

Curriculum Vitae

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Education:

1995 Doctor of Engineering in Electrical Engineering, Sophia University, Japan

1988 Dual M.S. in Electrical Engineering and Mechanical Engineering, University of Michigan (Ann Arbor), U.S.A.

1981 B.A. in Mechanical Engineering, Waseda University, Japan

Professional Career:

2019 Dec - Visiting Professor, The Technical University of Munich

2017 Sep - Full Professor, Okinawa Institute of Science and Technology Graduate University (OIST)

2017-2017Aug Adjunct Professor, Okinawa Institute of Science and Technology Graduate University (OIST)

2014-2017 Visiting Professor, Faculty of Science and Engineering, Waseda University

2012-2017 Full Professor, Dept. of Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST)

2001-2012 Team Leader, Lab. for Behavior and Dynamic Cognition, RIKEN Brain Science Institute, Japan

2008-2011 Visiting Professor, Dept. of Brain Science and Technology, Kyushu Inst. of Tech., Japan

1997-2002 Visiting Associate Professor, Graduate School of Arts and Sciences, University of Tokyo, Japan

1993-2001 Senior Researcher, Sony Computer Science Laboratories Inc., Japan

1990-1993 Researcher, Sony Corporation, Japan

1981-1990 Engineer, Chiyoda Chemical Engineering and Construction Corporation, Japan

Award:

- The best paper award, Japanese Neural Network Society, 2000.
- The best paper award, 5th International Conference on Simulation of Adaptive Behavior, 1998.

Editorial Board Member:

- Connection Science, Associate Editor, 2014 ~ 2022
- IEEE Transactions on Autonomous Mental Development, Associate Editor, 2008 ~ 2015
- Frontiers in Neurorobotics, Associate Editor, 2007 ~
- Adaptive Behavior, Associate Editor, 2006 ~

Publication List of Jun Tani

Books

1. Tani, J. (2016). Exploring Robotic Minds: Actions, Symbols, and Consciousness as Self-Organizing Dynamic Phenomena. *Oxford University Press*.

Journal Papers

1. Tinker, T. J., Doya, K., & Tani, J. (2026). Curiosity-Driven Development of Action and Language in Robots Through Self-Exploration, accepted in *ScienceAdvances*. [LINK](#)
2. Queißer, J. F., & Tani, J. (2025). Working Memory and Self-Directed Inner Speech Enhance Multitask Generalization in Active Inference. *Neural Computation*, 38, 28–70 (2026). [LINK](#)
3. Matsumoto, T., Fujii, K., Murata, S., & Tani, J. (2025). Active Inference with Dynamic Planning and Information Gain in Continuous Space by Inferring Low-Dimensional Latent States. *Entropy*, 27(8), 846. [LINK](#)
4. Queißer, J. F., Oyama, H., & Tani, J. (2025). How deep will you go? Hierarchy in predictive coding and transformers. *Cognitive Neuroscience*, 1–3. [LINK](#)
5. Oyama, H., Matsumoto, T., & Tani, J. (2025). Modeling autonomous shifts between focus state and mind-wandering using a predictive-coding-inspired variational recurrent neural network. *Frontiers in Computational Neuroscience*, 19, 1578135. [LINK](#)
6. Idei, H., Tani, J., Ogata, T., & Yamashita, Y. (2025). Future shapes present: autonomous goal-directed and sensory-focused mode switching in a Bayesian allostatic network model. *NPJ Complexity*, 2:23. [LINK](#)
7. Ohata, W., & Tani, J. (2025). Characterizing the sense of agency in human–robot interaction based on the free energy principle. *NPJ Complexity*, 2:12. [LINK](#)
8. Queißer, J. F., Tani, J., & Steil, J. J. (2025). The Epistemic Uncertainty Gradient in Spaces of Random Projections. *Entropy*, 27(2), 144.
9. Vijayaraghavan, P., Queißer, J. F., Verduzco-Flores, S., & Tani, J. (2025). Development of compositionality through interactive learning of language and action of robots. *Science Robotics*, 10, eadp0751.
10. Takahashi, Y., Idei, H., Komatsu, M., Tani, J., Tomita, H., & Yamashita, Y. (2025). Digital Twin Brain Simulator for Real-Time Consciousness Monitoring and Virtual Intervention Using Primate Electroencephalogram Data. *npj Digital Medicine*, in press.
11. Sawada, H., Ohata, W., & Tani, J. (2025). Human–Robot Kinaesthetic Interactions Based on the Free-Energy Principle. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*. 55 (1), 366–379.
12. Ohata, W., & Tani, J. (2024). Characterizing the sense of agency in human–robot interaction based on the free energy principle. Accepted in *NPJ Complexity*.
13. Han, D., Doya, K., Li, D., & Tani, J. (2024). Synergizing habits and goals with variational Bayes. *Nature Communication*, 15:4461.
14. Tinker, T., Doya, K., & Tani, J. (2024). Intrinsic Rewards for Exploration Without Harm From Observational Noise: A Simulation Study Based on the Free Energy Principle. *Neural Computation*, 36 (9), 1854–1885.
15. Matsumoto, T., Ohata, W., & Tani, J. (2023). Incremental Learning of Goal-Directed Actions in a Dynamic Environment by a Robot using Active Inference. *Entropy*, 25(11), 1506.
16. Tani, J. (2023). 自由エネルギー原理に基づく認知脳型ロボット研究 Studies of Cognitive Neurorobotics Based on the Free Energy Principle. *日本ロボット学会誌*, 41(7), 609–615.
17. Soda, T., Ahmadsreza, A., Tani, J., Honda, M., Hanakawa, T., & Yamashita, Y. (2023). Simulating Developmental Diversity: Impact of Neural Stochasticity on Atypical Flexibility and Hierarchy. *Frontiers in Psychiatry, section Psychopathology*. Volume 14 - 2023.

18. Wirkuttis, N., Ohata, W., & Tani, J. (2023). Turn-Taking Mechanisms in Imitative Interaction: Robotic Social Interaction Based on the Free Energy Principle. *Entropy*, 25(2), 263.
19. Nikulin, V., & Tani, J. (2022). Initialization of Latent Space Coordinates via Random Linear Projections for Learning Robotic Sensory-Motor Sequences. Accepted in *Frontiers in Neurorobotics*.
20. Idei, H., Ohata, W., Yamashita, Y., Ogata, T., & Tani, J. (2022). Emergence of sensory attenuation mechanism by the free-energy principle. *Scientific Report*, 12:14542, DOI: 10.1038/s41598-022-18207-7
21. Matsumoto, T., Ohata, W., Benureau, F. C., & Tani, J. (2022). Goal-directed Planning and Goal Understanding by Extended Active Inference: Evaluation Through Simulated and Physical Robot Experiments. *Entropy*, 24(4), 469.
22. Benureau, F. C., & Tani, J. (2020). Morphological Development at the Evolutionary Timescale: Robotic Developmental Evolution. *Alife*, 00: 1–19.
23. 谷淳 (2021). 池上「生命理論としての認知科学：減算と縮約の哲学をめぐって」へのコメント. *認知科学*. 28(2) 222-230.
24. Wirkuttis, N., & Tani, J. (2021). Leading or Following? Dyadic Robot Imitative Interaction Using the Active Inference Framework. *IEEE Robotics and Automation Letters*, 6(3) 6024-6031.
25. Queißer, J. F., Jung, M., Matsumoto, T., & Tani, J. (2021). Emergence of Content-Agnostic Information Processing by a Robot Using Active Inference, Visual Attention, Working Memory, and Planning. *Neural Computation*, 33(9), 2353–2407.
26. Chame H. F., Ahmadi A., & Tani, J. (2020). A Hybrid Human-Neurorobotics Approach to Primary Intersubjectivity via Active Inference. *Frontiers in Psychology*, 11, 584869.
27. Tani, J., & White, J. (2020). Cognitive neurorobotics and self in the shared world, a focused review of ongoing research. *Adaptive Behavior*, 1–20.
28. Ohata, W., & Tani, J. (2020). Investigation of the Sense of Agency in Social Cognition, based on frameworks of Predictive Coding and Active Inference: A simulation study on multimodal imitative interaction. *Frontiers in Neurorobotics*, 14, 61.
29. Han, D., Doya, K., & Tani, J. (2020). Self-Organization of Action Hierarchy and Compositionality by Reinforcement Learning with Recurrent Neural Networks. *Neural Networks*, 129, 149-162.
30. Matsumoto, T., & Tani, J. (2020). Goal-Directed Planning for Habituated Agents by Active Inference Using a Variational Recurrent Neural Network. *Entropy*, 22(5), 564.
31. Hwang, J., Kim, J., Ahmadi, A., Choi, M., & Tani, J. (2020). Dealing With Large-Scale Spatio-Temporal Patterns in Imitative Interaction Between a Robot and a Human by Using the Predictive Coding Framework. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 50(5), 1918-1931.
32. Cappuccio, M. L., Kirchhoff, M. D., Alnajjar, F., & Tani, J. (2020). Unfulfilled Prophecies in Sport Performance: Active Inference and the Choking Effect. *Journal of Consciousness Study*. 27(3-4), 152-184.
33. Ahmadi, A., & Tani, J. (2019). A Novel Predictive-Coding-Inspired Variational RNN Model for Online Prediction and Recognition. *Neural Computation*, 31, 2025–2074.
34. Zhong, J., Peniak, M., Tani, J., Ogata, T., & Cangelosi, A. (2019). Sensorimotor input as a language generalisation tool: A neurorobotics model for generation and generalisation of noun-verb combinations with sensorimotor inputs. *Autonomous Robots*, 43(5), 1271-1290.
35. Parisi, I. G., Tani, J., Weber, C., and Wermter, S. (2018). Lifelong Learning of Spatiotemporal Representations with Dual-Memory Recurrent Self-Organization. *Frontiers in Neurorobotics*, 12:78.
36. Idei, H., Murata, S., Chen, Y., Yamashita, Y., Tani, J., and Ogata, T. (2018). A Neurorobotics Simulation of Autistic Behavior Induced by Unusual Sensory Precision. *Computational Psychiatry*, 2, 164-182.
37. Jung, M., Lee, H., & Tani J. (2018). Adaptive Detrending to Accelerate Convolutional Gated Recurrent Unit Training for Contextual Video Recognition. *Neural Networks*, 105, 356-370.

