

Tatsuki Kurabayashi

Postdoc researcher

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RESEARCH TOPICS

My research interest lies in the cognitive plausibility of NLP models—how human and machine language processing differs. This involves a bunch of scientific questions: Can human language acquisition be achieved from (textual or beyond) data alone? What computations are performed during human language processing? Could these be quantified by NLP techniques?

Along with these, I am also interested in helping humans use/learn a language with NLP techniques. Language is for human-to-human communication; practicing language activities (e.g., writing/speaking, discussing, decision-making...) requires a human counterpart. I hope that a **human-like** computational models would be a beneficial partner for this purpose.

DEGREES

- 2022/03: Ph.D. Information Science. Tohoku University, Japan
 - 2020/03: M.S. Information Science. Tohoku University, Japan
 - 2018/03: B.E. Engineering. Tohoku University, Japan.
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EDUCATION

- 2020/04-2022/03: Ph.D. student of Information Science, Graduate School of Information Sciences, Tohoku University, Japan. (early graduation) (Advisor: Prof. Kentaro Inui)
 - Exploring Cognitive Plausibility of Neural NLP Models: Cross-Linguistic and Discourse-Level Studies.
 - 2018/04-2020/03: Master's student of Information Science, Graduate School of Information Sciences, Tohoku University, Japan. (Advisor: Prof. Kentaro Inui)
 - 2014/04-2018/03: Bachelor of Engineering, Department of Information and Intelligent Systems, Tohoku University, Miyagi, Japan.
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EXPERIENCE/ACTIVITIES

- 2018/05-Present.: Langsmith Co., Ltd. (Co-founder).
- 2020/04-2022/03: JSPS Research Fellowship for Young Scientists (DC1).
- 2019/08: 3rd Data Science Summer School in Göttingen, German.
- 2017/08: Cookpad 17days Internship, Japan.
- 2020-2022: Organizer of [Saisentan \(cutting-edge\) NLP study group](#), Japan.

PUBLICATIONS

(Refereed) Journal papers

- Hiroki Ouchi, Jun Suzuki, Sosuke Kobayashi, Sho Yokoi, Tatsuki Kuribayashi, Masashi Yoshikawa, Kentaro Inui.
"Instance-Based Neural Dependency Parsing."
Transactions of the Association for Computational Linguistics 2021 (TACL 2021), 2021/09.
- Tatsuki Kuribayashi, Hiroki Ouchi, Naoya Inoue, Jun Suzuki, Paul Reisert, Toshinori Miyoshi, Kentaro Inui.
論述構造解析におけるスパン分散表現 (Span Representations in Argumentation Structure Parsing)
自然言語処理 (domestic journal), Volume 27, Number 4, pp.753-780, December 2020.
- Takumi Ito, Tatsuki Kuribayashi, Hayato Kobayashi, Ana Brassard, Masato Hagiwara, Jun Suzuki, Kentaro Inui.
"Assisting Authors to Convert Raw Products into Polished Prose."
Journal of Cognitive Science, Vol.21, No.1, pp.99-135, 2020.

(Refereed) International Conferences and Workshops

- Tatsuki Kuribayashi, Yohei Oseki, Ana Brassard, Kentaro Inui.
"Context Limitations Make Neural Language Models More Human-Like."
In Proceedings of the 2022 Conference on Empirical Methods in Natural Language Processing (EMNLP 2022, Long), pp.xxx-xxx, 2022/12. (acceptance rate: ???)
- Yoichi Aoki, Keito Kudo, Tatsuki Kuribayashi, Ana Brassard, Masashi Yoshikawa, Keisuke Sakaguchi, and Kentaro Inui.
"Empirical Investigation of Neural Symbolic Reasoning Strategies."
Non-archival submission for the 2022 ACL-IJCNLP Student Research Workshop (ACL-IJCNLP SRW Non-archival), 2022/11. (acceptance rate: ???)
- Riki Fujihara, Tatsuki Kuribayashi, Kaori Abe, Ryoko Tokuhisa, Kentaro Inui.
"Topicalization in Language Models: A Case Study on Japanese."
In Proceedings of the 29th International Conference on Computational Linguistics (COLING 2022, Long), pp.851-862, 2022/10 (acceptance rate: 522/1563=33.4%).
 - (**earlier version**) Riki Fujihara, Tatsuki Kuribayashi, Kaori Abe, Kentaro Inui.
"Topicalization in Language Models: A Case Study on Japanese."
In Proceedings of Student Research Workshop at the Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP-2021 SRW Non-archival), 2021/08 (acceptance rate: 39%).
- Goro Kobayashi, Tatsuki Kuribayashi, Sho Yokoi, Kentaro Inui.
"Incorporating Residual and Normalization Layers into Analysis of Masked Language Models."
In Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing (EMNLP 2021, Long), pp. 4547-4568, 2021/11 (acceptance rate: 23.3%).
- Tatsuki Kuribayashi, Yohei Oseki, Takumi Ito, Ryo Yoshida, Masayuki Asahara, Kentaro Inui.
"Lower Perplexity is Not Always Human-Like."
In Proceedings of the Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021, Long), pp. 5203-5217, 2021/08 (acceptance rate: 21.3%).
- Takaki Otake, Sho Yokoi, Naoya Inoue, Ryo Takahashi, Tatsuki Kuribayashi, Kentaro Inui.
"Modeling Event Salience in a Narrative Based on Barthes' Cardinal Function."
In Proceedings of the 28th International Conference on Computational Linguistics (COLING-2020, Short), pp. 1784-1794, 2020/12 (acceptance rate: 26.2%).
- Goro Kobayashi, Tatsuki Kuribayashi, Sho Yokoi, Kentaro Inui.
"Attention is Not Only a Weight: Analyzing Transformers with Vector Norms."
In Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP-2020, Long), pp. 7057-7075, 2020/11 (acceptance rate: 754/3359=22.4%).
 - (**earlier version**) Goro Kobayashi, Tatsuki Kuribayashi, Sho Yokoi, Kentaro Inui.
"Self-Attention is Not Only a Weight: Analyzing BERT with Vector Norms."
In Proceedings of Student Research Workshop at the 58th Annual Meeting of the Association for Computational Linguistics (ACL-SRW-2020 Non-archival), 2020/07 (acceptance rate: 72/202=35.6%).

