

Olaf WITKOWSKI

Lead Scientist in Machine Intelligence
Collective Intelligence × Artificial Life

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Experience

2019 – present

Director of Research, Cross Labs, Cross Compass Ltd.

Leading a research institute for the fundamental principles of intelligence within the industry – at major AI company Cross Compass – integrating industrial research and scientific progress, toward and beyond human-level cognition.

Lecturer, Information Sciences at PEAK, Graduate School of Arts and Sciences, University of Tokyo.

Teaching information sciences in the age of information technology to undergraduate students, using the practical approach artificial life, information theory, and computer simulation.

Member of the Board of Directors, International Society for Artificial Life (Elected)
Steering the world's leading society in Artificial Life in terms of academic relations with the industry.

2016 – present

Research Scientist, Earth-Life Science Institute, Tokyo Institute of Technology.

Modeling the emergence of information flows which led to distributed intelligence in early life.

Visiting Research Member, Institute for Advanced Study, Princeton.

Co-Founder and Research Architect, YHouse Inc., New York.

2015 – 2016

Postdoctoral Fellow, Graduate School of Arts and Sciences, University of Tokyo.

Created multiagent neural network based models of massive swarm intelligence.

2013 – 2016

Research Scientist in Machine Learning, Advanced Technology Department, MTI Ltd.

Designed a music recommendation system and an AI/NLP scientist for gene expression analysis.

2007 – 2009

Co-Founder & Chief Research Officer, Commentag LLC.

Designed the first semantic search engine for Microblogging – Tweetag.com, which became Storify.com.

Education

2011 – 2015

Doctor's Degree in Computer Science, Graduate School of Information Science and Technology, University of Tokyo.

Thesis Evolution of Coordination and Communication in Groups of Embodied Agents

Supervisor Prof. Takashi IKEGAMI, Graduate School of Arts and Sciences, University of Tokyo.

2007 – 2008

Master's Course in Natural Language Processing (1 year), Center for Natural Language Processing, University of Louvain (UCL).

2004 – 2007

Master's Degree in Computer Science and Engineering, specialized in Artificial Intelligence, UCL Crypto Group & CSAIL MIT Khipu Research Group.

Research Funding

2020 – 2022

USD 234,000 / 2 years and 2 months Grant in Diverse Intelligences by Templeton World Charity Foundation, to start the "Institute for the Study of Apparent Selves" (ISAS) to research the overarching structures of intelligence and ethics of artificial agents.

2017 – 2019

USD 280,000 / 2 years Private grant to fund YHouse Inc., a new nonprofit transdisciplinary research institute in New York, focused on the study of awareness, artificial intelligence and complex systems, by organizing research activities, and public outreach events.

2016 – 2019

USD 300,000 / 3 years ELSI Origins Network Fellowship at TokyoTech and Institute for Advanced Study for "Information Flows in the Major Transitions of Evolution".

Publications

Google Scholar: https://scholar.google.be/citations?user=B_XJHVkAAAAJ

ORCID: <https://orcid.org/0000-0002-2101-2428>

ResearchGate: https://www.researchgate.net/profile/Olaf_Witkowski

Journal Papers

Witkowski, O. and Guttenberg, N. (in preparation). Transfer of Knowledge via Differentiably Learned Language. *Frontiers in Robotics and AI*.

Witkowski, O. (in preparation). Expansion of Collective Intelligence: A Model of Distributed Computation among Signaling Agents. *Computational Intelligence and Neuroscience in Neurorobotics*.

Frans, K., and Witkowski, O. (2021). **Population-Based Evolution Optimizes a Meta-Learning Objective**. arXiv preprint arXiv:2103.06435.

Fernandez, J., Guttenberg, N., Witkowski, O., and Pasquali, A. (2021). **Cross-Subject EEG-Based Emotion Recognition through Neural Networks with Stratified Normalization**. *Frontiers in neuroscience*, 15, 11.