38. Choi, M., & Tani, J. (2018). Predictive Coding for Dynamic Visual Processing: Development of Functional Hierarchy in a Multiple Spatio-Temporal Scales RNN Model. *Neural Computation*, 30, 237–270.
39. Tatsch, C., Ahmadi, A., Bottega, F., Tani, J., & da Silva Guerra, R. (2018). Dimitri: An Open-Source Humanoid Robot with Compliant Joints. *Journal of Intelligent & Robotic Systems*, (91), 291–300.
40. White, J., & Tani, J. (2017). From Biological to Synthetic Neurorobotics Approaches to Understanding the Structure Essential to Consciousness (Part 3). *American Philosophy Association Newsletter, Philosophy and Computers*, 17(1), 11-22.
41. Lee, H., Jung, M., & Tani, J. (2017). Recognition of Visually Perceived Compositional Human Actions by Multiple Spatio-Temporal Scales Recurrent Neural Networks. *IEEE Transactions on Cognitive and Developmental Systems*, (99), 1-1.
42. Parisi, G. I., Tani, J., Weber, C., & Wermter, S. (2017). Lifelong learning of human actions with deep neural network self-organization. *Neural Networks*, 96, 137–149.
43. Hwang, J., & Tani, J. (2017). Seamless Integration and Coordination of Cognitive Skills in Humanoid Robots: A Deep Learning Approach. *IEEE Transactions on Cognitive and Developmental Systems*, 10(2), 345-358.
44. Tani, J., & White, J. (2017). From Biological to Synthetic Neurorobotics Approaches to Understanding the Structure Essential to Consciousness (Part 2). *American Philosophy Association Newsletter, Philosophy and Computers*, 16(2), 29-41.
45. Ahmadi, A., & Tani, J. (2017). How can a recurrent neurodynamic predictive coding model cope with fluctuation in temporal patterns? Robotic experiments on imitative interaction. *Neural Networks*. 92, 3-16, DOI:10.1016/j.neunet.2017.02.015
46. Parisi, G. I., Tani, J., Weber, C., & Wermter, S. (2017). Emergence of multimodal action representations from neural network self-organization. *Cognitive Systems Research*, 43, 208-221.
47. Lyon, C. et al. (2016). Embodied language learning and cognitive bootstrapping: Methods and design principles. *International Journal of Advanced Robotics Systems*, 13:105, DOI:10.5772/63462
48. White, J., & Tani, J. (2016). From biological to synthetic neurorobotics approaches to understanding the structure essential to consciousness. (Part 1). *American Philosopher Association Newsletter, Philosophy and Computers*, 16(1), 13-23.
49. Murata, S., Yamashita, Y., Arie, H., Ogata, T., Sugano, S., & Tani, J. (2015). Learning to perceive the world as probabilistic or deterministic via interaction with others: a neuro-robotics experiment. *IEEE Transactions on Neural Networks and Learning Systems*, (4), 830-848. DOI: 10.1109/TNNLS.2015.2492140
50. Park, G., & Tani, J. (2015). Development of compositional and contextual communicable congruence in robots by using dynamic neural network models. *Neural Networks*, 72, 109-122.
51. Jung, M., Hwang, J., & Tani, J. (2015). Self-organization of spatio-temporal hierarchy via learning of dynamic visual image patterns on action sequences. *PLoS One*, 10(7): e0131214, DOI:10.1371/journal.pone.0131214
52. Murata, S., Arie, H., Ogata, T., Sugano, S., & Tani, J. (2014). Learning to generate proactive and reactive behavior using a dynamic neural network model with time-varying variance prediction mechanism. *Advanced Robotics*, 28(17), 1189-1203, DOI: 10.1080/01691864.2014.916628
53. Komatsu, M., Namikawa, J., Chao, Z. C., Nagasaka, Y., Fujii, N., Nakamura, K., & Tani, J. (2014). An artificial network model for estimating the network structure underlying partially observed neuronal signals. *Neuroscience Research*, 81-82, 69-77, DOI: 10.1016/j.neures.2014.02.005
54. Tani, J., Froston, K., & Haykin, S. (2014). Self-Organization and Compositionality in Cognitive Brains [Further Thoughts]. *Proceedings of the IEEE, Special Issue on Cognitive Dynamic Systems*, 102(4), 606-607.
55. Tani, J. (2014). Self-Organization and Compositionality in Cognitive Brains: A Neuro-Robotics Study. *Proceedings of the IEEE, Special Issue on Cognitive Dynamic Systems*, 102(4), 586-605.
56. Murata, S., Namikawa, J., Arie, H., Sugano, S., & Tani, J. (2013). Learning to reproduce fluctuating time series by inferring their time-dependent stochastic properties: Application in robot learning via tutoring. *IEEE Transactions on Autonomous Mental Development*, 5(4), 298-310, DOI: 10.1109/TAMD.2013.2258019

57. Jeong, S., Park, Y., Mallipeddia, P., Tani, J., & Lee, M. (2013). Goal-oriented Behavior Sequence Generation based on Semantic Commands using Multiple Timescales Recurrent Neural Network with Initial State Correction. *Neurocomputing*, 129, 67-77.
58. Alnajjar, F., Yamashita, Y., & Tani, J. (2013). The Hierarchical and Functional Connectivity of Higher-order Cognitive Mechanisms: Neurorobotic Model to Investigate the Stability and Flexibility of Working Memory. *Frontiers in Neurorobotics*, Vol. 7, Article 2, February.
59. Yamashita, Y., & Tani, J. (2012). Spontaneous Prediction Error Generation in Schizophrenia. *PLoS One*, 7(5): e37843. doi:10.1371/journal.pone.0037843
60. Maniadakisa, M., Trahaniasa, P., & Tani, J. (2012). Self-organizing high-order cognitive functions in artificial agents: implications for possible prefrontal cortex mechanisms. *Neural Networks*, 33, 76-87.
61. Nishide, S., Tani, J., Takahashi, T., Okuno, H.G., & Ogata, T. (2012) Tool-Body assimilation of humanoid robot using neuro-dynamical system. *IEEE Transactions on Autonomous Mental Development*, 14, 139-149.
62. Arie, H., Arakaki, T., Sugano, S., & Tani, J. (2011). Imitating others by composition of primitive actions: a neuro-dynamic model. *Robotics and Autonomous Systems*, 60, 729-741.
63. Tobari, Y., Okumura, T., Tani, J., & Okanoya, K. (2011). A direct neuronal connection between the telencephalic nucleus robustus arcopallialis and the nucleus nervi hypoglossi, pars tracheosyringalis in Bengalese finches (*Lonchura striata* var. domestica). *Neuroscience Research*, 71(4), 361-368.
64. Namikawa, J., Nishimoto, R., & Tani, J. (2011). A neurodynamic account of spontaneous behaviour”, *PLoS Computational Biology*, Vol. 7, Issue 10, e1002221.
65. Rohlfing, K.J., & Tani, J. (2011). Grounding language in action. *IEEE Transactions on Autonomous Mental Development*, 3(2), 109-112.
66. Jeong, S., Arie, H., Lee, M., & Tani, J. (2011). Neuro-robotics study on integrative learning of proactive visual attention and motor behaviors. *Cognitive Neurodynamics*, 6, 43-59.
67. Sugita, Y., Tani, J., & Butz, M.V. (2011). Simultaneously emerging braitenberg codes and compositionality. *Adaptive Behavior*, 19(5), 295-316.
68. Yamashita, Y., Okumura, T., Okanoya, K., & Tani, J. (2011). Cooperation of deterministic dynamics and random noise in production of complex syntactical avian song sequences: a neural network model. *Frontiers in Computational Neuroscience*, 5(18), 1-12.
69. Nishide, S., Tani, J., Okuno, H.G. & Ogata, T. (2011). Towards written text recognition based on handwriting experiences using recurrent neural network. *Advanced Robotics*, 25(17), 2173-2187.
70. Hinoshita, W., Arie, H., Tani, J., Okuno, H. & Ogata, T. (2011). Emergence of hierarchical structure mirroring linguistic composition in a recurrent neural network. *Neural Networks*, 24, 311-320.
71. Cangelosi, A., Metta, G., Sagerer, G., Nolfi, S., Nehaniv, C.L., Fischer, K., Tani, J., Belpaeme, B., Sandini, G., Fadiga, L., Wrede, B., Rohlfing, K., Tuci, E., Dautenhahn, K., Saunders, J. & Zeschel, A. (2010). Integration of action and language knowledge: A roadmap for developmental robotics. *IEEE Transactions on Autonomous Mental Development*, 2(3), 167-195.
72. Tani, J. (2010). Studies of symbols from ‘Robot Science’. *Journal of the Robotics Society of Japan*, 28(4), 522-531.
73. Namikawa, J. & Tani, J. (2010). Learning to imitate stochastic time series in a compositional way by chaos. *Neural Networks*, 23, 625-638.
74. Maniadakis, M., Trahanias, P., & Tani, J. (2009). Explorations on artificial time perception. *Neural Networks*, 22, 509-517.
75. Tani, J. (2009). Autonomy of ‘Self’ at criticality: The perspective from synthetic neuro-robotics. *Adaptive Behavior*, 17(5), 421-443.
76. Nishide, S., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2009). Self-organization of dynamic object features based on bidirectional training. *Advanced Robotics*, 23, 2035-2057.
77. Nishide, S., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2009). Autonomous motion generation based on reliable predictability. *Journal of Robotics and Mechatronics*, 21(4), 478-488.
78. Nishimoto, R., & Tani, J. (2009). Development of hierarchical structures for actions and motor imagery: a constructivist view from synthetic neuro-robotics study. *Psychological Research*, 73, 545-558.
79. Arie, H., Endo, T., Arakaki, T., Sugano, S., & Tani, J. (2009). Creating novel goal-directed actions

