YANCHEN LIU

Harvard University
Cambridge, MA, USA

CONTACT

+1 (617) 397-0175
yanchenliu@g.harvard.edu
liuyanchen1015@gmail.com
Page: liuyanchen1015.github.io

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 research interests lie primarily in Natural Language Processing, especially in **Parameter-Efficient Learning**, **Few-shot Learning** and **Robustness** for NLP models.

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

2018 - 2022

Technical University of Munich
BS in Computer Science
Minor in Computational Linguistics at **Ludwig Maximilian University**

Major GPA: $1.1/1.0$ (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**, Jing Yan, Yan Chen, Jing Liu, Haifeng Wang. Mixture of Adapters: a framework for multi-bias mitigation.
  In preparation for ACL 2023
- **Yanchen Liu**, Timo Schick, Hinrich Schütze. Semantic-Oriented Unlabeled Priming for Large-Scale Language Models. arXiv:2202.06133.
  Submitted to AACL 2022
- 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

Robustness for NLP models Mar. 2022 - Jul. 2022
Baidu, China

Introduced **Mixture of Adapters (MoA)**, a new model architecture that could mitigate multiple biases for a task simultaneously, while previous debiasing methods often aim to one specific bias, but fail against others.

Defined **multi-bias learning**, a new learning setting, along with **multi-bias loss**, a new loss function, which regards dealing with multiple biases for a task as a similar setting to dealing with multiple tasks using one model.

Prompt Transfer from Small LMs to Large-scale LMs Oct. 2021 – Feb. 2022
Tsinghua University, China **Advisor: Prof. Dr. Minlie Huang**

Investigated and designed network architectures to transfer the prompts pre-trained on a small LM to a large-scale LM and performed a thorough performance analysis of them.

SOUP: Semantic-Oriented Unlabeled Priming for Large-Scale Language Models Jun. 2021 – Nov. 2021
LMU, Germany **Advisor: Prof. Dr. Hinrich Schütze**

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.

SELECTED PROJECTS

Tomographic Reconstruction with Mathematical Methods Dec. 2020 – Feb. 2021
Course Project, TUM

Reconstructed and visualized the internal structure of objects based on X-ray signals applied from different angles.

Implemented different mathematical methods including fast Fourier transform (FFT), filtered backprojection algorithm (FBP), maximum likelihood estimation (MLE), etc., to reconstruct the linear attenuation coefficient distribution within an imaged slice, and applied these methods into Computed Tomography (CT).

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.