

XINYUE CUI

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📍 Los Angeles, California, United States ☎ (310)-562-3560

EDUCATION

University of Southern California

Aug 2022 - May 2024

Master of Science in Computer Science

GPA: 3.92/4.0

- **Relevant Coursework:** Analysis of Algorithms, Machine Learning, Deep Learning, Applied Natural Language Processing, Advanced Natural Language Processing

University of California, Los Angeles

Sept 2018 - June 2022

Bachelor of Science in Mathematics of Computation, Minor in Linguistics

GPA: 3.84/4.0

- **Relevant Coursework:**

- **Computer Science:** Machine Learning, Artificial Intelligence, Algorithms & Complexity
- **Mathematics:** Calculus, Probability, Statistics, Optimization, Linear Algebra, Numerical Methods
- **Linguistics:** Computational Linguistics, Syntax, Translation & Interpreting

RESEARCH INTERESTS

My research interests lie broadly at **machine learning**, **deep learning**, and **natural language processing**, with a focus on advancing algorithms and models that can effectively process and comprehend human reasoning and language.

PUBLICATIONS

- **Xinyue Cui** and Swabha Swayamdipta. “Linguistic Structure Distillation: A Case for FrameNet.” *Under preparation*.
- **Xinyue Cui**, Praveen Bandla and Rishi Sonthalia. “Effect of Geometry on Graph Neural Networks.” *Under preparation*.
- **Xinyue Cui** and Rishi Sonthalia. “Hyperbolic and Mixed Geometry Graph Neural Network.” In *NeurIPS Workshop on Symmetry and Geometry in Neural Representations*. 2022.
- Myers et al. “ICLR 2022 Challenge for Computational Geometry & Topology: Design and Results.” In *ICLR Workshop on Geometric and Topological Representation Learning*. 2022.

RESEARCH EXPERIENCE

Frame-Semantic Structured Data Augmentation

May 2023 - Present

Research Assistant, with Swabha Swayamdipta

University of Southern California

- Applied large language models to augment FrameNet dataset for frame-semantic role labeling
- Adapted **T5** models to generate diverse annotations, outperforming larger-sized zero-shot models in BARTScore
- Constructed a **SpanBERT**-based classifier to predict the frame element type of generated spans with **97%** accuracy

Hyperbolic Graph Neural Networks

Sept 2021 - Present

Research Assistant, with Rishi Sonthalia

University of California, Los Angeles

- Generalized current machine learning models to hyperbolic manifolds to efficiently utilize the geometry of data space
- Built mixed geometry Graph Neural Networks with both hyperbolic and Euclidean layers to be trained jointly
- Evaluated mixed geometry models on node classification tasks, outperforming Euclidean counterparts

Child Language Acquisition via Bayesian Inference

June 2021 - June 2022

Research Assistant, with Laurel Perkins

University of California, Los Angeles

- Implemented Bayesian machine learning models on child language acquisition and argument structure learning
- Applied MCMC algorithms to sample model parameters to jointly infer verb transitivity and noise observed in data
- Tested on child-directed speech and reached an **80%** accuracy in learning verb transitivity

HONORS

Kaggle Competition in Time Series Forecasting – *Top 5% on global leaderboard*

Dec 2022

Latin Honors – *Cum Laude at UCLA*

June 2022

ICLR 2022 Challenge for Computational Geometry & Topology – *1st place, \$2,000 prize*

March 2022

WORK EXPERIENCE

Jointelligent Technology Co., LTD, Tianjin, China

June 2021 - Aug 2021

Software Engineer Intern

- Developed and tested applications of a Manufacturing Execution System using Postman API
- Analyzed large-scale industrial production data and implemented machine learning models for predictive maintenance

TECHNICAL SKILLS

Programming Languages: C++, Python, Bash, Haskell, Lisp, MATLAB

Frameworks & Tools: PyTorch, Pandas, Numpy, Scikit-Learn, LaTeX, Git