- at criticality: a neuro-robotic experiment. *New Mathematics and Natural Computation*, 5(1), 307-334.
80. Maniadakis, M., & Tani, J. (2009). Acquiring rules for rules: neuro-dynamical systems account for meta-cognition. *Adaptive Behavior*, 17(1), 58-80.
 81. Igari, I., & Tani, J. (2009). Incremental learning of sequence patterns with a modular network model. *Neurocomputing*, 72, 1910-1919.
 82. Tani, J. (2008). Objectifying the subjective self: An account from a synthetic robotics approach. *Constructivist Foundations*, 4(1), 28-30.
 83. Namikawa, J., & Tani, J. (2008). Building recurrent neural networks to implement multiple attractor dynamics using the gradient descent method. *Advances in Artificial Neural Systems*, Vol. 2009, Article ID 846040.
 84. Yamashita, Y., & Tani, J. (2008). Emergence of functional hierarchy in a multiple timescale neural network model: a humanoid robot experiment. *PLoS Computational Biology*, Vol.4, Issue.11, e1000220.
 85. Namikawa, J., & Tani, J. (2008). A model for learning to segment temporal sequences, utilizing a mixture of RNN experts together with adaptive variance. *Neural Networks*, 21, 1466-1475.
 86. Yamashita, Y., Takahashi, M., Okumura, T., Ikebuchi, M., Yamada, H., Suzuki, M., Okanoya, K., & Tani, J. (2008). Developmental learning of complex syntactical song in the Bengalese finch: A neural network model. *Neural Networks*, 21, 1224-1231.
 87. Tani, J., Nishimoto, R., & Paine, R.W. (2008). Achieving 'organic compositionality' through self-organization: Reviews on brain-inspired robotics experiments. *Neural Networks*, 21, 584-603.
 88. Nishide, S., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2008). Predicting object dynamics from visual images through active sensing experiences. *Advanced Robotics*, 22(5), 527-546.
 89. Nishimoto, R., Namikawa, J., & Tani, J. (2008). Learning multiple goal-directed actions through self-organization of a dynamic neural network model: a humanoid robot experiment. *Adaptive Behavior*, 16(2/3), 166-181.
 90. Tani, J., Nishimoto, R., Namikawa, J., & Ito, M. (2008). Codevelopmental learning between human and humanoid robot using a dynamic neural-network model. *IEEE Trans. on Syst. Man and Cybern. Part B-Cybernetics*, 38(1), 43-59.
 91. Tani, J. (2007). On the interactions between top-down anticipation and bottom-up regression. *Frontiers in Neurorobotics*, Vol. 1, Article 2.
 92. Okumura, T., Okanoya, K., & Tani, J. (2007). Application of light-cured dental adhesive resin for mounting electrodes or microdialysis probes in chronic experiments. *Journal of Visualized Experiments*, 6, 249-1~249-10.
 93. Yokoya, R., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2007). Experience-based imitation using RNNPB. *Advanced Robotics*, 21(12), 1351-1367.
 94. Arie, H., Ogata, T., Tani, J., & Sugano, S. (2007). Reinforcement learning of a continuous motor sequence with hidden states. *Advanced Robotics, Special Issue on Robotic Platforms for Research in Neuroscience*, 21(10), 1215-1229.
 95. Ito, M., Noda, K., Hoshino, Y., & Tani, J. (2006). Dynamic and interactive generation of object handling behaviors by a small humanoid robot using a dynamic neural network model. *Neural Networks*, 19, 323-337.
 96. Tobari, Y., Okumura, T., Tani, T., & Okanoya, K. (2006). Non-singing female Bengalese Finches (*Lonchura striata* var. *domestica*) possess neuronal projections connecting a song learning region to a song motor region. *Ornithological Science*, 5, 47-55.
 97. Ogata, T., Ohba, H., Tani, J., Komatani, K., & Okuno, H.G. (2005). Extracting multimodal dynamics of objects using RNNPB. *Journal of Robotics and Mechatronics*, 17(6), 681-688.
 98. Ogata, T., Sugano, S., & Tani, J. (2005). Open-end human-robot interaction from the dynamical systems perspective: mutual adaptation and incremental learning. *Advanced Robotics*, 19(6), 651-670.
 99. Ogata, T., Sugano, S., & Tani, J. (2005). Acquisition of motion primitives of robot in human-navigation task. *Journal of Japanese Society for Artificial Intelligence*, 20(3), 188-196.
 100. Paine, R.W., & Tani, J. (2005). How hierarchical control self-organizes in artificial adaptive systems. *Adaptive Behavior*, 13(3), 211-225.
 101. Sugita, Y., & Tani, J. (2005). Learning semantic combinatoriality from the interaction between

- linguistic and behavioral processes. *Adaptive Behavior*, 13(1), 33-52.
102. Ito, M., & Tani, J. (2004). On-line imitative interaction with a humanoid robot using a dynamic neural network model of a mirror system. *Adaptive Behavior*, 12(2), 93-115.
 103. Tani, J. (2004). The dynamical systems accounts for phenomenology of immanent time: an interpretation by revisiting a robotics synthetic study. *Journal of Consciousness Studies*, 11(9), 5-24.
 104. Paine, R.W., & Tani, J. (2004). Motor primitive and sequence self-organization in a hierarchical recurrent neural network. *Neural Networks*, 17, 1291-1309.
 105. Tani, J., Ito, M., & Sugita, Y. (2004). Self-organization of distributedly represented multiple behavior schemata in a mirror system: Reviews of robot experiments using RNNPB. *Neural Networks*, 17, 1273-1289.
 106. Nishimoto, R., & Tani, J. (2004). Learning to generate combinatorial action sequences utilizing the initial sensitivity of deterministic dynamical systems. *Neural Networks*, 17, 925-933.
 107. Tani, J., & Ito, M. (2003). Self-organization of behavioral primitives as multiple attractor dynamics: A robot experiment. *IEEE Trans. on Syst. Man and Cybern. Part A- Systems and Humans*, 33(4), 481-488.
 108. Tani, J. (2003). Learning to generate articulated behavior through the bottom-up and the top-down interaction processes. *Neural Networks*, 16(1), 11-23.
 109. Tani, J., & Yamamoto, J. (2002). On the dynamics of robot exploration learning. *Cognitive Systems Research*, 3(3), 459-470.
 110. Ikegami, T., & Tani, J. (2001). Chaotic itinerancy needs embodied cognition to explain memory dynamics. *Behavioral and Brain Sciences*, 24(5), 818-819.
 111. Tani, J., & Nolfi, S. (1998). Learning to perceive the world as articulated: an approach for hierarchical learning in sensory-motor systems. *Proc. 5th Int. Conf. on Simulation of Adaptive Behavior*, pp.270-279, (Eds) R. Pfeifer, B. Blumberg, J.A. Meyer, S.W. Wilson, MA: The MIT Press. The revised version is in *Neural Networks*, 12, 1131-1141, 1999.
 112. Nolfi, S., & Tani, J. (1999). Extracting regularities in space and time through a cascade of prediction of prediction networks: The case of a mobile robot navigating in a structured environment. *Connection Science*, 11(2), 125-148.
 113. Tani, J. (1998). An interpretation of the 'Self' from the dynamical systems perspective: a constructivist approach. *Journal of Consciousness Studies*, 5(5/6), 516-542.
 114. Tani, J., & Nolfi, S. (1997). Self-organization of modules and their hierarchy in robot learning problems: A dynamical systems approach. *System Analysis for Higher Brain Function Research Project News Letter*, 2(4), 1-11.
 115. Tani, J., & Fukumura, N. (1997). Self-organizing internal representation in learning of navigation: a physical experiment by the mobile robot YAMABICO. *Neural Networks*, 10(1), 153-159.
 116. Tani, J. (1996). Model-based learning for mobile robot navigation from the dynamical systems perspective. *IEEE Trans. on Syst. Man and Cybern. Part B-Cybernetics*, 26(3), 421-436.
 117. Tani, J., & Fukumura, N. (1995). Embedding a grammatical description in deterministic chaos: an experiment in recurrent neural learning. *Biological Cybernetics*, 72, 365-370.
 118. Fukumura, N., & Tani, J. (1994). Learning in robotics. Learning goal-directed behaviour as dynamical system for sensory motor system. *Journal of the Robotics Society of Japan*, 13(1), 75-81.
 119. Tani, J., & Fukumura, N. (1994). Learning goal-directed sensory-based navigation of a mobile robot. *Neural Networks*, 7(3), 553-563.
 120. Tani, J. (1992). Proposal of chaotic steepest descent method for neural networks and analysis of their dynamics. *Electronics and Communications in Japan*, Part 3, 75(4), 62-70.
 121. Tani, J., & Fujita, M. (1992). Coupling of memory search and mental rotation by a nonequilibrium dynamics neural network. *IEICE Trans. Fundamentals*, E75-A(5), 578-585.

International Conference Proceedings, Technical Papers, and Book Chapters

1. Benureau, F. C., & Tani, J. (2022). Morphological Wobbling Can Help Robots Learn. *2022 IEEE International Conference on Development and Learning (ICDL)*. 257-264.

2. Lanillos, P., Meo, C., Pezzato, C., Meera, A. A., Baioumy, M., Ohata, W., Tschantz, A., Millidge, B., Wisse, M., Buckley, C. L., & Tani, J. (2021). Active Inference in Robotics and Artificial Agents: Survey and Challenges. *arXiv preprint arXiv:2112.01871*
3. Idei, H., Ohata, W., Yamashita, Y., Ogata, T., & Tani, J. (2021). Sensory attenuation develops as a result of sensorimotor experience. *arXiv preprint arXiv:2111.02666*.
4. Han, D., Doya, K., & Tani, J. (2020). Goal-Directed Planning by Reinforcement Learning and Active Inference. *arXiv preprint arXiv:2106.09938v2*.
5. Nikulin, V., & Tani, J. (2020). Efficient decomposition of latent representation in generative models. *2020 IEEE Symposium Series on Computational Intelligence (SSCI)*, pp. 611-615, Canberra, Australia, December 1-4.
6. Han, D., Doya, K., & Tani, J. (2020). Variational recurrent models for solving partially observable control tasks. Accepted for presentation in *ICLR 2020*. *arXiv preprint arXiv:1912.10703v2*.
7. Chame, H. F., & Tani, J. (2020). Cognitive and motor compliance in intentional human-robot interaction. In *2020 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 11291-11297.
8. Chame, H. F., Ahmadi A., & Tani, J. (2020). Towards hybrid primary intersubjectivity: a neural robotics library for human science. *arXiv preprint arXiv:2006.15948v1*.
9. Ohata, W., & Tani, J. (2020). Investigation of Multimodal and Agential Interactions in Human-Robot Imitation, based on frameworks of Predictive Coding and Active Inference. *arXiv preprint arXiv:2002.01632*.
10. Jung, M., Matsumoto, T., & Tani, J. (2019). Goal-Directed Behavior under Variational Predictive Coding: Dynamic Organization of Visual Attention and Working Memory. *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 1040-1047, Macau, China, November 4-8.
11. Tani, j. (2019). Accounting Social Cognitive Mechanisms by the Framework of Predictive Coding and Active Inference: A Synthetic Experimental Study using Robotics Interaction Platforms. *HAI '19: Proceedings of the 7th International Conference on Human-Agent Interaction*, pp 2, Kyoto, Japan, October 6-10.
12. Hwang, J., Wirkuttis, N., & Tani, J. (2019). A Neurorobotics Approach to Investigating the Emergence of Communication in Robots. *2019 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, pp. 622-623.
13. Tani, J. (2019). Tani, J. (2019). Accounting for the Minimal Self and the Narrative Self: Robotics Experiments Using Predictive Coding. In *CEUR workshop proceedings (Vol. 2287), TOCAIS19 AAAI Spring Symposium "Towards conscious AI systems"*, Stanford, USA, March 26.
14. Huang, J., & Tani, J. (2018). Visuomotor Associative Learning under the Predictive Coding Framework: a Neuro-robotics Experiment. In *The Proceedings of the 28th Annual Conference of the Japanese Neural Network Society (JNNS2018)*, pp. 30-31, Okinawa, Japan, October 26.
15. Jung, M., & Tani, J. (2018). Adaptive Detrending for Accelerating the Training of Convolutional Recurrent Neural Networks. In *The Proceedings of the 28th Annual Conference of the Japanese Neural Network Society (JNNS2018)*, pp. 48-49, Okinawa, Japan, October 25.
16. Matsumoto, T., Choi, M., Jung, M., & Tani, J. (2018). Generating Goal-directed Visuomotor Plans with Supervised Learning using a Predictive Coding Deep Visuomotor Recurrent Neural Network. In *The Proceedings of the 28th Annual Conference of the Japanese Neural Network Society (JNNS2018)*, pp. 134-135, Okinawa, Japan, October 26.
17. Burns, F. T., Benureau, F. C. Y., & Tani, J. (2018). A Bergson-Inspired Adaptive Time Constant for the Multiple Timescales Recurrent Neural Network Model. In *The Proceedings of the 28th Annual Conference of the Japanese Neural Network Society (JNNS2018)*, Okinawa, Japan, October 26.
18. Benureau, F. C. Y., & Tani, J. (2018). Learning Timescales in MTRNNs. In *The Proceedings of the 28th Annual Conference of the Japanese Neural Network Society (JNNS2018)*, pp. 177-178, Okinawa, Japan, October 26.
19. Wirkuttis, N., Hwang, J., & Tani, J. (2018). Spontaneous Shifts of Social Alignment in Synthetic Robot-Robot Interactions. *BODIS 2018: Body, Interaction, Self International Conference on Intelligent Robots and Systems 2018*, Madrid, Spain, October 1.

