YANCHEN LIU

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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

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 are focused on **NLP**, with a particular focus on LLMs' i) **Efficiency**: adapters, prompting, in-context learning; ii) **Reliability and Fairness**: social biases, toxicity and other social impacts.

EDUCATION

2022 - 2024 (Expected)

Harvard University
MS in Data Science

Massachusetts Institute of Technology
Cross-Registration in Computer Science

Core Courses: 6.867 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)
Rank: **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. DADA: Dialect Adaptation via Dynamic Aggregation of Linguistic Rules. arXiv:2305.13406.
  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.
  ACL 2023 Workshop on Simple and Efficient Natural Language Processing (SustaiNLP)

- 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 Mechatroincs.**

RESEARCH EXPERIENCES

AI4LIFE Research Group, Harvard University   Apr. 2023 – Present
Research Intern

Diagnosed and alleviated biases in Large Language Models (LLMs) to promote fairness.

Advisor: Prof. Hima Lakkaraju

Natural Language Processing Group, Stanford University   Sep. 2022 – Present
Research Intern

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

Natural Language Processing Group, Baidu Inc.   Mar. 2022 - Jul. 2022
Research Intern

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.

Center for Information and Language Processing, LMU   Jun. 2021 – Nov. 2021
Research Intern

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.

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.

Advisor: Prof. Hinrich Schütze

SELECTED PROJECTS

High-Level Augmentation for Data Distribution Matching   Sep. 2022 – Dec. 2021
Course Project, MIT

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   Nov. 2019 – Feb. 2020
Course Project, TUM

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.