



## CONTACT

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## SKILLS

### Programming Languages:

C/C++, Java, Python, OCaml, Verilog, MIPS Assembly, SQL...

Also hobby:

Soccer ⚽, Go (4 Dan) ●●●

### Language Proficiency:

English: TOEFL 111,

German: advanced,

Chinese: native

# YANCHEN LIU

Harvard University  
Cambridge, MA, USA

## PROFILE

### Affiliation

I am a **graduate** student with a major in **Data Science** at **Harvard University**, USA. Meanwhile, I also cross-register at **Massachusetts Institute of Technology** as a **Computer Science** student.

### Interests

My primary research interests lie in **Natural Language Processing**, with a particular focus on **Efficiency** (adapter, prompting, in-context learning), **Reliability and Fairness** (social biases, toxicity and other social impacts) of Large Language Models (LLMs).

## EDUCATION

### 2022 - 2024 (Expected)

#### Harvard University

MS in Data Science

#### Massachusetts Institute of Technology

Cross-Registration in Computer Science

Core Courses: 6.S867 Machine Learning, 6.S898 Deep Learning, 6.864 Advanced Natural Language Processing, 6.S986 Large Language Models and Beyond, 6.8300 Advances in Computer Vision

### 2018 - 2022

#### Technical University of Munich

BS in Computer Science with highest Honor

Minor in Computational Linguistics at **Ludwig Maximilian University**

Major GPA: 1.2/1.0 (3.97/4.0); Minor GPA: 1.0/1.0 (4.0/4.0)

**top 1%:** Over 70% of courses are Full-Score (1.0/A+), especially all math courses

Honor: **best.in.tum**, promotion of outstanding students

## PUBLICATIONS

- Yanchen Liu**, William Held, Diyi Yang. Dialect Adaptation by Dynamic Aggregation of Linguistic Transformation Rules. *in preparation for EMNLP 2023*
- Yanchen Liu**, Jing Yan, Yan Chen, Jing Liu, Hua Wu. **SMoA: Sparse Mixture of Adapters to Mitigate Multiple Dataset Biases**. arXiv:2302.14413. *in preparation for EMNLP 2023*
- Yanchen Liu**, Timo Schick, Hinrich Schütze. **Semantic-Oriented Unlabeled Priming for Large-Scale Language Models**. arXiv:2202.06133.
- Qi Wu, Chong Zhang, **Yanchen Liu**. **Custom Sine Waves Are Enough for Imitation Learning of Bipedal Gaits with Different Styles**. 2022 IEEE International Conference on Mechatronics and Automation (ICMA). **Finalists of Toshio Fukuda Best Paper Award in Mechatronics**.

## RESEARCH EXPERIENCES

### AI4LIFE Group @ Harvard University Research Intern

Apr. 2023 – Present

Diagnosed and alleviated biases in Large Language Models (LLMs) to promote fairness. (Advisor: Prof. [Hima Lakkaraju](#))

### SALT Lab @ Stanford NLP Group Research Intern

Sep. 2022 – Present

Investigated ways to adapt the Language Models (LMs) trained on the standard American English datasets to a specific dialect, or even to multiple dialects simultaneously. (Advisor: Prof. [Diyi Yang](#))

### NLP Group @ Baidu Inc. Research Intern

Mar. 2022 – Jul. 2022

Introduced [Sparse Mixture of Adapters \(SMoA\)](#), a novel model architecture that can mitigate multiple biases for a task simultaneously, while previous debiasing methods often aim to one specific bias, but fail against others. Defined [multi-bias mitigating](#), a new learning setting, along with [multi-bias loss](#), to regard dealing with multiple biases for a task as a similar setting to dealing with multiple tasks using one model.

### Schütze Lab @ Ludwig Maximilian University Research Intern

Jun. 2021 – Nov. 2021

Investigated ways to make use of unlabeled examples to improve the zero-shot performance of pre-trained LMs without any fine-tuning, while in prior work only labeled examples can be utilized for priming, which are extremely scarce or even entirely unavailable in many settings. (Advisor: Prof. [Hinrich Schütze](#))

Introduced [Semantic-Oriented Unlabeled Priming \(SOUP\)](#), a method that classifies examples by retrieving semantically similar unlabeled examples, assigning labels to them in a zero-shot fashion, and then providing them as additional contexts for in-context learning. And proposed [Bag-of-Contexts \(BoC\) priming](#), a new priming strategy that outperforms the usual, concatenation-based approach by a large margin in unlabeled settings and enables the usage of more examples than fit into the context window.

## SELECTED PROJECTS

### High-Level Augmentation for Data Distribution Matching Course Project @ MIT

Sep. 2022 – Dec. 2021

Proposed to controlled augment training examples with uncommon syntactic structure in original training datasets for a better model's robustness. Conducted experiments on three datasets and showed that our method enhances model's generalization power. (Instructor: Prof. [Yoon Kim](#))

### CommonRoad Search: Search-based Motion Planners Course Project @ TUM

Nov. 2019 – Feb. 2020

Developed and optimized search algorithms with motion primitives to solve Composable benchmarks for Motion planning on Roads scenarios and improved the motion planner using reinforcement learning methods, which outperforms the original baseline by 17%.

Tracked the moving robot's position in space and time using particle filtering based on sensor data with uncertainties, such as steering and velocity control inputs, as well as the distances to visible landmarks, etc.