Khajehabdollahi, S., Witkowski, O. (2020). **Evolution Towards Criticality in Ising Neural Agents**. *Artificial Life*, 26(1), 112-129.

Witkowski, O., Ikegami, T., Virgo, N., Oka, M., Iizuka, H. (2020). **Artificial Life Next Generation Perspectives: Echoes from the 2018 Conference in Tokyo**. *Artificial Life*, 26(1).

Witkowski, O., Ikegami, T. (2019). **How to make swarms open-ended? Evolving collective intelligence through a constricted exploration of adjacent possibles**. *Artificial Life*, 25(2), 178-197.

Rassias, M. T., and Witkowski, O. (2019). **The Program in Interdisciplinary Studies of the Institute for Advanced Study, Princeton**. *The Journal of Record of the European Mathematical Society (EMSN)*, 6(112), 40-42.

Mariscal, Carlos et al. (2019). **Hidden Concepts in the History and Philosophy of Origins-of-Life Studies: a Workshop Report**. *Origins of Life and Evolution of Biospheres*, 49(3), 111-145.

Witkowski, O., Ikegami, T. (2019). **How to Make Swarms Open-Ended? Evolving Collective Intelligence through a Constricted Exploration of Adjacent Possibles**. *Artificial Life* 25(2), 1–20.

Miyahara, K. and Witkowski, O. (2018) **The integrated structure of consciousness: phenomenal content, subjective attitude, and noetic complex. Phenomenology and the Cognitive Sciences** 18 (4), 731-758, Springer Nature. DOI: 10.1007/s11097-018-9608-5.

Drozd, A., Witkowski, O., Matsuoka, S. and Ikegami, T. (2016). **Critical Mass in the Emergence of Collective Intelligence: a Parallelized Simulation of Swarms in Noisy Environments**. *Artificial Life and Robotics* 21.3: 317-323.

Witkowski, O., and Ikegami, T. (2016). **Emergence of Swarming Behavior: Foraging Agents Evolve Collective Motion Based on Signaling**. *PloS one* 11.4 (2016): e0152756.

Scharf, C., Virgo, N., Cleaves, H. J., Aono, M. et al. (2015). **A Strategy for Origins of Life Research**. *Astrobiology* 15.12: 1031-1042.

Peer-Reviewed Papers

Witkowski, O. and Guttenberg, N. (in preparation). **Beyond the Computational Limit of Collective Artificial Intelligence**. *Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS 2020)*.

Khajehabdollahi, S. and Witkowski, O. (2018). **Critical Learning vs. Evolution: Evolutionary Simulation of a Population of Ising-Embodied Neural Networks**. In *Artificial Life Conference Proceedings* (pp. 47-54). One Rogers Street, Cambridge, MA 02142-1209 USA journals-info@mit.edu: MIT Press.

Ikegami, T., Virgo, N., Witkowski, O., Oka, M., Suzuki, R. and Iizuka, H. (2018). **Beyond AI: A New Epistemology for Artificial Life and Complex Systems, an Introduction to the 2018 ALIFE conference**. In *Artificial Life Conference Proceedings* (pp. 1-4). One Rogers Street, Cambridge, MA 02142-1209 USA journals-info@mit.edu: MIT Press.

Witkowski, O. and Nitschke, G. (2018). **The dynamics of cooperation versus competition**. In *Proceedings of the Genetic and Evolutionary Computation Conference Companion* (pp. 115-116). ACM.

Bartlett S. J., Witkowski O. and Giovannelli D. (2017). **Cognition and Learning: A Primary Determinant and Seed of Life**. In *Proceedings of XVIIIth Intl Conf on Origin of Life 2017 (LPI Contrib. No. 1967)* at UC San Diego, CA, USA.

Aubert-Kato, N., Witkowski, O., Hoel, E. and Bredeche, N. (2016). **Towards Detecting the Emergence of Agency in Evolved Artificial Chemistries**. *Artificial Life XV: Late-Breaking Proceedings of the Fifteenth International Conference on the Synthesis and Simulation of Living Systems*, 20-21.