20. Huang, J., & Tani, J. (2018). A Dynamic Neural Network Approach to Generating Robot's Novel Actions: A Simulation Experiment. *2018 15th International Conference on Ubiquitous Robots (UR)*, pp. 355-361, Hawaii, USA, June 28.
21. 谷淳 (2018). 脳型ロボット研究に基づく意識及び自由意志の統合的な理解、ベルクソン『物質と記憶』を再起動する 拡張ベルクソン主義の諸展望、書肆心水
22. Choi, M., Matsumoto, T., Jung, M., and Tani, J. (2018). Generating goal-directed visuomotor plans based on learning using a predictive coding type deep visuomotor recurrent neural network model. *arXiv preprint arXiv:1803.02578*.
23. Idei, H., Murata, S., Chen, Y., Yamashita, Y., Tani, J., & Ogata, T. (2017). Reduced behavioral flexibility by aberrant sensory precision in autism spectrum disorder: A neurorobotics experiment. *2017 Joint IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*, pp. 271-276, Lisbon, Portugal, September 18-21.
24. Hwang, J., Kim, J., Ahmadi, A., Choi, M., & Tani, J. (2017). Predictive Coding-based Deep Dynamic Neural Network for Visuomotor Learning. *The 7th Joint IEEE International Conference of Developmental Learning and Epigenetic Robotics (ICDL-EpiRob 2017)*, pp. 132-139, Lisbon, Portugal, September.
25. Tani, J. (2017). Exploring Robotic Minds by Predictive Coding Principle. *The Newsletter of the Technical Committee on Cognitive and Developmental Systems*, 14(1), 4-5. Spring.
26. Ahmadi, A., & Tani, J. (2017). Bridging the Gap between Probabilistic and Deterministic Models: A Simulation Study on a Variational Bayes Predictive Coding Recurrent Neural Network Model. *International Conference on Neural Information Processing*, pp. 760-769, Guangzhou, China, November.
27. Ahmadi, A., Tatsch, C., Montenegro, F. J. C., Tani, J., & Guerra, R. D. S. (2016, October). Dimitri: A low-cost compliant humanoid torso designed for cognitive robotics research. In *2016 XIII Latin American Robotics Symposium and IV Brazilian Robotics Symposium (LARS/SBR)* (pp. 67-72). IEEE, Recife, Brazil, October 8-12.
28. Ahmadi, A., & Tani, J. (2016). Towards Robustness to Fluctuated Perceptual Patterns by a Deterministic Predictive Coding Model in a Task of Imitative Synchronization with Human Movement Patterns. *Proc. of International Conference on Neural Information Processing*, pp. 393-402, October. (Excellent Paper Award).
29. Hwang, J., Jung, M., & Tani, J. (2016). A Deep Learning Approach for Seamless Integration of Cognitive Skills for Humanoid Robots. In *2016 Joint IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*, pp. 59-65.
30. Chen, Y., Murata, S., Arie, H., Ogata, T., Tani, J., & Sugano, S. (2016). Emergence of Interactive Behaviors between Two Robots by Prediction Error Minimization Mechanism. In *2016 Joint IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*, pp. 302-307.
31. Choi, M., & Tani, J. (2016). Predictive Coding for Dynamic Vision : Development of Functional Hierarchy in a Multiple Spatio-Temporal Scales RNN Model. *arXiv:1606.01672v2*.
32. Lee, H., Jung, M., & Tani, J., (2016). Characteristics of Visual Categorization of Long-Concatenated and Object-Directed Human Actions by a Multiple Spatio-Temporal Scales Recurrent Neural Network Model. *arXiv:1602.01921v1*.
33. Park, G., & Tani, J., (2015). Development of Compositional and Contextual Communication of Robots by using the Multiple Timescales Dynamic Neural Network. *Proc. of the Fifth Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics (ICDL-EpiRob2015)*, pp. 176-181, August.
34. Hwang, J., Jung, M., Madapana, N., Kim, J., Choi, M., & Tani, J. (2015). Achieving "Synergy" in Cognitive Behavior of Humanoids via Deep Learning of Dynamic Visuo-Motor-Attentional Coordination. *Proc. of 2015 IEEE-RAS International Conference on Humanoid Robots*, pp. 817-824.
35. Jung, M., Hwang, J., & Tani, J. (2014). Multiple Spatio-Temporal Scales Neural Network for Contextual Visual Recognition of Human Actions. *Proc. of the Fourth Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics (ICDL-EpiRob2014)*, pp. 227-233, Genoa, Italy, October.

36. Murata, S., Yamashita, Y., Arie, H., Ogata, T., Tani, J., & Sugano, S. (2014). Generation of Sensory Reflex Behavior versus Intentional Proactive Behavior in Robot Learning of Cooperative Interactions with Others. In *Proceedings of the Fourth Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics (ICDL-EpiRob 2014)*, pp. 234-240, Genoa, Italy, October.
37. Tan, B.H., Tang, H., Yan, R., & Tani, J. (2014). A Flexible and Robust Robotic Arm Design and Skill Learning by Using Recurrent Neural Networks. In *Proc. of IEEE Int. Conf. on Intelligent Robots and Systems (IROS2014)*, pp. 522-529, September.
38. Murata, S., Arie, H., Ogata, T., Tani, J., & Sugano, S. (2014). Learning and Recognition of Multiple Fluctuating Temporal Patterns Using S-CTRNN. *The 24th International Conference on Artificial Neural Networks (ICANN 2014)*, pp. 9-16, Hamburg, Germany, September.
39. Tani, J., Maniadakis, M., & Paine, R.W. (2014). Understanding Higher-Order Cognitive Brain Mechanisms by Conducting Evolutional Neuro-robotics Experiments. In *The Horizons of Evolutionary Robotics*, pp. 219-236, ed., P.A. Vargas, E.A. Di Paolo, I. Harvey and P. Husband, MIT Press.
40. Murata, S., Namikawa, J., Arie, H., Tani, J., & Sugano, S. (2013). Development of Proactive and Reactive Behavior via Meta-Learning of Prediction Error Variance. *The 20th International Conference on Neural Information Processing*, pp. 537-544, Daegu, Korea, November.
41. Murata, S., Namikawa, J., Arie, H., Tani, J., & Sugano, H. (2013). Learning to Reproduce Fluctuating Behavioral Sequences Using a Dynamic Neural Network Model with Time-Varying Variance Estimation Mechanism. *The Third Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics*, pp. 1-6, Osaka, Japan, August.
42. Nishide, S., Tani, J., Okuno, H.G., & Ogata, T. (2012). Self-organization of Object Features Representing Motion Using Multiple Timescales Recurrent Neural Network. In *The 2012 International Joint Conference on Neural Networks (IJCNN)*, pp. 1-8, June.
43. Komatsu, M., Namikawa, J., Tani, J., Chao, C.Z., Nagasaka, Y., Fujii, N., & Nakamura, K. (2012). Estimation of functional brain connectivity from electrocorticograms using an artificial network model. In *The 2012 International Joint Conference on Neural Networks (IJCNN)*, pp. 1-8, June.
44. Alnajjar, F., Yamashita, Y., & Tani, J. (2011). Formulating a Cognitive Branching Task by MTRNN: A Robotic Neuroscience Experiments to Simulate the PFC and its Neighboring Regions. *Advances in Cognitive Neurodynamics (III): Proceedings of the Third International Conference on Cognitive Neurodynamics*, pp. 267-274.
45. Yamashita, Y., & Tani, J. (2011). Neurodynamical account for altered awareness of action in schizophrenia: a synthetic neuro-robotic study. *Advances in Cognitive Neurodynamics (III): Proceedings of the Third International Conference on Cognitive Neurodynamics*, pp. 275-280.
46. Namikawa, J., Nishimoto, R., Arie, H., & Tani, J. (2011). Synthetic approach to understanding meta-level cognition of predictability in generating cooperative behavior. *Advances in Cognitive Neurodynamics (III): Proceedings of the Third International Conference on Cognitive Neurodynamics*, pp. 615-611.
47. Maniadakis, M., Tani, J., & Trahanias, P. (2011). Ego-centric and allo-centric abstraction in self-organized hierarchical neural networks. In *2011 IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*, 2, 1-6, Frankfurt, Germany, August.
48. Peniak, M., Marocco, D., Tani, J., Yamashita, Y., Fischer, K., & Cangelosi, A. (2011). Multiple time scales recurrent neural network for complex action acquisition. In *2011 IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*, Frankfurt, Germany, August.
49. Nishide, S., Tani, T., Okuno, H.G., & Ogata, T. (2011). Handwriting prediction based character recognition using recurrent neural network. *2011 IEEE Int. Conf. on Systems, Man, and Cybernetics*, pp. 2549-2554, Anchorage, USA, October.
50. Jeong, S., Park, Y., Arie, H., Tani, J., & Lee, M. (2011). Goal-oriented behavior generation for visually-guided manipulation task. *Lecture Notes in Computer Science*, 7062, 501-508; *Proc. 18th Int. Conf. ICONIP 2011*, Shanghai, China, November.
51. Awano, H., Nishide, S., Arie, H., Tani, J., Takahashi, T., Okuno, H.G., & Ogata, T. (2011). Use of a sparse structure to improve learning performance of recurrent neural networks. *Lecture Notes in Computer Science*, 7064, 323-331; *Proc. 18th Int. Conf. ICONIP 2011*, Shanghai, China, November.

