japan Science and
 Technology) “Modeling neural basis for processing
 temporal information”.

Oct 2004 – May 2010: Team Leader, Lab. for Neural Circuit Theory, RIKEN
 BSI

Apr 2005 – Mar 2008: Group Director, Computational Neuroscience Group,
 RIKEN BSI

Apr 2008 – Mar 2009: Group Director, Theoretical Neuroscience Group,
 RIKEN BSI
 (Previous Computational Neuroscience Group and
 Brain-Style Information Processing Group were unified)

*The position of the Group Director system was abolished at the end of
 March 2009.

Apr 2007 – present: Professor, Joint Graduate School Program of Frontier
 Sciences, University of Tokyo

Nov 2007 – Feb 2010: Member of the Strategic Unit of RIKEN BSI-TOYOTA
 Collaboration Center

Oct 2008 – 2012: Core Member of the Brain Research Team in
 the Next-Generation Supercomputer Project

Jun 2010 – Mar 2018: Senior Team Leader, Lab. for Neural Circuit Theory,
 RIKEN BSI

Oct 2010 – present: Professor, Joint Graduate School Program of
 Informatics, Kyoto University

June 2017 –present Director, RIKEN CBS-OMRON Collaboration Center

April 2018 –present: Team Leader, Lab. for Neural Coding and Brain
 Computing, RIKEN CBS

Recent and selected publications

1. Naoki Hiratani, Tomoki Fukai (2017) Detailed Dendritic Excitatory/Inhibitory Balance through Heterosynaptic Spike-Timing-Dependent Plasticity. *Journal of Neuroscience* 2017 Dec 13;37(50), 12106-12122.
2. Takashi Handa, Takashi Takekawa, Rie Harukuni, Yoshikazu Isomura, and Tomoki Fukai (2017) Medial frontal circuit dynamics represents probabilistic choices for unfamiliar sensory experience. *Cerebral Cortex* 2017 Feb 10:1-14.
3. Daisuke Miyamoto, Daichi Hirai, Chi Chung Fung, Ayumu Inutsuka, Maya Odagawa, Takayuki Suzuki, Roman Boehringer, Chinnakkaruppan Adaikkan, Chie Matsubara, Norio Matsuki, Tomoki Fukai, Thomas J McHugh, Akihiro Yamanaka, Masanori Murayama (2016) Top-down cortical input during NREM sleep consolidates perceptual memory. *Science* 352, 1315-1318.
4. Naoki Hiratani, Tomoki Fukai (2016) Hebbian Wiring Plasticity Generates Efficient Network Structures for Robust Inference with Synaptic Weight Plasticity. *Front. Neural Circuits* 10:41, 1-19.

5. Yoshiyuki Omura, Milena M. Carvalho, Kaoru Inokuchi, Tomoki Fukai (2015) A lognormal recurrent network model for burst generation during hippocampal sharp waves. *The Journal of Neuroscience*, 35(43):14585-14601.
6. Naoki Hiratani, Tomoki Fukai (2015) Mixed Signal Learning by Spike Correlation Propagation in Feedback Inhibitory Circuits. *PLoS Computational Biology*, 11(4): e1004227, 1-36.
7. Jun-nosuke Teramae, Tomoki Fukai (2014) Computational Implications of Lognormally Distributed Synaptic Weights. *Proceedings of the IEEE*, 102 (4), 500-512.
8. Nobuhiko Wagatsuma, Tobias C. Potjans, Markus Diesmann, Ko Sakai, Tomoki Fukai. (2013) Spatial and feature-based attention in a layered cortical microcircuit model. *PLOS One* 8(12), e80788 1-14.
9. Jun Igarashi, Yoshikazu Isomura, Kensuke Arai, Rie Harukuni, Tomoki Fukai (2013) A θ - γ Oscillation Code for Neuronal Coordination during Motor Behavior. *Journal of Neuroscience* 33(47), 18515–18530.
10. Yoshikazu Isomura, Takashi Takekawa, Rie Harukuni, Takashi Handa, Hidenori Aizawa, Masahiko Takada, and Tomoki Fukai. (2013) Reward-modulated motor information in identified striatum neurons. *Journal of Neuroscience* 33(25), 10209 –10220.
11. Fukai T, Tanaka S (1997) A simple neural network exhibiting selective activation of neuronal ensembles: From winner-take-all to winners-share-all. *Neural Computation* 9, 77-97.
12. Yoshikazu Isomura, Rie Harukuni, Takashi Takekawa, Hidenori Aizawa, Tomoki Fukai (2009) Microcircuitry coordination of cortical motor information in self-initiation of voluntary movements. *Nature Neuroscience* 12, 1586-1593.
13. Shiino M & Fukai T (1992) Self-consistent signal-to-noise analysis & its application to analog neural networks with asymmetric connections. *Journal of Physics A: Math. Gen.* 25, L375 -L381.
14. Shiino M, Fukai T (1993) Self-consistent signal-to-noise analysis of the statistical behavior of analog neural networks & enhancement of the storage capacity. *Physical Review* E48, 867-897.
15. Cateau H, Fukai T (2001) Fokker-Planck approach to the pulse packet propagation in synfire chain. *Neural Networks* 14, 675-685. (Special Issue: Spiking Neurons in Neuroscience and Technology).
16. Yasuhiro Tsubo, Masahiko Takada, Alex D. Reyes, Tomoki Fukai (2007) Layer and frequency dependences of phase response properties of pyramidal neurons in rat motor cortex. *Eur J. Neurosci.* 25, 3429-3441.
17. Masaki Nomura, Tomoki Fukai, Toshio Aoyagi (2003) Synchrony of fast-spiking interneurons interconnected by GABAergic and electrical synapses. *Neural Computation* 15, 2179-2198.
18. Yoshikazu Isomura, Takashi Takekawa, Rie Harukuni, Takashi Handa, Hidenori Aizawa, Masahiko Takada, and Tomoki Fukai. (2013) Reward-modulated motor information in identified striatum neurons. *J. Neurosci.* 33(25), 10209 –10220.
19. Takashi Takekawa, Yoshikazu Isomura, Tomoki Fukai (2010) Accurate spike-sorting for multiunit recordings. *European Journal of Neuroscience* 31, 263-272.
20. Jun-nosuke Teramae, Yasuhiro Tsubo, Tomoki Fukai (2012) Optimal spike-based communication in excitable networks with strong-sparse and weak-dense links. *Scientific Reports* 2 (485): 1-6. doi:10.1038/srep00485.