Witkowski, B. and Witkowski, O. (2016). City's Evolution: Vernacular or Sustainable? In: P. Hajek, J. Tywionak, A. Lupisek, Katerina Sojkova (eds.), CESB16: Proceedings of the Central Europe towards Sustainable Building Conference 2016, 635-642.

Witkowski, O. and Ikegami, T. (2015). Swarm Ethics: Evolution of Cooperation for Multi-Agent Foraging Model. Proceedings of the First International Symposium on Swarm Behavior and Bio-Inspired Robotics.

Drozd, A., Witkowski, O., Matsuoka, S. and Ikegami, T. (2015). Signal-Driven Swarming: A Parallel Implementation of Evolved Autonomous Agents to Perform A Foraging Task. Proceedings of the First International Symposium on Swarm Behavior and Bio-Inspired Robotics.

Aubert-Kato, N., Witkowski, O. and Ikegami, T. (2015). The Hunger Games: Embodied agents evolving foraging strategies on the frugal-greedy spectrum. In: P. Andrews, L. Caves, R. Doursat, S. Hickinbotham, F. Polack, S. Stepney, T. Taylor and J. Timmis (eds.), ECAL 2013: Proceedings of the Thirteenth European Conference on Artificial Life, MA: MIT Press, 13, 357-364.

Witkowski, O., Nitschke, G. and Ikegami, T. (2015). Signal drives genetic diversity: an agent-based approach to speciation. Proceedings of the Twentieth International Symposium on Artificial Life and Robotics, Springer Japan, 20, 74-77.

Witkowski, O. and Aubert-Kato, N. (2014). Pseudo-static cooperators: Moving isn't always about going somewhere. In: H. Sayama, J. Rieffel, S. Risi, R. Doursat and H. Lipson (eds.), Artificial Life XIV: Proceedings of the Fourteenth International Conference on the Simulation and Synthesis of Living Systems, MA: MIT Press, 14, 392-397.

Witkowski, O. and Ikegami, T. (2014). Asynchronous evolution: Emergence of signal-based swarming. In: H. Sayama, J. Rieffel, S. Risi, R. Doursat and H. Lipson (eds.), Artificial Life XIV: Proceedings of the Fourteenth International Conference on the Simulation and Synthesis of Living Systems, MA: MIT Press, 14, 302-309.

Witkowski, O. and Nitschke, G. (2013). The Transmission of Migratory Behaviors. In: P. Liò, O. Miglino, G. Nicosia, S. Nolfi and M. Pavone (eds.), ECAL 2013: Proceedings of the Twelfth European Conference on Artificial Life, MA: MIT Press, 12, 1218-1220.

Witkowski, O. and Aubert, N. (2012). Size Does Matter: The Impact of Size on Hoarding Behaviour. In: C. Adami, D. M. Bryson, C. Ofria and R. T. Pennock (eds.), Artificial Life XIII: Proceedings of the Thirteenth International Conference on the Synthesis and Simulation of Living Systems, Cambridge, MA: MIT Press, 13, 542-543.

Witkowski, O., Nitschke, G. and Ikegami, T. (2012). When is happy hour: An agent's concept of time. In: C. Adami, D. M. Bryson, C. Ofria and R. T. Pennock (eds.), Artificial Life XIII: Proceedings of the Thirteenth International Conference on the Synthesis and Simulation of Living Systems, Cambridge, MA: MIT Press, 13, 544-545.

McCrohon, L. and Witkowski, O. (2011). Devil in the details: Analysis of a coevolutionary model of language evolution via relaxation of selection. In: T. Lenaerts, M. Giacobini, H. Bersini, P. Bourguine, M. Dorigo, and R. Doursat (eds.), Advances in Artificial Life, ECAL 2011: Proceedings of the Eleventh European Conference on the Synthesis and Simulation of Living Systems, Cambridge, MA: MIT Press, MIT Press, 522-529.

