

Lana SINAPAYEN – Curriculum Vitae

Email

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Employment History

Apr 2020 - Sony Computer Science Laboratories, inc., Japan – Kyoto Lab

Present *Founding Member - Associate Researcher*

Neural Networks, Predictive coding, Artificial Perception

Sep 2018 - Sony Computer Science Laboratories, inc., Japan

Apr 2020 *Associate Researcher*

Neural Networks, Predictive Coding, Measures of complexity

Apr 2019 - Earth-Life Science Institute, Tokyo Institute of Technology, Japan

Jan 2020 *Researcher*

Research and development

Jan 2017 - Mofuyama Mofuko inc., Japan

Jun 2018 *Software Engineer*

Participated in decision making; development of mobile applications (Android, iPhone) and their server-side APIs (Databases, Authentication)

Technologies: **Java, JavaScript, Swift, Python, Docker**

Apr 2016 - MTI inc., Japan

Jan 2017 *Research Assistant*

Design and development of algorithms for processing noisy datasets.

Technologies: **C++, R**

Nov 2013 - Joint research with Honda Research Institute, Japan

Mar 2015 *Research Assistant*

Design and development of sound processing algorithms for a swarm of quadcopters.

Technologies: **Java, C, R**

Education

2015-2018 Ph.D. in Artificial Life and Artificial Intelligence

Tokyo University, Japan, Ikegami Laboratory

Topic

New neural architecture for Predictive Coding

Tokyo University Ichiko Memorial Award laureate; Leading Graduate Schools Scholarship recipient.

2013-2015 Master of Science in Computer and Mathematical Sciences

Tohoku University, Japan, Kinoshita Laboratory

Topic

Swarm Intelligence with sound processing quadcopters

Joint research with Honda Research Institute; Lead to two patents.

2007-2015 Master of Science in Engineering

INSA engineering school, Lyon, France

Major

Information Technologies

Programming Languages

Everyday user Java, C++, R, Python, SQL
Experienced C, Objective C, Swift, PHP, JavaScript

Natural Languages

French Native
English Fluent, TOEIC 970 (2010)
Japanese Fluent, JLPT N2 (2011)

Spanish: 5 years, Chinese: 4 years. Beginner level: Italian, Vietnamese, German, Hebrew, Shangainese, French Deaf Language, French Blind Writing.

Selected Publications

PhD thesis

- **L. Sinapayen** “Exploring new neural architectures for adaptation to complex worlds,” 2018. Ichiko Memorial Award of the University of Tokyo. Available at <https://goo.gl/nEV7kA>

Journals

- **L. Sinapayen**, A. Masumori, and T. Ikegami, “Reactive, Proactive, and Inductive Agents: An evolutionary path for biological and artificial spiking networks.” *Frontiers in Computational Neuroscience*, 13, 2019
- **L. Sinapayen**, A. Masumori, and T. Ikegami “Learning by Stimulation Avoidance: A Principle to Control Spiking Neural Networks Dynamics,” *PloS one* 12.2, e0170388, 2017.

International conferences

- **L. Sinapayen**, A. Masumori and T. Ikegami. “Online Fitting of Computational Cost to Environmental Complexity: Predictive Coding with the epsilon-network.” *Proc. of the 14th European Conference on Artificial Life (ECAL 2017)*, pp 380–387, 2017.
- **L. Sinapayen**, A. Masumori, N. Virgo and T. Ikegami “Learning by Stimulation Avoidance as a Primary Principle of Spiking Neural Networks Dynamics,” *Proc. of the 13th European Conference on Artificial Life (ECAL 2015)*, pp 175–182, 2015.
- A. Masumori, **L. Sinapayen**, N. Maruyama, T. Mita, D. Bakkum, U. Frey, H. Takahashi and T. Ikegami. “Autonomous Regulation of Self and Non-Self by Stimulation Avoidance in Embodied Neural Networks” *Proc. of the 2018 Conference on Artificial Life (ALIFE 2018)*, pp 163–170, 2018. (Best Beyond AI Paper Award)

Publication List

- [1] Lana Sinapayen, Atsushi Masumori, and Takashi Ikegami. “Reactive, Proactive, and Inductive Agents: An evolutionary path for biological and artificial spiking networks”. In: *Frontiers in Computational Neuroscience* 13 (2019).
- [2] Atsushi Masumori, Lana Sinapayen, and Takashi Ikegami. “GACS オートマトンのシミュレーション (A Simulation of the Gacs Automaton)”. In: *Proceedings of the conference of Japanese Society for Artificial Intelligence*. 2017.
- [3] Atsushi Masumori, Lana Sinapayen, and Takashi Ikegami. “Learning by Stimulation Avoidance Scales to Large Neural Networks”. In: *14th European Conference on Artificial Life (ECAL 2017)* (2017).
- [4] Lana Sinapayen and Takashi Ikegami. “Learning by stimulation avoidance: A principle to control spiking neural networks dynamics”. In: *PloS one* 12.2 (2017), e0170388.

- [5] Lana Sinapayen and Takashi Ikegami. “Video Compression with a Predictive Neural Network”. In: Proceedings of the conference of Japanese Society for Artificial Intelligence. 2017.
- [6] Lana Sinapayen et al. “Online Fitting of Computational Cost to Environmental Complexity: Predictive Coding with the epsilon-network”. In: *14th European Conference on Artificial Life (ECAL 2017)* (2017).
- [7] L Sinapayen et al. “Swarm of micro-quadcopters for consensus-based sound source localization”. In: *Advanced Robotics* 31.12 (2017), pp. 624–633.
- [8] Hiroki Kojima et al. “DCGAN を用いた記憶と表象のモデル (A Memory and Representation Model Using DCGAN)”. In: Proceedings of the conference of Japanese Society for Artificial Intelligence. 2016, pp. 2747–2747.
- [9] L Sinapayen and T Ikegami. “A New Principle to Shape Spiking Neural Networks Dynamics: Learning by Stimulation Avoidance”. In: *Meeting Abstracts of the Physical Society of Japan 71.1*. The Physical Society of Japan. 2016, p. 3038.
- [10] Atsushi Masumori et al. “Emergence of sense-making behavior by the Stimulus Avoidance Principle: Experiments on a robot behavior controlled by cultured neuronal cells”. In: *13th European Conference on Artificial Life (ECAL 2015)* (2015), pp. 373–380.
- [11] Keisuke Nakamura, Lana Sinapayen, and Kazuhiro Nakadai. “Interactive sound source localization using robot audition for tablet devices”. In: *Intelligent Robots and Systems (IROS), 2015 IEEE/RSJ International Conference on*. IEEE. 2015, pp. 6137–6142.
- [12] Caleb Scharf et al. “A strategy for origins of life research”. In: *Journal of Astrobiology*. 2015, pp. 1031–1042.
- [13] Lana Sinapayen et al. “Learning by Stimulation Avoidance as a primary principle of spiking neural networks dynamics.” In: *13th European Conference on Artificial Life (ECAL 2015)* (2015). Referred, Published, pp. 175–182.
- [14] Lana Sinapayen et al. “Multicopter localization using sound landmarks”. In: *情報処理学会第 76 回全国大会 3* (2014), p. 8.

Patents

- Honda Motor Co., Ltd.: K. Nakamura, K. Nakadai, T. Kinoshita, H. Takahashi, **L.Sinapayen**, “Acoustic processing device and acoustic processing method” (Patent 9720068)
- Honda Motor Co., Ltd.: K. Nakadai, K. Nakamura, **L. Sinapayen**, M. Imai, “2D sound source localization for mobile devices” (Patent 9664772)