Yufeng(Felix) Xu

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EDUCATION

New York University Shanghai **567 West Yangsi Road, Pudong New District, Shanghai, China**

Computer Science *Sep 2022 - Jun 2026*

- **Cumulative GPA:** 4.0/4.0 (Top 1/500)
- **Honors and Scholarships:** Lizhong Scholarship (**full scholarship** upon admission)
- **Relevant Coursework:**
  - Machine Learning
  - Computer Vision
  - Natural Language Processing
  - Algorithms(99.0)
  - Data Structures(97.4)
  - Probability & Statistics(99.6)
  - Discrete Mathematics(99.1)
  - Linear Algebra(98.6)
  - Multivariate Calculus(99.7)

PUBLICATIONS

- L. Guo, K. Ross, Z. Zhao, G. Andriopoulos, S. Ling, **Y. Xu,** and Z. Dong. *Cross Entropy versus Label Smoothing: A Neural Collapse Perspective,* Feb 2024. Submitted to NeuRIPS 2024. Arxiv

RESEARCH EXPERIENCE

Neural Collapse under the setting of Label Smoothing **Jun 2023 - Feb 2024**

Supervised by: Prof. Keith Ross, Prof. Li Guo *NYU Shanghai, Shanghai, China*

- Investigated the Neural Collapse Phenomenon in terminal phase of training to explain the essence of deep learning.
- Looked into Neural Collapse under Cross Entropy and Label Smoothing loss, proved that NC is more prevalent under LS loss in both theory and practice.
- Integrated Distributed Data Parallel to our experiment codes and improved the efficiency of training significantly.

Bidirectional Diffusion Model **Feb 2024 - Now**

Supervised by: Prof. Tianyi Zhou, Prof. Shengjie Wang *NYU Shanghai, China*

- Designing a novel bidirectional architecture for diffusion model to incorporate both text and image data and perform text-to-image, image-to-image, image-to-text, text-to-text and other downstream tasks.
- Apply a new noise schedule strategy to realize fine-grained control of the equilibrium of information entropy to balance the weights of different modalities.

A*esque Neurologic Decoding Algorithm & Tool LLMs **Feb 2024 - Now**

Supervised by: Prof. Chen Zhao *NYU Shanghai, China*

- Conducting a empirical comparison study between tool LLMs and constrained decoding algorithms to investigate which method mitigates the hallucination of language models better.

PROJECTS

LLM-powered Dating Application GitHub

Digital Innovation Challenge, NYU Shanghai *Nov 2023*

- Created an LLM-powered dating app – Amireux – to provide tailored chatbot service for users, learn users' traits, and match users effectively. Prompt-engineered the GPT-4 model to make AI chat in a more human-like way and adapt according to users' response.
- Obtained Top 10 ranking among 80+ teams in the NYU Shanghai Digital Innovation Challenge; launched a beta test in NYU Shanghai involving 10+ students and highly regarded by the users.

TECHNICAL SKILLS

Programming Languages: Python, C++, LaTeX, Matlab, SQL, Shell

Libraries and Tools: PyTorch, Sklearn, Pandas, Numpy, Flask, Git, HPC

EXTRACURRICULAR ACTIVITIES

Vice President of NYU Shanghai ACM Chapter *Dec 2023 - June 2024* **Leader** of NYU Shanghai AI Interest Group *June 2023 - Now*