- *Takumi Ito, *Tatsuki Kurabayashi, *Masatoshi Hidaka, Jun Suzuki, Kentaro Inui. (* equal contribution)
"Langsmith: An Interactive Academic Text Revision System."
In Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP-2020, **Demo**), pp. 216-226, 2020/11 (acceptance rate: ???%).
 - Tatsuki Kurabayashi, Takumi Ito, Jun Suzuki, Kentaro Inui.
"Language Models as an Alternative Evaluator of Word Order Hypotheses: A Case Study in Japanese."
In Proceedings of the 58th annual meeting of the Association for Computational Linguistics (ACL-2020, **Long**), pp. 6452-6459, 2020/07 (acceptance rate: 779/3429=22.7%).
 - Hiroki Ouchi, Jun Suzuki, Sosuke Kobayashi, Sho Yokoi, Tatsuki Kurabayashi, Ryuto Konno, Kentaro Inui.
"Instance-Based Learning of Span Representations: A Case Study through Named Entity Recognition."
In Proceedings of the 58th annual meeting of the Association for Computational Linguistics (ACL-2020, **Short**), pp. 6452-6459, 2020/07 (acceptance rate: 208/1185=17.6%).
 - *Takumi Ito, *Tatsuki Kurabayashi, Hayato Kobayashi, Ana Brassard, Masato Hagiwara, Jun Suzuki, Kentaro Inui. (* equal contribution)
"Diamonds in the Rough: Generating Fluent Sentences from Early-stage Drafts for Academic Writing Assistance."
In Proceedings of the 12th International Conference on Natural Language Generation (INLG-2019), pp. 40-53, 2019/10 (acceptance rate: 73/143=51.0%).
 - Masato Hagiwara, Takumi Ito, Tatsuki Kurabayashi, Jun Suzuki, Kentaro Inui.
"TEASN: Framework and Protocol for Integrated Writing Assistance Environments."
In Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing (EMNLP-IJCNLP 2019, **Demo**), pp. 229-234, 2019/11 (acceptance rate: ???%).
 - Tatsuki Kurabayashi, Hiroki Ouchi, Naoya Inoue, Paul Reisert, Toshinori Miyoshi, Jun Suzuki, Kentaro Inui.
"An Empirical Study of Span Representations in Argumentation Structure Parsing."
In Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics (ACL-2019, **Short**), pp. 4691-4698, 2019/07 (acceptance rate: 213/1163=18.2%).
 - Paul Reisert, Naoya Inoue, Tatsuki Kurabayashi, Kentaro Inui.
"Feasible Annotation Scheme for Capturing Policy Argument Reasoning using Argument Templates."
In Proceedings of the 5th Workshop on Argument Mining, pp.79-89, 2018/11 (acceptance rate: 18/32=56.3%).
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TOOLS

- Langsmith Editor (Academic writing support system)
[\[system | usage\]](#)
 - TEASN (Text Editing Assistance Smartness Protocol for Natural Language)
[\[code | document\]](#)
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AWARDS

- 2022/08: **Encouragement Awards**, YANS2022 (domestic meeting). 視覚情報は言語モデルに人間らしい統語的汎化を促すか.
- 2022/03: **President's Award**, Graduate School of Information Sciences, Tohoku University.
- 2022/03: **Recommended Ph.D. thesis** by domestic research association. Exploring Cognitive Plausibility of Neural NLP Models: Cross-Linguistic and Discourse-Level Studies.
- 2022/03: **Excellent Student in Electrical and Information Science Award**, Tohoku University.
- 2022/03: **Special Committee Award**, NLP2022 (domestic conference). 「Transformerにおけるフィードフォワードネットの作用」
- 2021/03: **Best Paper Award 2020**, Association for Natural Language Processing (domestic journal). (1/28=3.5%) 「論述構造解析におけるスパン分散表現」
- 2021/03: **Special Committee Award**, NLP2021 (domestic conference) (14/361=3.8%) 「予測の正確な言語モデルがヒトらしいとは限らない」
- 2020/03: **Excellent Student in Electrical and Information Science Award**, Tohoku University.
- 2020/03: **Best Paper Award**, NLP2020 (domestic conference) (2/396=0.5%) ベクトル長に基づく自己注意機構の解析.
- 2019/03: **Young Researcher Award**, NLP2019 (domestic conference) (11/274=4.0%) 言語モデルを用いた日本語の

SKILLS

- Python (6 years)
 - Tools in ML research: git, Docker, GCP, TeX, PyTorch...
 - Japanese (native), English (academic writing and conversational)
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HOBBIES/FAVORITE THINGS

- Saxophone
- Skiing
- Abacus, Abacus-based mental calculation
- Going to hot springs and camping