52. Nishimoto, R., & Tani, J. (2011). Schemata Learning. In *Perception-Action Cycle*, pp. 219-241. Springer, New York, NY.
53. Nishide, S., Ogata, T., Tani, J., Takahashi, T., Komatani, K., & Okuno, H.G. (2010). Motion generation based on reliable predictability using self-organized object features. *Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2010)*, pp. 3453-3458, Taipei, Taiwan.
54. Arie, H., Endo, T., Jeong, S., Lee, M., Sugano, S., & Tani, J. (2010). Integrative learning between language and action: a neuro-robotics experiment. Lecture Notes in Computer Science, *Proc. 20th Int. Conf. on Artificial Neural Networks (ICANN2010)*, 6353, 256-265, Thessaloniki, Greece, September.
55. Jeong, S., Lee, M., Arie, H., & Tani, J. (2010). Developmental learning of integrating visual attention shifts and bimanual object grasping and manipulation tasks. *Proc. IEEE 9th Int. Conf. on Development and Learning (ICDL2010)*, pp. 165-170, Ann Arbor, USA.
56. Maniadakis, M., Trahanias, P., & Tani, J. (2010). Self-organized executive control functions. *Proc. 2010 Int. Joint Conf. on Neural Networks (IJCNN2010)*, pp. 3633-3640, Barcelona, Spain, July.
57. Hinoshita, W., Arie, H., Tani, J., Ogata, T., & Okuno, H.G. (2010). Recognition and generation of sentences through self-organizing linguistic hierarchy using MTRNN. Lecture Notes in Artificial Intelligence, 6098, 42-51; *Proc. 23rd Int. Conf. on Industrial Engineering and Other Applications of Applied Intelligence Systems (IEA/AIE2010)*, Cordoba, Spain, June.
58. Arie, H., Endo, T., Arakaki, T., Sugano, S., & Tani, J. (2009). A neuro-dynamical model for understanding mechanisms of goal-directed action imitation. *Proc. 3rd Int. Symp. on Mobiligence*, pp. 46-51, Awaji, Japan, November.
59. Namikawa, J., & Tani, J. (2009). Learning to generate probabilistic event transition sequences via chaotic dynamics. *Proc. 3rd Int. Symp. on Mobiligence*, pp. 129-132, Awaji, Japan, November.
60. Nishide, S., Nakagawa, T., Ogata, T., Tani, J., Takahashi, T., & Okuno, H.G. (2009). Modeling tool-body assimilation using second-order recurrent neural network. *Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2009)*, pp. 5376-5381, St. Louis, USA, October.
61. Nishide, S., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2009). Analysis of motion searching based on reliable predictability using recurrent neural network. *Proc. 2009 IEEE/ASME Int. Conf. on Advanced Intelligent Mechatronics (AIM2009)*, pp. 192-197, Singapore, July.
62. Namikawa, J., & Tani, J. (2009). Learning to imitate stochastic time series in a compositional way by chaos. *Proc. IEICE Technical Report on Neurocomputing*, 109(125), 25-30, Ikoma, Japan, July.
63. Maniadakis, M., Tani, J., & Trahanias, P. (2009). Time perception in shaping cognitive neurodynamics of artificial agents. *Proc. 2009 Int. Joint Conf. on Neural Networks (IJCNN2009)*, pp. 1993-2000, Atlanta, USA, June.
64. Rybicki, L., Sugita, Y., & Tani, J. (2009). Reinforcement learning of multiple tasks using parametric bias. *Proc. 2009 Int. Joint Conf. on Neural Networks (IJCNN2009)*, pp. 2732-2739, Atlanta, USA, June.
65. Nishimoto, R., & Tani, J. (2009). Development process of functional hierarchy for actions and motor imagery. *Proc. IEEE 8th Int. Conf. on Development and Learning (ICDL2009)*, pp. 1-6, Shanghai, China, June.
66. Arie, H., Endo, T., Arakaki, T., Sugano, S., & Tani, J. (2009). Creating novel goal-directed actions using chaotic dynamics. *Proc. IEEE 8th Int. Conf. on Development and Learning (ICDL2009)*, pp. 1-6, Shanghai, China, June.
67. Ogata, T., Yokoya, R., Tani, J., Komatani, K., & Okuno, H.G. (2009). Prediction and imitation of other's motions by reusing own forward-inverse model in robots. *Proc. 2009 IEEE Int. Conf. on Robots and Automation (ICRA2009)*, pp. 4144-4149, Kobe, Japan, May.
68. Tani, J. (2008). Co-developmental learning between humanoids and human via force and intentionality interaction. *Proc. 4th Workshop on Anticipatory Behavior in Adaptive Learning Systems (ABiALS2008)*, Munich, Germany.
69. Nishide, S., Ogata, T., Yokoya, R., Tani, J., Komatani, K., & Okuno, H.G. (2008). Active sensing based dynamical object feature extraction. *Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2008)*, pp. 1-7, Nice, France, September.
70. Nishide, S., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2008). Analysis of reliable predictability based motion generation using RNNPB. *Proc. Int. Conf. on Soft Computing and Intelligent Systems and Int. Symposium on advanced Intelligent Systems (SCIS&ISIS2008)*, pp.

- 305-310, Nogoya, Japan, September.
71. Sugita, Y., & Tani, J. (2008). A sub-symbolic process underlying the usage-based acquisition of a compositional representation: Results of robotic learning experiments of goal-directed actions. *Proc. 7th IEEE Int. Conf. on Development and Learning (ICDL2008)*, pp. 127-132, Monterey, USA, August.
 72. Maniadakis, M., & Tani, J. (2008). Dynamical systems account for meta-level cognition. *Lecture Notes in Artificial Intelligence, Proc. 10th Int. Conf. on Simulation of Adaptive Behavior (SAB2008)*, 5040, 311-320, Osaka, Japan, July.
 73. Sugita, Y., & Tani, J. (2008). Acquiring a functionally compositional system of goal-directed actions of a simulated agent. *Lecture Notes in Artificial Intelligence, Proc. 10th Int. Conf. on Simulation of Adaptive Behavior (SAB2008)*, 5040, 331-341, Osaka, Japan, July.
 74. Nishide, S., Ogata, T., Yokoya, R., Tani, J., Komatani, K., & Okuno, H.G. (2008). Object dynamics prediction and motion generation based on reliable predictability. *Proc. IEEE-RAS Int. Conf. on Robots and Automation (ICRA2008)*, pp. 1608-1614, Pasadena, USA, May.
 75. Yokoya, R., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2007). Discovery of other individuals by projecting a self-model through imitation. *Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2007)*, pp. 1009-1014, San Diego, USA, October-November.
 76. Ogata, T., Murase, M., Tani, J., Komatani, K., & Okuno, H.G. (2007). Two-way translation of compound sentences and arm motions by recurrent neural networks. *Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2007)*, pp. 1858-1863, San Diego, USA, October-November.
 77. Arie, H., Sugano, S., & Tani, J. (2007). Constructive approach to understanding the active learning process of adaptation within a given task environment. *Proc. 2nd Int. Symp. on Mobiligence*, pp. 77-80, Awaji, Japan, July.
 78. Yamashita, Y., Okumura, T., Okanoya, K., & Tani, J. (2007). Function of the sensori-motor nucleus Nif in generation of complex syntactical song in the Bengalese Finch. *Proc. 2nd Int. Symp. on Mobiligence*, pp. 101-104, Awaji, Japan, July.
 79. Nishide, S., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2007). Predicting Object Dynamics from Visual Images through Active Sensing Experiences. *Proc. of IEEE Int. Conf. on Robotics and Automation (ICRA2007)*, pp. 2501-2506, Roma, Italy, April.
 80. Ogata, T., Matsumoto, S., Tani, J., Komatani, K., & Okuno, H.G. (2007). Human-Robot Cooperation using Quasi-symbols Generated by RNNPB Model. *Proc. of IEEE Int. Conf. on Robotics and Automation (ICRA2007)*, pp. 2156-2161, Roma, Italy, April.
 81. Arie, H., Namikawa, J., Ogata, T., Tani, J., & Sugano, S. (2006). Reinforcement learning algorithm with CTRNN in continuous action space. *Lecture Notes in Computer Science, Int. Conf. on Neural Information Processing (ICONIP2006)*, 4232, 387-396, Hong Kong, China, October.
 82. Yokoya, R., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2006). Experience Based Imitation Using RNNPB. *Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2006)*, pp. 3669-3674, Beijing, China, October.
 83. Noda, K., Ito, M., Hoshino, Y., & Tani, J. (2006). Dynamic generation and switching of object handling behaviors by a humanoid robot using a recurrent neural network model. *Lecture Notes in Artificial Intelligence, Int. Conf. on the Simulation of Adaptive Behavior (SAB'06)*, 4095, 185-196, Rome, Italy, September.
 84. Igari, I., Hirata, C., & Tani, J. (2006). Computational model for sequence learning: generalization and differentiation dynamics of learning modules. *Proc. 5th Int. Conf. on Development and Learning (ICDL2006)*, pp. 45-1~45-6, Bloomington, USA, May-June.
 85. Yokoya, R., Ogata, T., Tani, J., Komatani, K., & Okuno, H.G. (2006). Robot imitation from Active-sensing experiences. *Proc. 5th Int. Conf. on Development and Learning (ICDL2006)*, pp. 27-1~27-6, Bloomington, USA, May-June.
 86. Tani, J. (2005). Self-organization of neuronal dynamical structures through sensory-motor experiences of robots. *Proc. Workshop on Intelligence Dynamics, IEEE-RAS Int. Conf. on Humanoid Robots (Humanoids2005)*, pp. 32-37, Tsukuba, Japan, December.
 87. Ogata, T., Ohba, H., Tani, J., Komatani, K., & Okuno, H.G. (2005). Extracting multi-modal dynamics of objects using RNNPB. *Proc. 2005 IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2005)*, pp. 160-165, Edmonton, Canada, August.
 88. Sugita, Y., & Tani, J. (2005). Learning segmentation of behavior to acquire situated combinatorial

- semantics. *Proc. Workshop on Neural-Symbolic Learning and Reasoning, 19th Int. Joint Conf. on Artificial Intelligence (IJCAI-05)*, pp. 1-6, Edinburgh, UK, August.
89. Tani, J., & Ito, M. (2004). Interacting with NeuroCognitive Robots: A Dynamical System View. *Proc. 2nd Int. Workshop on Man-Machine Symbiotic Systems*, pp. 123-134, Kyoto, Japan, November.
 90. Ogata, T., Sugano, S., & Tani, J. (2004). Acquisition of Motion Primitives of Robot in Human-Navigation Task: Towards Human-Robot Interaction based on 'Quasi-Symbol. *Proc. 2nd Int. Workshop on Man-Machine Symbiotic Systems*, pp. 315-326, Kyoto, Japan, November.
 91. Ito, M., & Tani, J. (2004). Generalization in Learning Multiple Temporal Patterns Using RNNPB. *Proc. 11th Int. Conf. on Neural Information Processing (ICONIP2004)*, 3316, 592-598, Calcutta, India, edited by Pal N.R., Kasabov N., Mudi R.K., Pal S., Parui S.K., Springer-Verlag, November.
 92. Tani, J., Ito, M., & Sugita, Y. (2004). Review of a dynamic neural network scheme for synthesizing cognition of robots and humanoids. *Proc. IEEE-RAS/RSJ Int. Conf. on Humanoid Robots (Humanoids2004)*, CD1-20, Los Angeles, USA, November.
 93. Ito, M., & Tani, J. (2004). Joint attention between a humanoid robot and users in imitation game. *Proc. 3rd Int. Conf. on Development and Learning (ICDL'04)*, La Jolla, USA, October.
 94. Ogata, T., Matsunaga, M., Sugano, S., & Tani, J. (2004). Human-robot collaboration using behavioral primitives. *Proc. 2004 IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2004)*, pp. 1592-1597, Sendai, Japan, September-October.
 95. Ogata, T., Sugano, S., & Tani, J. (2004). Open-end human robot interaction from the dynamical systems perspective: Mutual adaptation and incremental learning. *Lecture Notes in Artificial Intelligence, Int. Conf. on Industrial and Engineering Applications of Artificial Intelligence and Expert Systems (IEA/AIE2004)*, 3029, 435-444, Ottawa, Canada, May.
 96. Sugita, Y., & Tani, J. (2004). A holistic approach to compositional semantics: a connectionist model and robot experiments. *Advances in Neural Information Processing Systems 16 (NIPS2003)*, pp. 969-976, Vancouver and Whistler, Canada, December, edited by Thrun S., Saul L.K., Scholkopf B., The MIT Press.
 97. Sugita, Y., & Tani, J. (2004). A connectionist approach to learn association between sentences and behavioral patterns of a robot. *Proc. 8th Int. Conf. on Simulation of Adaptive Behavior (SAB'04)*, pp. 467-476, Los Angeles, USA, July, edited by Schaal S., Ljsspeert A., Billard A., Vijayakumar S., Hallam J., Meyer J., The MIT Press.
 98. Paine, R.W., & Tani, J. (2004). Adaptive motor primitive and sequence formation in a hierarchical recurrent neural network. *Proc. 8th Int. Conf. on Simulation of Adaptive Behavior (SAB'04)*, pp. 274-283, Los Angeles, USA, July, edited by Schaal S., Ljsspeert A., Billard A., Vijayakumar S., Hallam J., Meyer J., The MIT Press.
 99. Paine, R.W., & Tani, J. (2004). Evolved motor primitives and sequences in a hierarchical recurrent neural network. *Proc. Genetic and Evolutionary Computation Conference (GECCO2004)*, pp. 603-614, Seattle, USA, June, edited by Deb K., Springer-Verlag.
 100. Ito, M., & Tani, J. (2004). On-line imitative interaction with a humanoid robot using a mirror neuron model. *Proc. 2004 IEEE Int. Conf. on Robotics & Automation (ICRA2004)*, pp. 1071-1076, New Orleans, USA, April-May.
 101. Ogata, T., Masago, N., Sugano, S., & Tani, J. (2003). Interactive learning in human-robot collaboration. *Proc. 2003 IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS2003)*, pp. 162-167, Las Vegas, USA, October.
 102. Ogata, T., Masago, N., Sugano, S., & Tani, J. (2003). Collaboration development through interactive learning between human and robot. *Proc. 3rd Int. Workshop on Epigenetic Robotics*, pp. 99-106, Boston, USA, August, edited by Prince C.G. and others.
 103. Nishimoto, R., & Tani, J. (2003). Learning to generate combinatorial action sequences utilizing the initial sensitivity of deterministic dynamical systems. *Lecture Notes in Computer Science, Int. Work-Conf. on Artificial and Natural Neural Networks (IWANN2003)*, 2686, 422-429, Mao, Menorca, Spain, June.
 104. Tani, J. (2003). Symbols and dynamics in embodied cognition: revisiting a robot experiment. *Anticipatory Behavior in Adaptive Learning Systems*, pp. 167-178, edited by Butz M.V., Sigaud O., Gerard P., Springer-Verlag.
 105. Tani, J. (2002). Articulation of sensory-motor experiences by 'Forwarding Forward Model': From

