Yi Wu

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RESEARCH INTERESTS

My current research interests mainly lie in Machine Learning and Natural Language Processing on bridge the gap between artificial and human intelligence, specifically in:

- Devising strategies for model adaptability amidst domain shifts, particularly in NLP;
- Leveraging machine learning algorithms to simulate the real world problems, e.g. exploring AI agents' group behaviors and creating collaborative AI in realistic settings.

EDUCATION

- **University of Wisconsin-Madison** Madison, WI
  Bachelor of Science in Computer Science *2022.9-2024.5 (expected)*
  GPA: 4.0/4.0
- **University of Illinois Urbana-Champaign** Champaign, IL
  The Grainer College of Engineering, Exchange Student *2022.1-2022.5*
  GPA: 3.91/4.0
- **The Hong Kong University of Science and Technology** Hong Kong SAR
  Bachelor of of Science in Computer Science, Mathematics *2019.9-2022.8 (on leave now)*
  GPA: 3.716/4.3

Related Courses:
Honors Design and Analysis of Algorithms, Honors Probability, Honors Linear Algebra, Calculus I, II, III, Intro to Machine Perception, Communication Networks, Intro to Optimization, Intro-Artificl Intelligence, Deep Learning in Computer Vision, Advanced Natural Language Processing

PUBLICATIONS & PREPRINTS

[1] **Evolving Domain Adaptation of Pretrained Language Models for Text Classification**
Yun-Shiuan Chuang, **Yi Wu**, Dhruv Gupta, Rheeya Uppaal, Ananya Kumar, Luhang Sun, Makesh M. Sreedhar, Sijia Yang, Timothy T. Rogers, Junjie Hu
Preprint, under review. [pdf]

[2] **Evolving Domain Adaptation of Pretrained Language Models for Text Classification**
Yun-Shiuan Chuang, **Yi Wu**, Rheeya Uppaal, Luhang Sun, Makesh M. Sreedhar, Sijia Yang, Timothy T. Rogers, Junjie Hu
In *NeurIPS 2023 Workshop on Distribution Shifts (DistShift)*.[pdf]

[3] **KnowComp Submission for WMT23 Word-Level AutoCompletion Task**
Yi Wu, Haochen Shi, Weiqi Wang, Yangqiu Song
In *Proceedings of the Eighth Conference on Machine Translation (WMT-2023).* [pdf], [code]

RESEARCH EXPERIENCES

Hulab & Knowledge and Concepts Lab, UW-Madison *2023.3 - present*
Advisor: Junjie Hu, Timothy T. Rogers

- **Simulating Opinion Dynamics with Networks of LLM-based Agents**
  - Helped to explore the use of Large Language Models (LLMs) for simulating human opinion in group dynamics in politically charged environments.
  - Proposed ideas to identify biases in LLM agents towards accurate information, impacting the simulation of resistant viewpoints, like in climate change debates.
  - Helped to utilize LLMs to role-play partisan personas, finding that responses without Chain-of-Thought (CoT) reasoning align more with human behaviors.
- **Evolving Domain Adaptation of Pretrained Language Models for Text Classification**
  - Investigated Evolving Domain Adaptation (EDA) strategies for Pretrained Language Models (PLM) in time-series text classification, especially incremental self-training.

- Conducted extensive experiments to demonstrate incremental self-training's superiority in adapting PLMs to evolving domain shifts.
- Suggested the necessity of regular PLM updates for sustained real-world application accuracy and suggested future research on PLM robustness to natural language evolution.

KnowComp, HKUST *2023.3 - 2023.8*
Advisor: Yangqiu Song

- **WMT23 Word-Level AutoCompletion Task**
  - Proposed a LLM-based system for the WMT23 Word-Level Auto-Completion (WLAC) task, using LLMs to evaluate performance in multilingual contexts.
  - Tested the system in Chinese-English, German-English, and English-German translation directions.
  - Assessed performance under zero-shot and few-shot settings, finding improved accuracy with additional training exemplars.

PROJECTS & EXPERIENCES

- **A TCP Protocol Implementation based on UDP**: Used UDP protocol to construct a TCP protocol that can tolerate packet drops, allow other concurrent connections a fair chance. The protocol was tested to be reliable within the virtual machine environment.
- **Iterative Closest Point and Odometry**: Constructed a point cloud alignment and depth odometry algorithm to estimate camera poses and build 3D maps of the environment through raw depth observation.
- **3D Multi Object Tracking**: Implemented a Kalman Filter to match the objects detected by the object detector in the current frame to the objects are already tracking from the previous frames.

HONORS & AWARDS

- **Dean's List**, 2019, HKUST
- **University's Scholarships Scheme for Continuing Undergraduates**, 2020-2021, 2021-2022, HKUST
- **Dean's List**, 2022 Spring, UIUC
- **Dean's List**, 2022 Fall, 2023 Spring, UW-Madison

SKILLS

- **Programming skills**: Python, C/C++, SQL, Java
- **Frameworks & Tools**: PyTorch, Huggingface, Git, GDB, PDB, LaTeX
- **Languages**: Chinese(Native), English(Professional)