Non Peer-Reviewed Papers

Fdez, J., Guttenberg, N., Witkowski, O., Pasquali, A. (2020). Cross-Subject EEG-Based Emotion Recognition through Neural Networks with Stratified Normalization. bioRxiv.

Markovitch, O., Witkowski, O. and Virgo, N. (2018). Chemical Heredity as Group Selection at the Molecular Level. arXiv preprint arXiv:1802.08024.

Guttenberg, N., Virgo, N., Witkowski, O., Aoki, H. and Kanai, R. (2016). Permutation-equivariant neural networks applied to dynamics prediction. arXiv preprint arXiv:1612.04530.

Dissertations

Witkowski, O. (2015). **Evolution of Coordination and Communication in Groups of Embodied Agents.** PhD thesis, Library for Engineering and Information Science & Technology, University of Tokyo.

Witkowski, O. (2007). **Decrypting Khipu Cords Used by Incas as a Means of Communication: an Example of Ethno-Cryptography.** MSc thesis, Library of Exact Sciences, Catholic University of Louvain.

Conference Presentations

Witkowski, O. (November 2019). Open-Ended Swarms: The Layered Evolution of Collective Intelligence. SWARM Conference 2019. November 22, 2019.

Witkowski, O. (June 2019). Sensing When to Leave: An Agent-Based Approach to the Concept of Time. The 23rd Annual Meeting of the Association for the Scientific Study of Consciousness (ASSC). June 25-28, 2019.

Witkowski, O. (July 2018). The Future of Collective Intelligence: Investigating the Impact of High-Dimensional Sphere Packing and Massively Multichannel Societies on Communication with Evolutionary Simulation. The 2018 Conference on Artificial Life. July 23-27, 2018.

- Witkowski, O. (April 2017). Information Flows, Connectionist Learning and the Transition to Collective Cognition. AI With The Best, International Online Conference. April 29-30, 2017.
- Witkowski, O. (July 2017). The Emergence of Cognition as Parasitic Information Flows, Artificial Life Workshop, July 22, 2017.
- Witkowski, O. (August 2016). Representing Information Flows in the Major Transitions to Complex Life and Cognition. History and Philosophy of Origins Research Workshop at ELSI, Tokyo, Japan. August 24-26, 2016.
- Aubert-Kato, N., Witkowski, O., Hoel, E. and Bredeche, N. (July 2016). Decision Making in Messy Chemistries: Case Study with an Invasion-based Reaction Diffusion Scenario. Proceedings of the International Conference on Unconventional Computation and Natural Computation.
- Witkowski, O., Nitschke, G. and Ikegami, T. (March 2012). Time To Migrate: The Effect of Lifespan on Imitation and Culturally Learned Migration. Seventh International Workshop on Natural Computing.
- Witkowski, O. (September 2011). A Two-Speed Language Evolution: Exploring the Linguistic Carrying Capacity. Proceedings of the International Conference: Ways to Protolanguage 2.
- Witkowski, O. (July 2011). Can Cultural Adaptation Lead to Evolutionary Suicide? Proceedings of the Twenty-Third Annual Human Behavior & Evolution Society Conference (HBES 2011).
- Witkowski, O. (August 2010). A Two-Speed Language Evolution. Proceedings of the Fourth Annual International Free Linguistics Conference.

