

Zetian Wu

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EDUCATION

Oregon State University

PhD in CS & AI (Dual-major with OSP Fellowship), Advisor: Prof. Liang Huang

Corvallis, OR, USA

Sept. 2022 – present

Johns Hopkins University

MSE in Data Science

Baltimore, MD, USA

Jan. 2020 – Dec. 2021

Zhejiang University

BS in Physics | Minor in Finance

Hangzhou, China

Sept. 2015 – Jun. 2019

RESEARCH EXPERIENCE

Research Assistant

with Prof. Liang Huang

Sept. 2022 – present

OSU, USA

Towards Simultaneous Translation between Sign and Spoken Languages (Under Working)

- **Problem:** Trying to design models to translate spoken languages into sign languages and vice versa, especially in a simultaneous manner in order to support real-life application scenarios.
- **Techniques:** Designing pre-training and multi-task training paradigms for better translation with limited training data. Using cutting-edge Computer Vision techniques, e.g. GANs and Diffusion models, to obtain photo-realistic sign language videos from skeleton pose sequences. Combining methods in simultaneous speech translation with sign language translation models to achieve simultaneous translation between sign and spoken languages.

Research Assistant

with Prof. João Sedoc, Prof. Lyle Ungar

Jun. 2020 – Apr. 2022

NYU/UPenn, USA

Inducing Generalizable and Interpretable Lexica [1]

- **Problem:** Compared the quality of lexica generated from different model-method pairs and made conclusions concerning explainability features of different models and methods accordingly.
- **Techniques:** Built FFN, SVM, RoBERTa, DistilBERT models and implemented lexicon generation methods including single token importance, masking, and Partition Shap to create lexicon. Evaluated lexica in terms of generalization ability and human annotation.
- **Results:** Context-sensitive models generalized better to different datasets in similar domains while lexica created from them on the contrary performed worse compared to that created from context-oblivious models.

Research Assistant

with Prof. Louis-Philippe Morency

Mar. 2021 – Sep. 2021

CMU, USA

MultiBench: Multiscale Benchmarks for Multimodal Representation Learning [2]

- **Problem:** Built a benchmark for multimodal fusion models and datasets.
- **Techniques:** Implemented several multimodal fusion methods including early/late fusion, LRTF, Mutual Information Matrix, CCA, RefNet, MFM, and RMFE. Built a universal codebase to train and evaluate each model under different datasets according to metrics and robustness.

Research Assistant

Center for Language and Speech Processing, with Prof. Benjamin Van Durme

Apr. 2020 – Jan. 2021

JHU, USA

Span Identification and Representation for Information Extraction

- **Problem:** Formulated entity mention detection problem under partially annotated datasets.
- **Techniques:** Built an LSTM-based model to detect spans by conditioning on given spans. Introduced a ranking loss to rank gold spans higher while not fully ablating unlabelled spans. Took the SpanBERT-based coreference model as span proposal model to detect entity mentions.
- **Results:** Achieved recall above 0.9 and F1 score above 0.8 when conducting few-shot finetuning.

Research Assistant

Intelligent Computing & System Lab, with Prof. Qinming He

Apr. 2018 – Aug. 2019

ZJU, China

Interactive Rare-Category-of-Interest Mining from Large Datasets [3]

- **Problem:** Built a model for rare category detection which supported real-time interactions according to categories' interestingness to users.

- **Techniques:** Implemented a Rare Category Detection (RCD) model using a combined method of offline phase inference and high-level knowledge abstractions, reducing the time complexity of query answering from quadratic to logarithmic. Built a Rare Category Exploration (RCE) model using a collaborative-reconstruction approach.
- **Results:** Obtained at least 11.75% improvement in accuracy compared with baseline algorithms including kNN, Interleave, NNDM, Clover, and FRANK.

WORK EXPERIENCE

Research Scientist Intern

June 2023 – present

Genies

San Mateo, CA, USA

- Developed an application for user insight analysis using large language models (LLMs) to extract and analyze behavior patterns from user profiles, app logs, and chatbot histories.
- Pursuing research on optimizing text-to-SQL generation by enhancing efficiency while preserving accuracy, employing large language models (LLMs) and reinforcement learning strategies. (In progress, targeting submission to ACL 2025)

Applied Scientist Intern

July 2023 – Oct. 2023

Amazon

San Francisco, CA, USA

- Generative Multimodal Long Sequence Modeling

Applied Scientist Intern

May 2022 – Aug. 2022

Amazon

Seattle, WA, USA

- Fine-grained Multi-lingual Disentangled Autoencoder for Language-agnostic Representation Learning [4]

Machine Learning Engineer

Aug. 2019 – Mar. 2020

Hangzhou Enjoymusic Technology Co. Ltd.

Hangzhou, China

- Built a sequence-to-sequence model for music style transferring using TransformerXL and Discriminator.
- Formulated automatic music piece generation problem as a conditional sequence generation task that decodes MIDI sequence from drum beats, and modelled with VAE architecture.
- Refactored Typescript Midi-me codes using Python for integration with our own platform and application.

PUBLICATIONS

- [1] *Yilin Geng, *Zetian Wu, Roshan Santhosh, Tejas Srivastava, Lyle Ungar, and João Sedoc. Inducing generalizable and interpretable lexica. In *Findings of the Association for Computational Linguistics: EMNLP 2022*, pages 4430–4448, Abu Dhabi, United Arab Emirates, December 2022. Association for Computational Linguistics.
- [2] Paul Pu Liang, Yiwei Lyu, Xiang Fan, Zetian Wu, Yun Cheng, Jason Wu, Leslie Yufan Chen, Peter Wu, Michelle A Lee, Yuke Zhu, Russ Salakhutdinov, and Louis-Philippe Morency. Multibench: Multiscale benchmarks for multimodal representation learning. In *Thirty-fifth Conference on Neural Information Processing Systems Datasets and Benchmarks Track (Round 1)*, 2021.
- [3] Zhenguang Liu, Sihao Hu, Yifang Yin, Jianhai Chen, Kevin Chiew, Luming Zhang, and Zetian Wu. Interactive rare-category-of-interest mining from large datasets. *Proceedings of the AAAI Conference on Artificial Intelligence*, 34(04):4965–4972, Apr. 2020.
- [4] Zetian Wu, Zhongkai Sun, Zhengyang Zhao, Sixing Lu, Chengyuan Ma, and Chenlei Guo. Fine-grained multi-lingual disentangled autoencoder for language-agnostic representation learning. In *Proceedings of the Massively Multilingual Natural Language Understanding Workshop (MMNLU-22)*, pages 12–24, Abu Dhabi, United Arab Emirates (Hybrid), December 2022. Association for Computational Linguistics.

SKILLS AND ADDITIONAL INFORMATION

Programming/Framework: Python, PyTorch, TensorFlow, AllenNLP, Linux, C/C++, MATLAB, R, SQL

Awards: Top Prize in China Collegiate Computing Contest-AI Innovation Contest, Honorable Award in COMAP

Honors: Outstanding Scholar Program (OSU), 2nd Level in Training Plan of the National Basic Subject Top-notch Talent Scholarship (ZJU)