

# YULU QIN

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## EDUCATION

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### New York University

*M.S. in Computer Science at Courant Institute, GPA: 3.78/4*

Sept 2021 – May 2023

*New York, NY*

### The Ohio State University

*B.A. in Sociology and Computer Information Science, Magna Cum Laude*

Sept 2018 – May 2021

*Columbus, OH*

### Nankai University

*GPA (4.0 Scale): 3.7, GPA (100 Scale): 88.50 Rank: Top 18 in 102 in department*

Sep. 2016 – Jun. 2018

*Tianjin, China*

## RESEARCH EXPERIENCE

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### New York University Human and Machine Learning Lab

June 2023 – present

*Assistant Research Scientist, Advisor: Prof. Brenden Lake*

- Examined what syntax and semantics can be learned by training LSTM and Transformer-based models on a single child data from CHILDES and SAYCam corpus
- Evaluated generalization behavior on syntactic minimal pair acceptability test
- Analyzed effects on model architectures and tokenization
- Compared results with child performance reported by existing psycholinguistics literature

### The Ohio State University Computational Social Science

May 2020 – Dec 2020

*Undergrad Research Assistant, Dr. Eungang Choi, Erick Axze*

- Contributed results to presented talk in socPIE Workshop 2020
- Used dictionary-based analysis and topic modeling with R to analyze Airbnb reviews to examine racial disparity.

### The Ohio State University Natural Language Processing

May 2020 – Aug 2020

*Research Assistant of Word Alignment, Prof. Wei Xu*

- Employed the NLP word-aligner machine model to do word/phrase alignments, detected and analyzed complex ontology alignments, and identified discrepancies and increased the validity of alignments through adjustments

## TEACHING ASSISTANTSHIP

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### NYU CSCI-GA.2565 Machine Learning

Sept 2022 – Dec 2022

- Assisted Prof. Rajesh Ranganath in creating rubrics and grading the grad-level Machine Learning (ML) course
- Explained solutions related to PyTorch simulations, statistical distributions, bayesian inferences, latent variables and generative models

## RELEVANT PROJECT

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### Interpret BERT's Syntactic and Semantic representation | *Interpretability of LLMs*

Jan 2023 – May 2023

- Investigated BERT's understanding of phrasal, syntactic, and semantic representations layer by layer, employing neural network probing and visualization techniques for interpretability. [\[Report\]](#)[\[Github\]](#)
- Employed t-SNE to visualize span representations and observed capture of phrase-level information in the lower layers.
- Examined BERT's syntactic representations layer by layer via probing classifiers on subject-verb agreement tests

### Grokking with transformers | *Python, Machine Learning*

Jan 2022 – May 2022

- Trained a transformer model with 400K parameters to 1M epochs and 2M optimization steps on algorithmic datasets for classification and utilized High Performance Computing Machine for training on the cloud [\[Report\]](#)
- Experimented and presented how changes in operators and cardinality of a dataset affect the occurrence of Grokking

### Text To Image Generation | *Python, Hugging Face, PyTorch*

Sept 2022 – Dec 2022

- Fine-tuned Stable Diffusion model for text-to-image generation with Oxford-102 and CIFAR-10 datasets and achieved near perfect performance under the guidance of Prof. Rob Fergus [\[Link\]](#)

### 10KInsight | *HackGPT@Cornell 2023 Finalists*

[DevPost](#) | [GitHub](#)

- Built a cloud-based application with Python Flask, utilizing LLM API to extract risk factors from 10K annual reports
- Developed understanding of prompt engineering techniques, compared performances of different LLMs

## MISC

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**Programming Languages:** Python, Java, C++, R, HTML/CSS, JavaScript, SQL

**Relevant Courses:** Machine Learning, Computational Cognitive Modeling, Natural Language Processing, Computational Linguistics, Fundamental Algorithms, Artificial Intelligence, Linear Algebra, Mathematical tools in Computer Science

**Volunteer Actions:** Coaching rural teenagers for city-level English speech competitions

**Diversity and Leadership:** Cultural Ambassador; Core member of College Varsity Basketball and Debate Team; Participant of Stanford CSDGC youth leadership program

**Honors and Awards:** dean's list (OSU); merit scholarship (Nankai)