Yufeng 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), BaoSteel Scholarship
- **Relevant Coursework:**
  - Machine Learning(95.0)
  - Natural Language Processing(95.1)
  - Computer Vision(graduate-level, on-going)
  - Computer Graphics(graduate-level, on-going)
  - Operating Systems(on-going)
  - Parallel Computing(on-going)
  - Algorithms(99.0)
  - Data Structures(97.4)
  - Probability & Statistics(99.6)
  - Linear Algebra(98.6)
  - Multivariate Calculus(99.7)
  - Discrete Mathematics(99.1)

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. Arxiv

RESEARCH EXPERIENCE

Controllable Generation for Tool-augmented LM **Feb 2024 - Now**

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

- Created an expert-validated dataset constructed from real APIs consisting of ∼300 samples to evaluate the faithfulness of LLMs in tool augmented generation.
- Developed a novel classify-and-copy paradigm to enhance the faithfulness of LLMs. Evaluated a wide spectrum of constrained decoding methods for comprehensive comparison.

Multimodal Diffusion for World Model **Feb 2024 - Now**

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

- Investigating a diffusion architecture that is capable of bidirectional generation between text and image and enables mutual reconstruction of the two modalities.
- Working on the adaptation of the architecture to world models to bridge the gap between the performances of VLM and LLM agents.

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 impact of different loss functions (Cross Entropy, MSE, and Label Smoothing) on the Neural Collapse phenomenon in Deep Learning.
- Modified the codebase to a distributed-data-parallel version and improved the training efficiency by 4 times.

PROJECTS

Audio Classification with LSTM & CNN GitHub

CSCI-SHU 360 Machine Learning, NYU Shanghai *Nov 2023*

- Applied an ensemble of bidirectional LSTM and CNN to do classification on a small audio dataset(~ 5000 samples). Constructed a separate-then-classify pipeline and reached 80% test accuracy (5% improvement from previous).

TECHNICAL SKILLS

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

Skills: Git, Docker, High Performance Computing

Libraries: PyTorch, Sklearn, Transformers, OpenCV

EXTRACURRICULAR ACTIVITIES

Vice President of NYU Shanghai ACM Chapter *Dec 2023 - May 2024*

Leader of NYU Shanghai AI Interest Group *May 2024 - Now*