CONTACT

Cambridge, MA 02138

617-201-2328

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SKILLS

- Python
- C++
- JavaScript
- Large Language Models
- Diffusion Models
- Social Network Analysis

MAYA OKAWA

Google Scholar LinkedIn

EXPERIENCE

Research Fellow Harvard University - Cambridge, MA
03/2023 - Present

- Research on understanding behavior of generative AI models through a scientific lens, drawing inspiration from social science and physics.

Research Scientist NTT R&D - Tokyo, Japan
09/2014 - 02/2023

- 2014 – 2018 Engineer on time-series models for real-world applications, including airport logistics and crowd management at large-scale social events.
- 2019 – 2023 Research on integration of deep learning and social science, social network analysis and machine learning to analyze complex social behaviors.

EDUCATION

Doctor of Philosophy (Ph.D.): Computer Science
Kyoto University - Kyoto, 01/2022

Master of Science (M.S.): Physics
University of Tokyo - Tokyo, 01/2014

Bachelor of Science (B.S.): Physics
Sophia University - Tokyo, 01/2012

PUBLICATIONS

Representation Shattering in Transformers: A Synthetic Study with Knowledge Editing
Kento Nishi, **Maya Okawa**, Rahul Ramesh, Mikail Khona, Hidenori Tanaka, and Ekdeep Singh Lubana
ICML - International Conference on Machine Learning, 2025

ICLR: In-Context Learning of Representations
Christopher F. Park, Andrew Lee, Ekdeep Singh Lubana, Young Yang, **Maya Okawa**, Kento Nishi, Michael Wattenberg, Hidenori Tanaka
ICLR – International Conference on Learning Representations, 2025

Dynamics of Concept Learning and Compositional Generalization
Young Yang, Christopher F. Park, Ekdeep Singh Lubana, **Maya Okawa**, Wei Hu, Hidenori Tanaka

ICLR – International Conference on Learning Representations, 2025

- Emergence of Hidden Capabilities: Exploring Learning Dynamics in Concept Space
  Maya Okawa*, Core F Park*, Andrew Lee, Ekdeep S Lubana, Hidenori Tanaka, NeurIPS − Advances in Neural Information Processing Systems, 2024 (Spotlight)

- Towards an Understanding of Stepwise Inference in Transformers: A Synthetic Graph Navigation Model
  Mikail Khona, **Maya Okawa**, Jan Hula, Rahul Ramesh, Kento Nishi, Robert Dick, Ekdeep Singh Lubana, Hidenori Tanaka
  ICML − The International Conference on Machine Learning, 2024

- Compositional Abilities Emerge Multiplicatively: Exploring Diffusion Models on a Synthetic Task
  Maya Okawa, Ekdeep S Lubana, Robert Dick, Hidenori Tanaka
  NeurIPS − Advances in Neural Information Processing Systems, 2023

- Predicting Opinion Dynamics via Sociologically-Informed Neural Networks
  Maya Okawa, Tomoharu Iwata
  KDD − 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, 2022

- Hawkes Processes for Discovering Time-evolving Communities' States behind Diffusion Processes
  Maya Okawa, Tomoharu Iwata, Yusuke Tanaka, Hiroyuki Toda, Takeshi Kurashima, Hisashi Kashima
  KDD − 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, 2021

- Deep Mixture Point Processes: Spatio-temporal Event Prediction with Rich Contextual Information Dynamic
  Maya Okawa, Tomoharu Iwata, Takeshi Kurashima, Yusuke Tanaka, Hiroyuki Toda, Naonori Ueda
  KDD − 25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, 2019

- Refining Coarse-Grained Spatial Data Using Auxiliary Spatial Data Sets with Various Granularities
  Yusuke Tanaka, Tomoharu Iwata, Toshiyuki Tanaka, Takeshi Kurashima, **Maya Okawa**, Hiroyuki Toda
  AAAI − 32th AAAI Conference on Artificial Intelligence, 2019

- Spatially aggregated Gaussian processes with multivariate areal outputs
  Yusuke Tanaka, Toshiyuki Tanaka, Tomoharu Iwata, Takeshi Kurashima, **Maya Okawa**, Yasunori Akagi, Hiroyuki Toda

NeurIPS −Advances in Neural Information Processing Systems, 2019

Online traffic flow prediction using convolved bilinear Poisson regression
Maya Okawa, Hideaki Kim, Hiroyuki Toda
MDM − 18th IEEE International Conference on Mobile Data Management, 2017

AWARDS

Honorable Mention Award, 2017, 18th IEEE International Conference on Mobile Data Management (MDM), Awarded by IEEE

Ph.D. Research Scholarship from Business Communication co., ltd.

DBSJ Kambayashi Young Researcher Award, 2022

Telecommunications Award, 2022, Awarded by The Telecommunication Advancement Foundation

COMMUNITY SERVICE

Committee Member PAKDD
01/2023 - 03/2024

Committee Member AAAI
08/2019 - 12/2021