Takateru Yamakoshi

Contact Information

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Education

The University of Tokyo, Bachelor of Science, Medicine — 04/2018 - 03/2025 (expected)
Princeton University, Exchange Student — 09/2019 - 05/2020

Awards

2023. Clinical Clerkship Best Student Award
2022. UTokyo–Princeton Strategic Partnership Grant
2019. Ito Foundation USA, FUTI Scholarship
2018. High school valedictorian
2016. Tobitate! (Leap for Tomorrow) Scholarship
2015. Murata Scholarship

Journal Papers (∗: equal contributions)

Kumar, S.*, Sumers, T.R.*, **Yamakoshi, T.**, Goldstein, A., Hasson, U., Norman, K.A., Griffiths, T.L., Hawkins, R.D., Nastase, S.A. (2024). Shared functional specialization in transformer-based language models and the human brain. *Nature Communications.*

Proceedings Papers (∗: equal contributions)

Yamakoshi, T., McClelland, J.L., Goldberg A.E., Hawkins, R.D. (2023). Causal interventions expose implicit situation models for commonsense language understanding. *Findings of the Association for Computational Linguistics (ACL).*

Yamakoshi, T., Griffiths, T.L., Hawkins, R.D. (2022). Probing BERT's priors with serial reproduction chains. *Findings of the Association for Computational Linguistics (ACL).*

Hawkins, R.D.*, **Yamakoshi, T.***, Griffiths, T.L., Goldberg, A.E. (2020). Investigating representations of verb bias in neural language models. *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP).*

Presentations

2023. Invited talk at Princeton Computational Cognitive Science Lab
2023. The 61st Annual Meeting of the Association for Computational Linguistics
2022. The 60th Annual Meeting of the Association for Computational Linguistics
2021. Go Global Meeting
- Information session for the exchange programs at UTokyo.
2020. Conference on Empirical Methods in Natural Language Processing (EMNLP)
2020. Final project presentation at the Neuromatch Academy (https://academy.neuromatch.io/)
- Developed a method to identify functional connectivity using Neuropixels data.
- Selected as one of the highlighted projects.

Research Experiences

1. Natural Language Processing & Cognitive Science

1-1. Situation Models in Language Models (Findings of ACL 2023) 09/2021 - 05/2022

- Investigated how language models construct "situation models".
- Revealed circuits inside language models via causal interventions.

1-2. Sampling from Masked Language Models (Findings of ACL 2022) 09/2020 - 05/2021

- Proposed a mathematically rigorous way to sample from masked language models.
- Identified model biases by comparing samples from BERT and those from Wikipedia.

1-3. Grammatical Constructions in Language Models (EMNLP 2020) 01/2020 - 05/2020

- Investigated whether language models learn grammatical constructions.
- Identified the process in which the models build up grammatical constructions.

2. Natural Language Processing & Neuroscience

2-1. Aligning fMRI Data with Language Models (Nat. Commun.) 09/2020 - 05/2022

- Proposed a novel representation that captures how words get contextualized.
- Revealed a shared trend of functional specialization in BERT and the brain.

3. Computational Neuroscience

3-1. Ca^{2+} Oscillation Frequency Encoding in Sleep 11/2021 - 03/2023

- Built a model on how neurons encode the frequency of Ca^{2+} oscillations.

3-2. Motor Learning in Marmosets 11/2020 - 03/2021

- Identified the anatomical layout of motion patterns using Ca^{2+} imaging data.

Professional Service

Ad Hoc Reviewer

- Workshop on Representation Learning for NLP (RepL4NLP) (@ ACL 2024)

Treasurer for the students & alumni association of UTokyo Medical School, 2023–2024

Skills

Natural Languages:	Japanese (native), English (fluent), Spanish, Italian (beginner)
Programming Languages:	Python, R, MATLAB, JavaScript, Prolog
Technologies:	PyTorch, Git, Docker, LaTeX