Honors & Funding

- 2020 – 2022 ISAS Grant in Diverse Intelligences by Templeton World Charity Foundation, to start a “Center for the Study of Apparent Selves”. The funding covers fees for scholarships, workshops, and conferences in the study of the ethics of artificial and natural agents, leading to the understanding of the overarching structures of intelligence. **USD 234,000 / 2 years and 2 months.**
- 2017 – 2019 Private grant to fund YHouse, a nonprofit transdisciplinary research institute in New York, focused on the study of awareness, artificial intelligence and complex systems. The funding covered research activities, public outreach events, and working workshops focusing on the study of awareness, consciousness and intelligence. **USD 200,000 / 2 years.**
- 2016 – 2019 ELSI Origins Network Postdoctoral Fellowship Grant, supported by the John Templeton Foundation; Study Title: “Information Flows in the Major Transitions of Evolution”. Hosting Institutions: Earth-Life Science Institute, Tokyo Institute of Technology & Institute for Advanced Study. **USD 100,000 / 1 year** (personal funding).
- 2010 – 2013 MEXT Monbukagakusho Scholarship from Japanese Government for PhD Program. Hosting Institution: University of Tokyo (Ikegami Lab/Artificial Life). **USD 1400 / month** (personal funding).
- 2008 – 2010 MEXT Monbukagakusho Scholarship from Japanese Government for Independent Research Project. Hosting Institution: University of Tokyo (Tsuji Lab/Natural Language Processing). **USD 1400 / month** (personal funding).
- 2010 IST International Research Program Fellowship, Université du Québec à Montréal (UQAM), Canada.
- 2008 Grant for Student Mobility for Internships, Hosting Institution: University of Sheffield (UK).
- 2007 Obtained the protected title of Civil Engineer, with Honors (UCL, Belgium).
- 2006 – 2007 Erasmus European Scholarship for Master’s Students. Hosting Institution: Polytechnic University of Valencia (Spain).

Invited Talks & Workshops

- 2019 *The Future of Evolution: Learning in the Age of Artificial Life?* New Perspectives on Evolution. Washington and Lee University, Lexington, USA. November 9, 2019.
- 2018 *What is the Foundation for a Theory of Life?* ASU-SFI Origin of Life Theory Working Group Meeting. Global Biosocial Complexity Initiative Space, Arizona State University, USA. November 11-13.

- 2018 *Novelty?!! Characterizing Open-Ended Evolution from Origins of Life to Artificial Intelligence*. Invited talk at Arizona State University, USA. November 13.
- 2018 *Swarm AI: How Life Can Evolve Higher Forms of Cognition*. After Hours Conversation Talk, Institute for Advanced Study, Princeton, USA. October 29.
- 2018 *The Future of Artificial Life Research*. ALife Roadmap Workshop. ALIFE 2018 Conference, Tokyo, Japan. July 23-27.
- 2018 *Evolution of Life through the Lens of Computation*. Leslie Valiant Lab, Harvard University, Boston, USA. June 15-16.
- 2018 *From Life to Brains: The Emergence of Collective Computation*. McGill University, Montreal, Canada. February 21.
- 2017 *Information Flows, Connectionist Learning and the Transition to Collective Cognition*. AI With The Best, International Online Conference. April 29-30.
- 2017 *Characterizing Cognition as Information Flows*. Cognition Lunch Salon, Princeton, USA. March 23.
- 2017 *When Do Autonomous Agents Act Collectively? Biological Complexity: Can It Be Quantified? Beyond Center Workshops on the Physics of Living Matter*. Institute for Advanced Study, Princeton, USA. February 1-3.
- 2016 *Representing Information Flows in the Major Transitions to Complex Life and Cognition*. History and Philosophy of Origins Research Workshop at ELSI, Tokyo, Japan. August 24-26.
- 2016 *Complex Systems & Artificial Life*. Institute for Advanced Study, Princeton, USA. February 2-March 30.
- 2015 *Signal-Driven Swarm Intelligence and Evolutionary Robotics*. Molecular Robotics Symposium, Tokyo, Japan. October 28.
- 2015 *Deep Learning and Swarm Intelligence: Towards Higher Levels of Cognition*. University of Cape Town, Cape Town, South Africa. September 7-11.
- 2015 EON International Roadmap Workshop, ELSI, Tokyo, Japan. August 28.
- 2015 EON Workshop on the Spontaneous Emergence of Autonomous Agents in Complex Systems, Kobe, Japan. August 12-14.
- 2015 *The Value of Signals in the Evolution of Collective Behavior*. Workshop on Artificial Life and Embodied Systems. Institute of Intelligent Systems and Robotics, Paris, France. June 25.
- 2015 *Evolution of Coordination to Cooperation to Language: An Artificial Life Approach*. Sackler Centre for Consciousness Science, University of Sussex, UK. July 25.
- 2015 *Open-Ended Modeling: How to Make Artificial Life Do Better At Studying Real Life?* Workshop on Artificial Life and Open-Ended Evolution at ELSI, Tokyo, Japan. May 21.
- 2013 *Time To Migrate: The Effect of Lifespan on Imitation and Culturally Learned Migration*. Seventh International Workshop on Natural Computing, Tokyo, Japan. March 21.
- 2012 *Evolution of Artificial Communication in Embodied Agents: The Impact of Temporal Concept on Communicative Behavior*. Artificial Life Summer Workshop, Sapporo, Japan. August 2-3.
- 2012 *Size Does Matter: The Impact of Size on Hoarding Behaviour*. Bio UT International Life Sciences Symposium, Tokyo, Japan. May 21.
- 2011 *A Two-Speed Language Evolution: Exploring the Linguistic Carrying Capacity*. International Conference Protolang 2, Torun, Poland. September 19-21.
- 2011 *Language Evolution in a Population of Simulated Agents*. Artificial Life Summer Workshop, Yamanaka, Japan. July 23-25.

