Tianze (Etha) Hua

CONTACT
INFORMATION

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EDUCATION

Brown University, Providence, RI
M.S. in Computer Science

Sept 2023 - present

- Relevant Coursework: *Computational Linguistics*, *Deep Learning*, *Topics in Self-Supervised Learning*

Tufts University, Medford, MA
B.S. in Computer Science and Philosophy, GPA: 3.97/4.00

Sept 2019 - May 2023

- Relevant Coursework: *Introduction to Machine Learning and Data Mining*, *Linear Algebra*, *Algorithms*, *Computation Theory*, *Introduction to Linguistics*, *Formal Logic*, *Epistemology*
- Honors: *summa cum laude*; *Helen Morris Cartwright Prize in Philosophy*

RESEARCH
EXPERIENCE

LUNAR Lab, Brown University, Providence, RI
Advised by Prof. Ellie Pavlick

Sept 2023 - present

- Studying the effect of overlapping task-specific subnetworks on task interference during multitasking in pretrained transformer language models
- Investigating how vision-language models resolve conflicts between visual and textual inputs
- Designed a synthetic environment to study multilingual representation alignment and cross-lingual transfer in multilingual language models

Humans to Robots Lab, Brown University, Providence, RI
Advised by Prof. Stefanie Tellex

Sept 2023 - April 2024

- Conducted research on emergent multi-agent communication in reference games and navigation tasks; reproduced key findings from *Multi-agent Communication meets Natural Language: Synergies between Functional and Structural Language Learning* (Lazaridou et al., 2020)

Levin Lab, Tufts University, Medford, MA
Advised by Gizem Gumuskaya

May 2022 - May 2023

- Formalized a computational model of staged biobot self-assembly based on rotatable Wang tiles
- Designed and implemented a shape compiler, which analyzes input target shapes and computes specifications of constituent biobots with staged choreography

PUBLICATIONS

mOthello: When Do Cross-Lingual Representation Alignment and Cross-Lingual Transfer Emerge in Multilingual Models?
Tianze Hua*, Tian Yun*, and Ellie Pavlick
Findings of NAACL 2024

WORKING PAPERS

Effects of Task-Specific Subnetwork Overlap on Task Interference in Multitasking Language Models
Tianze Hua, Jacob Russin, and Ellie Pavlick

Perceptive Conflict Processing in Vision-Language Models
Tianze Hua*, Tian Yun*, and Ellie Pavlick

PROJECTS	**Optimizing CLIP through Parameter Allocation and Data Augmentation**, Providence, RI
	Self-Supervised Learning Course Project Sept 2024 - present

- Implemented a CLIP training pipeline using PyTorch, incorporating pretrained vision and language models; fine-tuned models using low-rank adaptation
- Analyzing the effect of varying the relative sizes of vision and language models on multimodal representation quality and the effect of algorithmically generated negative captions in training batches on downstream performance in vision reasoning tasks

NASA Image Alt-text Generation for the Visually Impaired, Providence, RI

Advised by Thomas Sgouros   Sept 2023 - Dec 2023

- Designed an InstructBLIP-powered alternative-text generator to improve accessibility for visually impaired users, focusing on astronomical images released by the Chandra Observatory
- Developed specialized evaluation techniques to assess the accuracy and quality of alternative-text in astronomical contexts

TEACHING EXPERIENCE	**Brown University**, Providence, RI
	Teaching Assistant Sept 2023 - present

CSCI 1460: Computational Linguistics (Fall 2024)
CSCI 1260: Compilers and Program Analysis (Fall 2023)

Last update on December 6, 2024