

Jackson Petty

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EDUCATION

New York University 2022 – Now

- Ph.D., Department of Linguistics;
- Advised by Sam Bowman.

Yale University 2017 – 2022

- B.A. in Linguistics, with honors; advised by Robert Frank;
- Thesis: *Characterizing Algebraic Generalization in Linguistic Neural Networks* [12].

JOURNAL ARTICLES

Asterisks () denote equal contribution*

- [1] Michael Wilson, **Jackson Petty**, and Robert Frank. Nov. 2023. “How Abstract Is Linguistic Generalization in Large Language Models? Experiments with Argument Structure”. In: *Transactions of the Association for Computational Linguistics* 11 (2023), pp. 1377–1395. ISSN: 2307-387X. DOI: [10.1162/tac1_a_00608](https://doi.org/10.1162/tac1_a_00608).
- [2] Leonardo Di Giosia*, Jahangir Habib*, Jack Hirsch*, Lea Kenigsberg*, Kevin Li*, Dylanger Pittman*, **Jackson Petty***, Christopher Xue*, and Weitao Zhu*. Mar. 2023. “Optimal monohedral tilings of hyperbolic surfaces”. In: *Rose-Hulman Undergraduate Mathematics Journal* 24 (1). DOI: [10.48550/arXiv.1911.04476](https://doi.org/10.48550/arXiv.1911.04476). URL: <https://scholar.rose-hulman.edu/rhumj/vol24/iss1/3/>.
- [3] Jack Hirsch*, Kevin Li*, **Jackson Petty***, and Christopher Xue*. Dec. 2021. “The Optimal Double Bubble for Density r^p ”. In: *Rose-Hulman Undergraduate Mathematics Journal* 22 (2). DOI: [10.48550/arXiv.1908.10766](https://doi.org/10.48550/arXiv.1908.10766). URL: <https://scholar.rose-hulman.edu/rhumj/vol22/iss2/4>.
- [4] Jack Hirsch*, Kevin Li*, **Jackson Petty***, and Christopher Xue*. Oct. 2021. “Certain hyperbolic regular polygonal tiles are isoperimetric”. In: *Geometriae Dedicata* 214 (1), pp. 65–77. ISSN: 1572-9168, DOI: [10.1007/s10711-021-00605-2](https://doi.org/10.1007/s10711-021-00605-2).

CONFERENCE PAPERS

- [5] Najoung Kim, Phu Mon Htut, Samuel R Bowman, and **Jackson Petty**. July 2023. “(QA)²: Question answering with questionable assumptions”. In: *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*. ACL 2023 (Toronto, Canada). Stroudsburg, PA, USA: Association for Computational Linguistics, pp. 8466–8487. DOI: [10.18653/v1/2023.acl-long.472](https://doi.org/10.18653/v1/2023.acl-long.472). URL: <https://aclanthology.org/2023.acl-long.472>.
- [6] **Jackson Petty**, Michael Wilson, and Robert Frank. Feb. 2022. “Do Language Models Learn Position-Role Mappings?” In: *Proceedings of the 46th annual Boston University Conference on Language Development*. BUCLD 46. Vol. 2. Boston, MA, pp. 657–671. DOI: [10.48550/arXiv.2202.03611](https://doi.org/10.48550/arXiv.2202.03611). URL: <https://www.lingref.com/buclid/46/BUCLD46-50.pdf>.
- [7] Robert Frank* and **Jackson Petty***. Dec. 2020. “Sequence-to-Sequence Networks Learn the Meaning of Reflexive Anaphora”. In: *Proceedings of the Third Workshop on Computational Models of Reference, Anaphora and Coreference*. CRAC 2020. Barcelona, Spain (online): Association for Computational Linguistics, pp. 154–164. URL: <https://aclanthology.org/2020.crac-1.16>.