Organizational Roles & Research Management

- 2021 Member of the Advisory Board for ALIFE 2021 in Prague, Czech Republic.
- 2020 Organizer of the [ALife for Good Workshop](#) at ALIFE 2020 in Montréal, Canada.

- 2019 **Elected Member the Board of Directors of the **International Society for Artificial Life (ISAL)****, a democratic, international, professional society dedicated to promoting scientific research and education relating to artificial life, including sponsoring conferences, publishing scientific journals, and maintaining online contents related to artificial life.
- 2019 Advisory Board of the Artificial Life Conference 2019 (ALIFE 2019, UK)
- 2019 Co-organizer of the **Psychological and Artificial Agency Workshop**, at the University of Tokyo, in November 2019.
- 2019 **Co-Founder and Chief Scientist of **Cross Research Institute (CRI) in Tokyo, a research center for intelligence sciences.**** Launched in April 2019, CRI seeks to uncover the fundamental principles of all intelligent processes, observable both in nature and in artificial environments, and to design new tools to better solve problems in the industry. CRI thus **bridges the gap between industrial and academic research**, by promoting fundamental and applied science in connection with technological needs of society.
- 2019 Co-organizer of “Hybrid Life” Workshop at ALIFE 2019 (UK)
- 2019 General Chair of ELSI “Fundamental Principles of Life” Workshop, first event of the “Meeting of Experts”, co-organized by ELSI and the University of Tokyo
- 2019 Program Chair of 7th ELSI International Symposium on Origins of Life “Comparative Emergence”
- 2018 **Program Chair of **ALIFE 2018 – the 2018 International Conference on Artificial Life, themed “Beyond AI”**** held July 23rd-27th in Tokyo (First edition of a unified international conference in artificial life, unifying the major meetings in the Artificial Life field, ECAL and ALIFE, started in 1987).
- 2018 Co-Organizer of Workshop “Leslie Valiant’s Learning Vision”, School of Engineering and Applied Sciences, Harvard University
- 2018 – present **Research Coordinator for the **ELSI Origins Network (EON) project, a global network of researchers working on the origins of life.**** EON was created to form a world-wide and interdisciplinary network for research into the Origin of Life, to pursue leading-edge research at ELSI, in TokyoTech and throughout the whole network, and to internationalize research and higher education in Japan. The total funding of the EON project consisted of **US\$2,000,000** per year, over 2.5 years, and started a large number of initiatives which got their own funding.
- 2017 – present **Co-Founder and Chief Research Architect at **YHouse Inc., nonprofit transdisciplinary research institute focused on the study of awareness, artificial intelligence and complex systems,**** New York City. Although YHouse Inc. got officially incorporated in July 2017, activities started in February 2016. Experience: coordinated the development of 14 research projects, and formed a network including 18 top universities and research institutions, ending up fundraising over US\$100,000 over the first two years of the organization.
- 2016 – present Co-Organizer of the IAS Cognition Lunch, weekly interdisciplinary academic meeting at the Institute for Advanced Study (Princeton)
- 2016 – present **Founder and Principal Organizer of the **Consciousness Club, biweekly interdisciplinary science outreach event**** in New York City – over 1000 members.
- 2016 – 2017 Scientific Board for Conscious Machine Project (CREST Grant “Towards constructing artificial consciousness based on the integrated information theory”, ARAYA Brain Imaging)
- 2016 Scientific Team for the Strategy for Origins of Life Research (SOLR) Roadmap Workshop
- 2015 – present Chair of Coordinating Committee for Initiative for a Synthesis in Studies of Awareness (ISSA), organizing joint research projects and biennial summer schools
- 2011 – present Member of International Society for Artificial Life (ISAL)
- 2010 – present Organizing Member of Tokyo Evolutionary Linguistics Group
- 2007 – 2009 Founder & Leader of Research Department in Machine Learning and Natural Language Processing, at Commentag LLC.
- 2006 – present Member of MIT Khipu Research Group (CSAIL, MIT)