- robot experiments to phenomenology. *Proc. 7th Int. Conf. on Simulation of Adaptive Behavior (SAB'02)*, pp. 171-180, Edinburgh, UK, August, edited by Hallam B., Floreano D., Hayes G., Meyer J., and Hallam J., The MIT Press.
106. Tani, J. (2002). Self-organization of behavioral primitives as multiple attractor dynamics: a robot experiment. *Proc. 2002 Int. Joint Conf. on Neural Networks (IJCNN'02)*, pp. 489-494, Honolulu, USA, May.
 107. Tani, J. (2002). The level organization by 'Forwarding Forward models': from robot experiments. *Proc. 7th Int. Symp. on Artificial Life and Robotics (AROB7th'02)*, pp. 359-366, Beppu, Japan, January.
 108. Sugita, Y., & Tani, J. (2002). A connectionist model which unifies the behavioral and the linguistic processes: Results from robot learning experiments. *Mirror Neurons and the Evolution of Brain and Language*, pp. 363-376, Delmenhorst, Germany, edited by Stamenov M.I. and Gallese V., John Benjamins Publishing.
 109. Tani, J., & Sugita, Y. (1999). On the dynamics of robot exploration learning. *Proc. 5th European Conf. on Artificial Life (ECAL99)*, pp. 279-288, Lausanne, Switzerland, September.
 110. Ito, M., & Tani, J. (1998). Dynamic adaptation of a neural-net based agent. *Proc. 8th Int. Conf. on Artificial Neural Networks (ICANN'98)*, pp. 1151-1156, Skovde, Sweden, September.
 111. Horikawa, K., Asoh, H., & Tani, J. (1998). Emergence of experts modules for mobile robot navigation from a mixture of Elman networks. *Proc. Int. Conf. on Neural Information Processing Systems*.
 112. Sugita, Y., & Tani, J. (1998). Emergence of cooperative/competitive behavior in two robot's game: plans or skills?. *SAB'98 Workshop on Adaptive Behavior using dynamic recurrent neural nets*, Zurich, Switzerland.
 113. Tani, J., & Nolfi, S. (1998). Learning to perceive the world as articulated: an approach for hierarchical learning in sensory-motor systems. *Proc. 5th Int. Conf. on Simulation of Adaptive Behavior (SAB'98)*, pp. 270-279, Zurich, Switzerland, August, edited by Pfeifer R., Blumberg B., Meyer J-A., Wilson S., The MIT Press.
 114. Tani, J. (1997). Visual attention and learning of a cognitive robot. *Proc. 7th Int. Conf. on Artificial Neural Networks (ICANN'97)*, Special session on Adaptive Autonomous Agents, pp. 697-702, Lausanne, Switzerland.
 115. Tani, J., Yamamoto, J., & Nishi, H. (1997). Dynamical interactions between learning, visual attention, and behavior: an experiment with a vision-based mobile robot. *Proc. 4th European Conf. on Artificial Life (ECAL97)*, pp. 309-317, Brighton, UK, July, edited by Husbands P. and Harvey I., The MIT Press.
 116. Tani, J. (1996). A dynamical systems approach to represent cognition of robots: a view of the internal observer. *AAAI Fall Symposium: Embodied Cognition and Action*, TR FS-96-02, 123-128, Cambridge, USA.
 117. Tani, J. (1996). Does dynamics solve the symbol grounding problem of robots?. *Proc. AISB'96 Workshop: Learning in Robots and Animals*, Brighton, UK.
 118. Tani, J., & Fukumura, N. (1995). A dynamical systems approach for a learnable autonomous robot. *Advances in Neural Information Processing Systems 8 (NIPS'95)*, pp. 989-995, Denver, Colorado, November, edited by Touretzky S.D., Mozer C. M., Hasselmo E.M., The MIT Press.
 119. Tani, J. (1995). Self-organization of symbolic processes through interactions with the physical world. *Proc. 14th Int. Joint Conf. on Artificial Intelligence (IJCAI'95)*, pp. 112-118, Montreal, Canada, August.
 120. Tani, J. (1995). Essential dynamical structure in learnable autonomous robots. *Proc. 3rd European Conf. on Artificial Life (ECAL95)*, pp. 721-732, Granada, Spain, June, Springer-Verlag.
 121. Tani, J. (1995). Embedding symbolic process into deterministic chaos. *Proc. Biologically Inspired Evolutionary Systems (BIES95)*, pp. 156-162, Tokyo, Japan.
 122. Tani, J. (1995). Dynamical systems approach in learnable autonomous robots. *Proc. Information Integration Workshop, Beyond Divide and Conquer Strategy (IIW95)*, pp. 241-249.
 123. Tani, J. (1994). Experiment of Learning and Chaotic Planning of a Mobile Robot. *Proc. 2nd Int. Conf. on Fuzzy Logic, Neural Nets and Soft Computing*, Iizuka, Japan.
 124. Tani, J., & Fukumura, N. (1994). Embedding task-based behavior into internal sensory-based attractor dynamics in navigation of a mobile robot. *Proc. 1994 IEEE/RSJ/GI Int. Conf. on*

- Intelligent Robots and Systems (IROS'94)*, 2, 886-893, Munich, Germany.
125. Tani, J., & Fukumura, N. (1993). Learning task-based behavior as attractor dynamics: an experiment of autonomous mobile robot. *Proc. Int. Symp. on Nonlinear Theory and Its Applications (NOLTA'93)*, 2, 431-434, Hawaii, USA.
 126. Tani, J., & Fukumura, N. (1993). Learning goal-directed navigation as attractor dynamics for a sensory motor system: an experiment by the mobile robot YAMABICO". *IEEE Proc. Int. Joint Conf. on Neural Networks (IJCNN'93)*, pp. 1747-1753, Nagoya, Japan.
 127. Tani, J. (1992). Diversity and regularity in chaotic wandering of robot. *Proc. 2nd Int. Conf. on Fuzzy Logic and Neural Networks*, pp. 127-132, Iizuka, Japan.
 128. Tani, J. (1992). The role of chaos in processing language. *IEEE Proc. Int. Joint Conf. on Neural Networks (IJCNN'92)*, 3, 444-449, Baltimore, USA.
 129. Tani, J., Hirobe, T., Niida, K., Koshijima, I., & Murakami, H. (1989). New learning algorithm for rule extraction by neural network and its application. *Proceedings of the 4th Knowledge Acquisition for Knowledge-Based Systems Workshop*, 35.1-35.16, Banff, Alberta, October 1-6.
 130. Tani, J., & Yang, W.J. (1989). Numerical Simulation of Pipeline Control System. *Proceeding of the 2nd ICFP*, pp. 836-840, Zhejiang University, China.

Recent Talks and Seminars (since 2006):

1. Keynote speech, Tani, J. Human-in-the-Loop Learning under the Free Energy Principle: A Developmental Robotics Perspective. *The Augmented Humans (AHs) International Conference 2026*, OIST, Okinawa, Japan, March 16-19, 2026.
2. Invited talk, Tani, J. Exploring robotic minds by extending the idea of predictive coding and active inference. *International Symposium on the Unified Theory of Prediction and Action 2026*, Tokyo, Japan, March 13-14, 2026.
3. Keynote speech, Tani, J. Development of Higher Cognitive Mechanisms Through Iterative Sensorimotor Interactions With the World: Insights From Neurorobotics. *32nd International Conference on Neural Information Processing (ICONIP2025)*, OIST, Okinawa, Japan, November 20-24, 2025.
4. Keynote speech, Tani, J. Cognitive Neurorobotics Studies Extending the Free Energy Principle. *6th International Workshop on Active Inference (IWAI2025)*, Montreal, October 15-17, 2025.
5. Invited talk, Tani, J. How can higher cognitive mechanisms develop through iterative sensorimotor interactions with the world? Insights From Neurorobotics. *2025 Asia-Pacific Computational and Cognitive Neuroscience Conference (AP-CCN2025)*, Saitama, Japan, July 22, 2025.
6. Invited talk, Tani, J. Development of Compositionality through Interactive Learning of Language and Action of Robots Using Free Energy Principle. Colloquium Talk, Department of Informatics, University of Hamburg, March 24, 2025.
7. Invited talk, Tani, J. Development of Compositionality through Interactive Learning of Language and Action of Robots Using Free Energy Principle. Italian Institute of Technology, Genova, March 18, 2025.
8. Invited talk, Synergizing Habits and Goals with Variational Bayes. Oct. 9th, 2024, International Research Center for Neurointelligence, The University of Tokyo
9. Invited talk, Cognitive Neurorobotics Studies Extending the Free Energy Principle. *Simulation of Adaptive Behavior (SAB2024)*, Sept. 10, 2024, Irvine, California, The USA
10. Keynote speech, Tani, J. Toward Understanding Structural Basis for Autonomy of Consciousness: A Synthetic Neurorobotics Study. *Association for the Scientific Study of Consciousness 27 (ASSC-27)*, Tokyo, July 2, 2024.
11. Invited lecture, Tani, J. Cognitive Neurorobotics Studies Using the Free Energy Principle. Department of Mechano-Informatics. Graduate School of Information Science and Technology, University of Tokyo, April 24, 2024.
12. Keynote address, Tani, J. Exploring robotic minds using the free energy principle. *AWARE-AI NSF Research Traineeship Program*, January 16th, 2024, Online.

