

Jackson Petty

206 Elm Street, PO #205585 github.com/jopetty
New Haven, CT 06520 jacksonpetty.org

EDUCATION

Yale College 2017 – Present

New Haven, CT

- Pursuing Bachelors of Art in Mathematics and Linguistics;
- Board member, Yale Undergraduate Mathematics Society. Founding member, Student Advisory Committee to Mathematics Department.

Le Centre de Langue et de Culture Summer 2016

Marrakech, Morocco

- Awarded National Strategic Language Initiative for Youth (NSLI-Y) scholarship from the U.S. Department of State to study Modern Standard Arabic.

PEER-REVIEWED PUBLICATIONS

- [1] 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](https://doi.org/10.1007/s10711-021-00605-2). arXiv: [1910.12966](https://arxiv.org/abs/1910.12966). URL: <https://link.springer.com/article/10.1007/s10711-021-00605-2>.
- [2] 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](https://arxiv.org/abs/2011.00682). URL: <https://www.aclweb.org/anthology/2020.crac-1.16>.
- [3] Di Giosia, L., Habib, J., Hirsch, J., Kenigsberg, L., Li, K., Pittman, D., **Petty, J.**, Xue, C., and Zhu, W. Aug. 2019. *Optimal Monohedral Tilings of Hyperbolic Surfaces*. arXiv: [1911.04476](https://arxiv.org/abs/1911.04476).
- [4] Hirsch, J., Li, K., **Petty, J.**, and Xue, C. 2019b. *The Optimal Double Bubble for Density r^p* . arXiv: [1908.10766](https://arxiv.org/abs/1908.10766).

RESEARCH EXPERIENCE

Undergraduate Research Fellow Summer 2020 – Present

CLAY Lab

- Designed and conducted experiments exploring the ability of recurrent networks to acquire algebraic generalization necessary to parse reflexive anaphors in model language;
- Designed and built custom training and evaluation platform for neural networks;
- Presented novel results at 2020 *Conference on Reference, Anaphora, and Coreference*;
- Built models in PyTorch, statistical analysis in Python and R.

Undergraduate Research Fellow Summer 2019

SUMRY REU

- Identified isoperimetric tilings of compact hyperbolic manifolds and 2-dimensional bubble candidates in weighted Euclidean space;
- Discovered counterexamples to previous assumptions of monotonicity in tiling area;
- Extended Hales’ theorem to regular polygonal tiles of certain area of closed hyperbolic manifolds.

TEACHING EXPERIENCE

Writing Partner

August 2018 – Present

Yale College Writing Center

- 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;
- Selected for exceptional writing and teaching ability;
- Teaching Fellow for ENGL 114, LING 284, HIST 174j, LING 254, HIST 334j.

Writing Tutor

May 2020

Warrior-Scholar Project

- 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.

INDUSTRY EXPERIENCE

Consulting Software Engineer

Winter 2020 – Present

The John B. Pierce Lab

- Designed signal processing algorithm to identify extrema in noisy signal measurements;
- Built data-processing platform for 1-photon and 2-photon experiments, covering thousands of experimental trials.

Spatial Deep Learning Intern

Autumn 2020

HELIX RE

- 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 re-grouping, 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.