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Nathaniel Imel

Education

University of California, Irvine — Irvine, CA
Ph.D. in Language Science — 2023–now
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

Summer Programs
Santa Fe Institute International Summer School (Complexity-GAINS) — Cambridge, 2023
North American Summer School for Logic, Language and Information (NASSLLI) — USC, 2022
Summer School in Logic and Formal Epistemology (LFE) — CMU, 2021

Peer reviewed publications

1. **Imel, N.** & Hafen, Z. Citation-similarity relationships in astrophysics. in *AI for Scientific Discovery: From Theory to Practice Workshop (AI4Science @ NeurIPS)* (2023).
2. **Imel, N.,** Zaslavsky, N., Franke, M. & Futrell, R. Noisy population dynamics lead to efficiently compressed semantic systems. in *NeurIPS Workshop on Information-Theoretic Principles in Cognitive Systems Workshop (InfoCog @ NeurIPS)* (2023).
3. **Imel, N.** The evolution of efficient compression in signaling games. in *Proceedings of the 45th Annual Meeting of the Cognitive Science Society* (2023).
4. **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).
5. 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).
6. Steinert-Threlkeld, S., **Imel, N.** & Guo, Q. A semantic universal for modality. *Semantics and Pragmatics.* https://doi.org/10.3765/sp.16.1 (2023).

Preprints

7. **Imel, N.,** Guo, Q. & Steinert-Threlkeld, S. An efficient communication analysis of modal typology. https://ling.auf.net/lingbuzz/007392 (2023).
8. 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

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) 6/08/22
Experiments in Linguistic Meaning (Philadelphia) 5/18/22

The evolution of efficient compression in signaling games
University of Tübingen Linguistics Colloquium (virtual) 7/04/23
CogSci 2023 (Sidney, virtual) 7/26/23

Software

The artificial language toolkit (ALTK)
With Shane Steinert-Threlkeld. (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 2023
Merit Fellowships (UC Irvine School of Social Sciences) 2022
Best paper "Desire Semantics", selected for UC San Diego undergraduate philosophy journal *Intuitions* 2020

Teaching

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

selected graduate coursework

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