13. Keynote speech, Tani, J. Cognitive Neurorobotics Studies Utilizing the Free Energy Principle: Towards an Ontological Understanding of the Mind. *ALIFE 2023*, Sapporo, July 24, 2023.
14. Invited talk, Tani, J. Exploring robotic minds using the free energy principle. *Brain & Neuroscience Workshop 2023* (Online) - Microsoft Research, June 20, 2023.
15. Invited talk, Tani, J. Cognitive Science Colloquium, Univ. of Tübingen, May 25, 2023.
16. Invited talk, Tani, J. Doctoral Seminar Talk at Technical University of Munich 2023 May 22, 2023.
17. Invited talk, Tani, J. Exploring robotic minds by extending the framework of predictive coding and active inference. The Center for Robotics and Neural Systems (CRNS) (Online), University of Plymouth, UK, February 15, 2023.
18. 招待講演, 谷淳, 製造科学技術センター、異分野技術シーズ「意見交換会」自由エネルギー原理で作動する認知脳ロボット (Online), January 17, 2023
19. Invited talk, Tani, J. Goal-directed Planning and Goal Understanding of Robots by Extended Active Inference. *RoboTac 2022*, The IROS 2022 workshop, Kyoto, October 23, 2022.
20. Invited talk, Tani, J. Lifelong Learning of High-level Cognitive and Reasoning Skills. *IROS 2022 workshop*, Kyoto, October 23, 2022.
21. Invited talk, Tani, J. Cognitive Neurorobotics Studies Using the Frameworks of Predictive Coding and Active Inference. *International Symposium on Artificial Intelligence and Brain Science 2022*, Okinawa Institute of Science and Technology Graduate University, Okinawa, Japan, July 5, 2022.
22. Invited talk, Tani, J. Neurorobotics experiments on goal-directed planning based on active inference. *The Fifth International Workshop on Intrinsically Motivated Open-ended Learning IMOL 2022* (Online), Max Planck Institute for Intelligent Systems, Tübingen, Germany, April 4-6, 2022.
23. Invited talk, Tani, J. Predictive coding and active inference framework for cognitive neurorobotics. *ECoGs seminar organized by Tom Froese* (Online), February 28, 2022.
24. Plenary talk, Tani, J. Cognitive Neurorobotics Study Using the Free Energy Principle. *FEP workshop* (Online), December 14, 2021.
25. Invited talk, Tani, J. Robotic Minds from Predictive Coding and Active Inference. *Graduate School, University of Tokyo, Graduate Course: Brain Information Processing Systems*, (Online), December 10, 2021.
26. Tani, J. Studies on cognitive neurorobotics using the framework of predictive coding and active inference. *RIKEN-OIST Joint Symposium, Series 2, Neurosciences and AI/Data science, Kinds of Minds - What is thinking?* (Online), October 6, 2021.
27. Invited talk, Tani, J. Cognitive neurobotic self in the shared world. *International Conference on Philosophy of Information ICPI 2021* (Online), September 18, 2021.
28. Keynote talk, Tani, J. Exploring robotic minds using the concepts of predictive coding and active inference. *IEEE ICDL 2021, Beijing, China* (Online), August 28, 2021.
29. Invited talk, Tani, J. An analysis of meta-level cognitive processes of a variational recurrent neural network model when acting with the environment. *ICDL Workshop StEPP'21* (Online), August 22, 2021.
30. Invited talk, Tani, J. Exploring robotic minds using predictive coding and active inference frameworks. *Cognitive Informatics at Université du Québec à Montréal* (Online), April 1, 2021.
31. Invited talk, Tani, J. Understanding Embodied Cognition through Free Energy Minimization. *2021 International Workshop on Embodied Intelligence* (Online), March 24, 2021.
32. Invited talk, Tani, J. Cognitive Neurorobotics Study Using Predictive Coding and Active Inference. *Neuroengineering Symposium* (Online), The Technical University of Munich, Germany, March 11, 2021.
33. Invited talk, Tani, J. Exploring minds using predictive coding and active inference frameworks. *1st SMILES workshop 2020* (Online), November 2, 2020.
34. Invited talk, Tani, J. Cognitive Neurorobotics Study and Its Possible Applications to Rehabilitation. *The 2nd RENEW Workshop: Integrating Sensor Information for Optimal Rehabilitation* (Online), October 20, 2020.
35. Invited talk, Tani, J. An account of the development of cognitive minds using predictive coding and

- active inference frameworks. *University of California Irvines CogSci colloquium (Online)*, October 2, 2020.
36. Invited talk, Tani, J. Exploring robotic minds. *Mind & Life Europe summer research institute 2020, 'Grounding Knowledge in Uncertainty' (Online)*, Aug.10 -15, 2020.
 37. Keynote talk, Tani, J. Cognitive Neurorobotics Study Using Predictive Coding and Active Inference Framework. *icra2020 rain PIL Workshop – virtual, New advances in brain-inspired perception, interaction and learning*, May 31, 2020.
 38. Invite talk, Tani, J. A Proposal of a Novel Variational Bayes Recurrent Neural Network Model Under Predictive Coding and Active Inference Frameworks. *Consciousness Club Tokyo*, Tokyo, Japan, February 7, 2020.
 39. Invited talk, Tani, J. Cognitive Neurorobotics Study Using Frameworks of Predictive Coding and Active Inference. BMW Group, Munich, Germany, December 17, 2019.
 40. Invited talk, Institute for Cognitive Systems Technische Universität München, Munich, Germany, December 18, 2019.
 41. Invited talk, Tani, J. Actions, Symbols and Selves as Self-Organizing Dynamic Phenomena: a View from Neurorobotics study. *CHAIN INTERNATIONAL SYMPOSIUM Adventures in Consciousness Science: Exploring the Crossover between Philosophy, Neuroscience, AI, and Robotics*, Sapporo, Japan, November 10, 2019.
 42. Invited talk, Tani, J. An account of the development of cognitive minds using predictive coding and active inference frameworks. *ATR Brain Information Communication Research Laboratory Group Symposium*, Kyoto, Japan, October 30, 2019.
 43. Keynote talk, Tani, J. Accounting social cognitive mechanisms by the framework of predictive coding and active inference: a synthetic experimental study using robotics interaction platforms. *7th International Conference on Human-Agent Interaction (HAI2019)*, Kyoto, Japan, October 8, 2019.
 44. Invited talk, Tani, J. Emergence in Neurorobotics Experimental Studies. *Riken Robotics Retreat*, Kyoto, Japan, September 13, 2019.
 45. Invited talk, Tani, J. ロボット構成論的アプローチで考える身体的自己と物語的自己について, 第19回Kフォーラム, Takayama, Japan, August 23, 2019.
 46. Invited talk, Tani, J. How can compositionality develop through self-exploration and supervised tutoring? *Fourth International Workshop on Intrinsically-Motivated Open-ended Learning (IMOL2019)*, Frankfurt, Germany, July 1-3, 2019.
 47. Invited talk, Tani, J. Generating goal-directed planning images using frameworks of predictive coding and active inference: Agency and object constancy. *NII Shonan Meeting, Language as Goal-Directed Sequential Behavior: Computational Theories, Brain Mechanisms, Evolutionary Roots*, Shonan, Japan, May 21, 2019.
 48. Invited talk, Tani, J. Accounts of the development of embodied cognition using predictive coding and active inference frameworks. *Marcus Wallenberg International Symposium on Affective and Developmental Processes in Cognitive and Autonomous Systems - Augmenting Deep Learning using Neural Dynamics and Predictive Coding*, Gothenburg, Sweden, May 6, 2019.
 49. Invited talk, NCM2019 Satellite Meeting, Toyama, Japan, April 23, 2019.
 50. Invited talk, IRCN Neuro-inspired Computation Course, Tokyo, Japan, March 22, 2019.
 51. Invited talk, SoAIR2019 JST-CREST/IEEE-RAS Spring School on “Social and Artificial Intelligence for User-Friendly Robots”, Shonan, Japan, March 19, 2019.
 52. Invited talk, 第1回公開シンポジウム 自己をめぐる冒険～現象学・ロボティクス・神経科学・精神医学の境界を超えて～, Tokyo, Japan, February 21, 2019.
 53. Invited talk, MEXT Grant-in-Aid for Scientific Research on Innovative Areas: Evolinguistics and OIST Joint Workshop, Okinawa, Japan, February 19, 2019.
 54. Invited talk, 2018 年度 第10回在日科協碩博セミナー “Robotics&AI(第四次産業革命の展望の中で)”, Tokyo, Japan, October 13, 2018.
 55. Invited talk, Humboldt University, Berlin, Germany, September 26, 2018.
 56. Invited talk, Bernstein Conference 2018 Satellite Workshops, Berlin, Germany, September 26, 2018.
 57. Keynote talk, Workshop for the Synthetic Approach to Biology and the Cognitive Sciences,

