Nathaniel Imel

email · website · linkedin · github

Education

New York University — New York, NY
Ph.D. in Psychology (Cognition and Perception) — 2024–now

University of California, Irvine — Irvine, CA
Ph.D. Program in Language Science — 2023–2024
Ph.D. Program in Logic and Philosophy of Science — 2022–2023

University of Washington — Seattle, WA
M.S. in Computational Linguistics — 2020–2022

University of California, San Diego — La Jolla, CA
B.A. in Philosophy — 2016–2020

Peer reviewed journal publications

1. Steinert-Threlkeld, S., Imel, N. & Guo, Q. A semantic universal for modality. *Semantics and Pragmatics.* https://doi.org/10.3765/sp.16.1 (2023).

Conference proceedings and workshop papers

2. Imel, N. & Zaslavsky, N. Optimal compression in human concept learning. in *Proceedings of the 46th Annual Meeting of the Cognitive Science Society* (2024).
3. Imel, N. & Hafen, Z. Citation-similarity relationships in astrophysics. in *AI for Scientific Discovery: From Theory to Practice Workshop (AI4Science @ NeurIPS)* (2023).
4. Imel, N., Futrell, R., Franke, M. & Zaslavsky, N. Noisy population dynamics lead to efficiently compressed semantic systems. in *NeurIPS Workshop on Information-Theoretic Principles in Cognitive Systems Workshop (InfoCog @ NeurIPS)* (2023).
5. Imel, N. The evolution of efficient compression in signaling games. in *Proceedings of the 45th Annual Meeting of the Cognitive Science Society* (2023).
6. Imel, N. & Steinert-Threlkeld, S. Modals in natural language optimize the simplicity/informativeness trade-off. in *Proceedings of Semantics and Linguistic Theory (SALT 32)* (2022).
7. Guo, Q., Imel, N. & Steinert-Threlkeld, S. A Database for Modal Semantic Typology. in *Proceedings of the 4th Workshop on Research in Computational Linguistic Typology and Multilingual NLP* (Association for Computational Linguistics, Seattle, Washington, July 2022).

Preprints

8. Imel, N., Guo, Q. & Steinert-Threlkeld, S. An efficient communication analysis of modal typology. https://ling.auf.net/lingbuzz/007392 (2023).
9. Uegaki, W., Mucha, A., Imel, N. & Steinert-Threlkeld, S. Deontic priority in the lexicalization of impossibility modals. https://psyarxiv.com/h63y9/ (2023).

Talks and Presentations

Optimal compression in human concept learning
Cogsci 2024 (Rotterdam, NL) 7/24/24

Citation-similarity relationships in astrophysics literature
Santa Fe Institute Workshop on Intelligence and Representation (Cambridge, UK) 8/18/23

Modals in natural language optimize the simplicity/informativeness trade-off
Semantics and Linguistic Theory (Mexico City, CDMX) 6/08/22
Experiments in Linguistic Meaning (Philadelphia, PA) 5/18/22

Noisy population dynamics lead to efficiently compressed semantic systems
University of Tübingen Linguistics Colloquium (virtual) 7/04/23
MIT Computational Psycholinguistics Lab (Cambridge, MA) 10/17/23
Evolang 2024 (Madison) 5/19/24

Software

The unnatural language toolkit (ULTK)
With Shane Steinert-Threlkeld, Chris Haberland, and Mickey Shi. (link).

Sciterra: a library for topographic analyses of scientific literature
With Zachary Hafen. (link).

Awards

Santa Fe Institute Complexity GAINs Summer Fellowship 2023
North American Summer School for Logic, Language and Information Student Fellowship (USC) 2023
Merit Fellowships (UC Irvine School of Social Sciences) 2022
Accepted to Summer School in Logic and Formal Epistemology (CMU) 2021
Best paper "Desire Semantics", selected for UC San Diego undergraduate philosophy journal *Intuitions* 2020

Teaching

- Introduction to Syntax (LSCI 20) Winter, Spring 2024
- Introduction to Linguistics (LSCI 3) Fall 2023
- Basic Economics I (ECON 20A) Spring 2023
- Introduction to Symbolic Logic (LPS 30) Winter 2023

Service

- Ad-hoc reviewing: InfoCog Workshop @ Neurips, EvoLang, California Annual Meeting of Psycholinguistics 2023
- Department Colloquium Committee 2023
- Organizing Committee for Society for Computation in Linguistics Conference 2023

GRADUATE COURSEWORK

Control and Reinforcement Learning	Roy Fox
Language Models for Cognitive Science	Noga Zaslvasky
Experimental Methods	Xin Xie
Computability Theory and Incompleteness	Toby Meadows
Game Theory in the Philosophy of Biology	Cailin O'Connor
Information Theory and Language	Richard Futrell
Mathematical Logic	Kai Wehmeier
Set Theory	Toby Meadows
Social Dynamics	Brian Skyrms and Simon Huttegger
Philosophy of Science Foundations	Kyle Stanford
Deep Learning for NLP	Shane Steinert-Threlkeld
Machine Learning	Sewoong Oh and Simon Du
Advanced Statistical Methods for NLP	Fei Xia
NLP Systems and Applications	Gina Anne-Levow
Deep Processing Techniques For NLP	Shane Steinert-Threlkeld
Shallow Processing Techniques For NLP	Fei Xia
Multilingual Grammar Engineering	Emily Bender
Syntax for Computational Linguistics	Emily Bender
Formal Semantics II	Toshiyuki Ogihara
Phonetics	Marina Oganyan

Experience

Posh Technologies Boston, MA

NLP Research Intern Summer 2021

Performed error analysis experiments of chatbot and presented results to NLP team; wrote unit tests for intent-classification software; curated large datasets and pipelines for ML model evalutaion