Editorial Boards

- 2020 – present Innovations in Machine Intelligence (Editor); Frontiers (Topic Editor); Entropy (Guest Editor)
- 2018 – present Artificial Life, Journal of the International Society for Artificial Life (Guest Editor), Frontiers in Artificial Intelligence (Guest Editor), Phenomenology and the Cognitive Sciences; New Journal of Physics; Cognitive Systems; Research Special Issue on Social Learning and Cultural Evolution; International Journal of Control
- 2017 – present Biosystems Journal; Frontiers in Physics; Adaptive behavior
- 2016 – present Artificial Life, Journal of the International Society for Artificial Life
- 2015 – present International Conference on the Synthesis and Simulation of Living Systems (Annual PC); International Symposium on Swarm Behavior and Bio-Inspired Robotics (Biennial PC)
- 2013 – present Evolutionary Robotics for the Journal Frontiers in Robotics and AI

Outreach Activities

- 2019 Creation of **Cross Roads Tokyo**, A monthly series of lectures on AI, neuroscience, and artificial life, bridging the gap between academic research and industrial innovation.
- 2018 "Collective Intelligence: Emergence of Language in the Universe". University of Kathmandu, November 26, 2018.
- 2018 EON Interdisciplinary Talk: "The Collective Computation of Life: Emergence and Expansion of Cognition in the Universe", EON Annual Meeting, Tokyo. January 5-6.
- 2017 Nerdnite Talk: "Befriending the Alien: Expansion of Intelligence in the Universe", Nagatacho GRID, Tokyo. December 15.
- 2017 IAS Lunch Talk: "Ethics and AI", Program for Interdisciplinary Studies, Institute of Advanced Study, Princeton. March 8.
- 2017 Talk for the AMIAS board of trustees: "The Collective Computation of Life" (see abstract towards the end of this file), Institute for Advanced Study, Princeton. November 3.
- 2017 Talk at Cognition Lunch Salon: "Characterizing Cognition as Information Flows", Institute for Advanced Study, Princeton. March 23.
- 2017 Public Talk at WeWork: "The Collective Computation of Life", New York, October 25.
- 2016 Public Talk at Consciousness Club: "AlphaGo and the Future of AI", New York. October 12.
- 2016 Creation of **Consciousness Club New York**, A biweekly series of interdisciplinary lectures on awareness, cognition and intelligence open to all scientists, scholars, or engineers.