PREPRINTS & MANUSCRIPTS

- [8] Julian Michael, Salsabila Mahdi, David Rein, **Jackson Petty**, Julien Dirani, Vishakh Padmakumar, and Samuel R Bowman. Nov. 2023. “Debate Helps Supervise Unreliable Experts”. In: *arXiv [cs.AI]*. eprint: [2311.08702](https://arxiv.org/abs/2311.08702) (cs.AI). URL: <http://arxiv.org/abs/2311.08702>.
- [9] David Rein, Betty Li Hou, Asa Cooper Stickland, **Jackson Petty**, Richard Yuanzhe Pang, Julien Dirani, Julian Michael, and Samuel R Bowman. Nov. 2023. “GPQA: A Graduate-Level Google-Proof Q&A Benchmark”. In: *arXiv [cs.AI]*. eprint: [2311.12022](https://arxiv.org/abs/2311.12022) (cs.AI). URL: <http://arxiv.org/abs/2311.12022>.
- [10] Aaron Mueller, Albert Webson, **Jackson Petty**, and Tal Linzen. Nov. 2023. “In-context Learning Generalizes, But Not Always Robustly: The Case of Syntax”. In: *arXiv [cs.CL]*. eprint: [2311.07811](https://arxiv.org/abs/2311.07811) (cs.CL). URL: <http://arxiv.org/abs/2311.07811>.
- [11] **Jackson Petty**, Sjoerd van Steenkiste, Ishita Dasgupta, Fei Sha, Dan Garrette, and Tal Linzen. Oct. 2023. “The Impact of Depth and Width on Transformer Language Model Generalization”. In: *arXiv [cs.CL]*. eprint: [2310.19956](https://arxiv.org/abs/2310.19956) (cs.CL). URL: <http://arxiv.org/abs/2310.19956>.
- [12] **Jackson Petty**. Apr. 2022. “Characterizing Algebraic Generalization in Linguistic Neural Networks”. BA thesis. New Haven, CT: Yale University. URL: <https://jacksonpetty.org/thesis>.
- [13] **Jackson Petty** and Robert Frank. Sept. 2021. “Transformers Generalize Linearly”. DOI: [10.48550/arXiv.2109.12036](https://doi.org/10.48550/arXiv.2109.12036). URL: <http://arxiv.org/abs/2109.12036>.

CONFERENCE PRESENTATIONS

- [14] **Jackson Petty**. Dec. 2023. *How Abstract is Linguistic Generalization in Large Language Models? Evidence from Argument Structure*. Singapore.
- [15] **Jackson Petty**. Nov. 2021. *Learning structure-role alignments without linguistic bias: a computational exploration*. Boston, MA (online). URL: <https://www.youtube.com/watch?v=NsdYRSiJc3o>.
- [16] **Jackson Petty**. Dec. 2020. *Sequence-to-Sequence Networks Learn the Meaning of Reflexive Anaphora*. Barcelona, Spain (online). URL: <https://www.youtube.com/watch?v=m32TtETXpJA>.
- [17] Kevin Li* and **Jackson Petty***. Aug. 2019. *The Optimal Double Bubble for Density r^p* . The Ohio State University.

INVITED PRESENTATIONS

- [18] David Rein* and **Jackson Petty***. Feb. 2023. *Uncommon Sense*. NYU.
- [19] **Jackson Petty**. Apr. 2022. *Algebraic Generalization in Neural Networks*. Yale University.

WORK EXPERIENCE

- Student Researcher, Google AI 2023
 - Hosts: Tal Linzen & Dan Garrette;

- Machine Learning Intern, Alert Innovation Autumn 2021
 - Host: Don Bourque III;
 - Project: Automatic Inventory Management with Computer Vision.

Machine Learning Intern, Novetta, Inc Summer 2021

- Hosts: Shauna Revay & Christopher Sieber;
- Project: Real-time Multimodal Activity Classification.

Consulting Software Engineer, The John B. Pierce Lab Winter 2020 – Summer 2021

- Host: Jelena Platisa;
- Project: Fluorescent Signal Processing for 1- and 2-Photon Platforms.

Spatial Deep Learning Intern, HELIX RE Autumn 2020

- Host: James Roche;
- Project: Semantic Segmentation of LiDAR Point Clouds.

Geometry Group, SUMRY REU Summer 2019

- Advisor: Frank Morgan;
- Project: Isoperimetric Problems.

Software Engineer, US Forest Service Summer 2017

- Host: Russel Parsons;
- Project: Integrating GIS Data into Predictive Fire-Modelling.

RESEARCH AFFILIATIONS

Google AI

- Language Research Team, Hosts: Dan Garrette & Tal Linzen. 2023

New York University

- Alignment Research Group (ARG), PI: Sam Bowman; 2022 – Now
- Computation and Psycholinguistics Lab (CapLab), PI: Tal Linzen. 2022 – Now

Yale University

- Computational Linguistics at Yale Lab (CLAY), PI: Bob Frank; 2020 – 2022
- SUMRY Geometry Research Group, PI: Frank Morgan. Summer 2019

TEACHING EXPERIENCE

Writing Partner, Yale College Writing Center 2018 – 2022

- Taught Yale college students techniques for writing, editing, and revising a wide variety of writing styles, including essays, creative writing, technical writing, and applications;
- Met weekly with international students to conduct English as a Second Language tutoring session;
- Teaching Fellow for ENGL 114, LING 284, HIST 174j, LING 254, HIST 334j.

Writing Tutor, Warrior-Scholar Project May 2020

- Worked with pre-college students attending university on the GI bill to develop the writing skills and confidence needed to succeed in the academic environment of college;

- Led 1-on-1 and pair teaching sessions as students developed an original, analytical essay on the central questions of American democracy.