

Jackson Petty

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EDUCATION

- New York University 2022 – Now
– Ph.D., Linguistics.
- Yale University 2017 – 2022
– B.A. in Linguistics, with honors; advised by Robert Frank;
– Thesis: *Algebraic Generalization in Neural Networks*.

REVIEWED PUBLICATIONS

- [1] **Petty, J.**, Wilson, M., and Frank, R. 2022. “Do Language Models Learn Position-Role Mappings?” In: *BUCLD 46: Proceedings of the 46th annual Boston University Conference on Language Development*. Vol. 2, pp. 657–671. URL: <http://www.lingref.com/bucld/46/BUCLD46-50.pdf>.
- [2] Hirsch, J., Li, K., **Petty, J.**, and Xue, C. Dec. 2021. “The Optimal Double Bubble for Density r^p ”. In: *Rose-Hulman Undergraduate Mathematics Journal* 22 (2), pp. 1–19. arXiv: 1908.10766. URL: <https://scholar.rose-hulman.edu/rhumj/vol22/iss2/4/>.
- [3] Hirsch*, J., Li*, K., **Petty*, J.**, and Xue*, C. Feb. 2021. “Certain Hyperbolic Regular Polygonal Tiles are Isoperimetric”. In: *Geom. Dedicata* 2021 (February). DOI: 10.1007/s10711-021-00605-2. arXiv: 1910.12966. URL: <https://link.springer.com/article/10.1007/s10711-021-00605-2>.
- [4] Frank*, R. and **Petty*, J.** 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*. Barcelona, Spain (online): Association for Computational Linguistics, pp. 154–164. arXiv: 2011.00682. URL: <https://www.aclweb.org/anthology/2020.crac-1.16>.
- [5] Di Giosia, L., Habib, J., Hirsch, J., Kenigsberg, L., Li, K., Pittman, D., **Petty, J.**, Xue, C., and Zhu, W. Nov. 2019. “Optimal monohedral tilings of hyperbolic surfaces”. In: *Rose-Hulman Undergraduate Mathematics Journal*, to appear. arXiv: 1911.04476.

INDUSTRY EXPERIENCE

- Machine Learning Intern, Alert Innovation Fall 2021
– Designed Object Detection platform to identify and count products in grocery delivery system;
– Used computer vision system to improve weight-based estimates of product counts;
– Prototyped automatic inventory management system using developed models;
– Presented results to CEO and senior company leadership.
- Machine Learning Intern, Novetta, Inc Summer 2021
– Designed multimodal activity classifier for real-time monitoring of video, infrared, and LiDAR data;
– Built training framework to fine-tune pre-trained video classifier models.
- Spatial Deep Learning Intern, HELIX RE Autumn 2020
– Built and trained custom PyTorch implementations of the Minkowski Engine and RandLA-Net to improve semantic segmentation $mIOU$ and $mAcc$ performance on proprietary dataset;

- Doubled experimental model performance using entropy-based data segmentation, intelligent class regrouping, and improvements to model architecture;
- Developed production pipeline for trained segmentation models, leveraging Docker and Google Cloud Storage to automate model inference in production setting;
- Integrated Google Cloud into model training pathway, greatly reducing training time and increasing parallelizability of training routine.

RESEARCH AFFILIATIONS

- CapLab, NYU 2022–Now
- Led by Tal Linzen.
- Bowman Group, NYU 2022–Now
- Led by Sam Bowman.
- Computational Linguistics at Yale [CLAY] Lab 2020–2022
- Advised by Robert Frank.
- Geometry Group, Summer Undergraduate Mathematics Research at Yale [SUMRY] REU Summer 2019
- Advised by Frank Morgan; member of Geometry Group G'19.

CONFERENCE PRESENTATIONS

- [6] **Petty, J.** and Frank, R. 2021c. *Learning structure-role alignments without linguistic bias*. Boston University Conference on Language Development.
- [7] **Petty, J.** and Frank, R. 2020c. *Sequence-to-Sequence Networks Learn the Meaning of Reflexive Anaphora*. *Conference on Reference, Anaphora, and Co-Reference*, COLING.
- [8] **Petty, J.** and Li, K. 2019b. *The Optimal Double-Bubble for Density r^p* . *Young Mathematicians Conference*, The Ohio State University.

TEACHING EXPERIENCE

- Writing Partner, Yale College Writing Center August 2018 – Now
- Teach Yale college students techniques for writing, editing, and revising a wide variety of writing styles, including essays, creative writing, technical writing, and applications;
 - Meet 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.