Neil Rathi

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Interests

Human and machine language processing, black box models, linguistic basis of LLMs, interpretable NLP, computational psycholinguistics, information theory, typology

Education

Stanford University *2022–2026*
BAS in Linguistics and Math

Palo Alto High School *2018–2022*
Math/CS/Linguistics Coursework at Berkeley & Foothill

Experience

Researcher, Stanford ALPS Lab, *2022–*

- Studied human processing of lexicalized scalar implicatures
- Used Rational Speech Act model and probabilistic programming

Researcher, UC Irvine Language Processing Group *2020–2022*

- Led work using information theory to model gradable morphological fusion
- Used probabilistic modeling to explain typological universals
- Wrote and trained LSTM seq2seq models on UniMorph datasets

Math Tutor and TA, Palo Alto High School *2019–2022*

Papers

Neil Rathi, Michael Hahn, and Richard Futrell. 2022. Explaining patterns of fusion in morphological paradigms using the memory–surprisal tradeoff. In *CogSci 2022*. **Best undergraduate paper.**

Neil Rathi, Michael Hahn, and Richard Futrell. 2021. An information-theoretic characterization of morphological fusion. In *EMNLP*.

Neil Rathi. 2021. Dependency locality and neural surprisal as predictors of processing difficulty: Evidence from reading times. In *CMCL (@ NAACL)*.

talks

Neil Rathi. 2022. Towards an information-theoretic model of inflectional morphology. UC Irvine Language Processing Group (Invited).

Neil Rathi, Michael Hahn, and Richard Futrell. 2021. Information-theoretic characterization of morphological fusion. Presented at SIGTYP @ NAACL. **Best paper.**

Neil Rathi. 2021. A neural network analysis of integration cost and surprisal. Presented at LSA 2021.

Awards

CogSci Sayan Gul Undergraduate Award *2022*
8th Place Winner, Regeneron Science Talent Search *2022*
EMNLP Student Travel Grant *2021*
NSLI-Y Arabic Scholarship *2021*

software

Python, Tensorflow, PyTorch, Java, R, HTML/CSS, JS, WebPPL

languages

English, Latin, Greek, Sanskrit, Arabic