- ALIFE2018, Tokyo, Japan, July 25, 2018.
58. Invited talk, Eighth International Symposium on Biology of Decision Making, Satellite workshop, Paris, France, May 24, 2018.
 59. Invited talk, Cognitive systems for non-specialists, Munich, Germany, March 14, 2018.
 60. Invited talk, Workshop on Mechanism of Brain and Mind, The Winter Workshop 2018 "Body control and self representation", Rusutsu, Japan, January 9, 2018.
 61. Invited talk, NBNi2017, Wako, Japan, November 17, 2017.
 62. Invited talk, Consciousness Research Network CoRN201, Taipei, Taiwan, November 3, 2017.
 63. Invited talk, RIKEN BSI Retreat, Omiya, Japan, October 31, 2017.
 64. Invited talk, Rebooting Matter and Memory Multidisciplinary Perspectives on Expanded Bergsonism, Tokyo, Japan, October 27, 2017.
 65. Invited talk, International Forum on Singularity: Exponential X, Kyoto, Japan, June 9, 2017.
 66. Invited lecture, ISSA Summer School 2017, Osaka, Japan, May 26, 2017.
 67. Invited lecture, Korean Society for Computational Neuroscience winter school 2017, Pohang, Korea, February 6-10, 2017.
 68. Invited talk, International Forum on Singularity: Exponential X, Kyoto, Japan, June 9, 2017.
 69. Invited lecture, ISSA Summer school 2017, Osaka, Japan, May 22 – June 02, 2017.
 70. Invited lecture, Kyoto Univ. Informatics Seminar, Kyoto, Japan, December 15, 2016.
 71. Invited talk, 2nd Joint UAE Symposium on Social Robotics, UAE, November 20-23, 2016.
 72. Invited lecture, Autumn School for Computational Neuroscience, Japan, November 3-6, 2016.
 73. Invited talk, IROS Workshop on Machine Learning Methods for High-Level Cognitive Capabilities in Robotics 2016 (ML-HLCR 2016), Daejeon, South Korea, October 14, 2016.
 74. Invited talk, Workshop on Bio-inspired Social Robot Learning in Home Scenarios at IEEE/RSJ IROS 2016, Daejeon, South Korea, October 10, 2016.
 75. Invited talk, International Symposium on Temporal Perception and Experience, Time in Tokyo, Tokyo, Japan, October 11, 2016.
 76. Invited lecture, National Center of Neurology and Psychiatry, Tokyo, Japan, August 24, 2016.
 77. Plenary talk, The 9th International Conference on Intelligent Robotics and Applications, Tokyo, August 24, 2016.
 78. Invited lecture, Artificial Intelligence Research Center, AIST, Tokyo, Japan, July 4, 2016.
 79. Invited talk, CFC symposium on “Illuminating neuronal circuits: development to function”, KIST, Seoul, South Korea, November 17, 2015.
 80. Invited seminar, Riken Brain Science Institute, Saitama, Japan, October 29, 2015.
 81. Invited talk, KAIST Brain & Cognitive Engineering Symposium, KAIST, South Korea, September 24, 2015.
 82. Invited lecture, Interdisciplinary College 2015, From Neuron to Person: Assembling Behavior and Cognition, Gunne, Germany, March 11-13, 2015.
 83. Invited talk, International Symposium on Cognitive Neuroscience Robotics, Osaka Univ., Japan, December 11, 2014.
 84. Invited lecture, KOFAC International Conference on Science & Creativity 2014, Seoul, South Korea, December 4-5, 2014.
 85. Invited talk at the symposium on robot consciousness at BICA 2014, MIT, Boston, USA, November 7-9, 2014.
 86. Keynote speech, The 24th Int. Conf. on Artificial Neural Networks (ICANN2014), Hamburg, Germany, September 15-19, 2014.
 87. Invited talk, A-talk series in Aldebaran Robotics, Paris, France, September 19, 2014.
 88. Invited talk, Korean-Swiss Science Days, Seoul, South Korea, October 7-8, 2014.
 89. Invited talk, Neurobiologically inspired robotics workshop, Hong Kong, June 5, 2014.
 90. Invited talk, Korean Society Cognitive Science Conference at Seoul National Univ., Symposium on “Embodied Mind”, Seoul, South Korea, May 24, 2014.
 91. Plenary talk, Japan Workshop on Emergent Intelligence on Networked Agents (JWEIN2013), Keio Univ., Yokohama, Japan, August 30-September 1, 2013.
 92. Invited seminar, Cognitive Science Colloquium, Seoul National University, South Korea, May 28, 2013.
 93. Invited talk, Robotics-Specialized Education Consortium (RoSEC) Winter School, Hanyang Univ,

- South Korea, January 10-12, 2013.
94. Invited talk, Artificial Cognitive Memory (ACM) workshop, Singapore, October 13, 2013.
 95. Plenary talk, First International Conference on Robot Intelligence Technology and Applications (RiTA 2012), Gwangju, South Korea, December 16-18, 2012.
 96. Invited talk, Humanoids 2012 Workshop on Developmental Robotics: Can developmental robotics yield human-like cognitive abilities?, Osaka, Japan, November 29, 2012.
 97. Invited talk, 12th China-Japan-Korea Joint Workshop on Neurobiology and Neuroinformatics, Korea University, Seoul, Korea, November 21-23, 2012.
 98. Invited seminar, Dept. of Computer Science and Engineering, POSTECH, Department Seminar, November 14, 2012.
 99. Keynote lecture, The 7th APCTP-KAIST School for Brain Dynamics: Young Computational Neuroscientist Workshop (2012), South Korea, November 25, 2012.
 100. Invited seminar at the distinguished seminar series, Dept. of Brain and Cognitive Engineering, Korea University, South Korea, October 26, 2012.
 101. Invited talk, Cognitive Neuroscience Workshop at IROS2012, Portugal, October 12, 2012.
 102. Invited seminar, Center of Human-friendly Robotics Based on Cognitive Neuroscience, Osaka Univ., Japan, April 2012.
 103. Invited talk, Workshop on "Cognitive Dynamics in Neural Systems: Mathematical and Computational Modeling", Lyon, France, March 29-30, 2012.
 104. Invited seminar at FIAS Colloquium, Frankfurt Institute for Advanced Studies, Germany, November 24, 2011.
 105. Invited seminar, The Life & Mind Seminar Network, University of Tokyo, November 14, 2011.
 106. Invited seminar at Honda Research Institute Europe, Germany, November 23, 2011.
 107. Invited talk at AAAI Workshop on Language-Action Tools for Cognitive Artificial Agents: Integrating Vision, Action and Language, San Francisco, USA, August 8, 2011, Generating cognitive behavior through top-down and bottom-up interaction in hierarchically organized cortical networks: neuro-robotics experiments.
 108. Invited talk at the 5th Workshop on the Anticipatory Behavior in Adaptive Learning Systems (ABIALS2010/11), Bielefeld, Germany, February 22, 2011, Generation of cognitive behavior through top-down and bottom-up interaction in hierarchical cortical networks: neuro-robotics experiments.
 109. Invited talk at Santa Barbara Workshop on Multi-level Integration organized by Michael Gazzaniga, Santa Barbara, USA, November 3, 2010, Emergence of functional hierarchy in multiple timescale neuronal network model.
 110. Invited talk at Workshop "Mirror Code for Social Interactions". Capri, Italy, June 29, 2010, An account for mirror neuron systems by generative models with functional hierarchy.
 111. Invited talk at the 2nd International Symposium on Computational Neuroscience "Phenomenology, Function, and Computation of Consciousness". Seoul, Korea, June 18, 2010, Autonomy of 'Self' at criticality: the perspective from synthetic neuro-robotics.
 112. Plenary talk at International Interdisciplinary Conference "Mirror Neurons: from Action to Empathy". Torun, Poland, April 16, 2010, Emergence of functional hierarchy: neuro-robotics experiments.
 113. Invited talk at Cognitive Robotics Research Methods Workshop, Plymouth, UK, March 9, 2010, Dynamical Systems.
 114. Invited talk at Joint Workshop on Neural Information Processing, Pyeongchang, Korea, January 21, 2010, Synthetic brain modeling studies via neuro-robotics experiments: from the sensory-motor processes to the high order cognitive processes.
 115. Invited talk at the 2nd bilateral German-Japanese Workshop, Berlin, Germany, May 27, 2009, Emergence of functional hierarchy, neuro-robotics experiments.
 116. Invited talk at Recent Advances in Neuro-Robotics Symposium, Freiburg, Germany, July 21, 2008, Achieving "Organic Compositionality" through self-organization: reviews on brain-inspired robotics experiments.
 117. Plenary talk at the 5th Six-Monthly euCognition Meeting, Munich, Germany, June 27, 2008, Toward "Organic Compositionality": neuro-dynamical systems accounts for cognitive behavior.
 118. Invited talk at Future of AI in Robotics Workshop, Gotenba, Japan, November 30, 2007, Brain

science for robotics.

119. Invited talk at IEEE-RAS/IFRR School of Robotics Science on Learning, Verona, Italy, September 27, 2007, Dynamical systems approach to robot learning.
120. Invited talk at the 9th European Conference on Artificial Life (ECAL07), Lisbon, Portugal, September 9, 2007, Co-developmental learning between human and humanoid robot through physical dynamic interactions.
121. Invited talk at International Conference on Morphological Computation (ICMC07), Venice, Italy, March 27, 2007, Toward “Organic Compositionality”: dynamical systems accounts for cognitive behaviors.
122. Invited talk at Honda International Symposium “Creating Brain-Like Intelligence”, Frankfurt, Germany, February 2, 2007, Brain-inspired robotics: a dynamical systems account for cognitive behavior.
123. Invited talk at International Symposium on Artificial Brain with Emotion and Learning (ISABEL2006), Seoul, Korea, August 24, 2006, Neuro-cognitive robotics: experiments, analysis and interpretations.
124. Plenary Talk at IEEE International Conference on Robotics and Automation (ICRA06), Orlando, U.S.A., May 17, 2006, Brain-inspired robotics: a dynamical systems account for cognitive behavior.

Issued Patents:

1. Tani, J, Nishimoto, R, & Ito, M. “Information processing apparatus, method, and program using recurrent neural networks”, US7877338, issued 2011.
2. Ito, M, Yoshiike, Y, Noda, K, & Tani, J. “Information processing apparatus and method, and program for teaching an action to a device in a time-series pattern”, US7814037, issued 2010.
3. Tani, J, Nishimoto, R, & Ito, M. “Information processing apparatus, information processing method, and program”, JP4388033, issued 2009.
4. Ito, M, & Tani, J. “Information processing apparatus and method, program storage medium and program”, US7373333, issued 2008.
5. Ito, M, & Tani, J. “Information processing apparatus and method”, US7324980, issued 2008.
6. Tani, J “Information processing apparatus and method, and recording medium”, US7089219, issued 2006.
7. Tani, J. “Data processing apparatus and method, recording medium, and program”, US6792413, issued 2004.
8. Tani, J. “Learning-type movement control apparatus, method therefor, and distribution medium therefor”, US6724364, issued 2004.
9. Tani, J. “Land mark recognition method for mobile robot navigation”, US5963663, issued 1999.
10. Tani, J. “Method of processing signals within a neural network to position a robot”, US5504841, issued 1996.
11. Niida, K, Koshijima, I, Tani, J, & Hirobe, T. “Method for recognition of abnormal conditions using neural networks”, US5402521, issued 1995.
12. Tani, J. “Neural network”, US5301257, issued 1994.

Recent Research Grants (since 2006):

1. National Research Foundation of Korea (NRF No. 2014R1A2A2A01005491), (2014-2016) 234 million won
2. Program (10044009) funded by the Korean Ministry of Trade, Industry and Energy, (2013-2014) 100 million won
3. US Air Force of Scientific Research, (AOARD 134067), (2013-2014) USD 39,941
4. Singapore-Korea Joint Research Grant, Institute for Infocomm Research, Singapore (2012-2014) USD 230,000
5. Korean Ministry of Education, Science, and Technology (2012K001342). (2012) 45 million won
6. RIKEN BSI Grants (2006-2011) JPY 364 million yen
7. RIKEN BSI Director’s Competition Fund (2010) JPY 18 million yen

8. RIKEN BSI Director's Competition Fund (2009) JPY 10.4 million yen
9. European Commission (FP7) Grant (ITALK) (2008-2011) EUR 28,800
10. Grants-in-Aid for Scientific Research on Innovative Areas No.22120523 (2010-2011) JPY 9.2 million yen
11. Grants-in-Aid for Scientific Research on Priority Areas No.454 (2008-2009) JPY 10.7 million yen
12. Grants-in-Aid for Scientific Research on Priority Areas No.454 (2006-2007) JPY 8.7 million yen