

# WENQIAN YE

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## EDUCATION

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| <b>New York University</b><br>Master of Science in Computer Science                                       | New York, NY<br>Sept. 2020 – May 2022  |
| <b>University of Illinois Urbana-Champaign</b><br>Bachelor of Science in Mathematics and Computer Science | Champaign, IL<br>Sept. 2017 – May 2020 |
| <b>University of California, Berkeley</b><br>Summer Visiting Student                                      | Berkeley, CA<br>May. 2016 – Aug. 2016  |

## SELECTED PUBLICATIONS

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(\* indicates co-first authors)

- Wenqian Ye\***, Xu Cao\*, Elena Sizikova, Kenny Moise, Megan Coffee. Masked Domain Adaptation (MDA): Lipschitz Regularized Masked Self-supervised Learning for Chest X-ray Domain Adaptation. *Under review at The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.
- Xu Cao\*, **Wenqian Ye\***, Elena Sizikova, Xue Bai, Megan Coffee, Hongwu Zeng, Jianguo Cao. ViTASD: Robust ViT Baselines for Autism Spectrum Disorder Facial Detection. *Under review at IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2023.
- Wenqian Ye\***, Yunsheng Ma\*, and Xu Cao. Uncertainty Estimation in Deterministic Vision Transformer. *AAAI Workshop on Uncertainty Reasoning and Quantification in Decision Making (UDM-AAAI)*, 2022.
- Guoxuan Li, Songmao Zhang, Jiayi Wei, **Wenqian Ye**. Combining FCA-Map with representation learning for aligning large biomedical ontologies. *In International Semantic Web Conference, Workshop on Ontology Matching (ISWC)*, 2021.
- Wenqian Ye**, Fei Xu, Yaojia Huang, Cassie Huang, Ji A. Adversarial Examples Generation for Reducing Implicit Gender Bias in Pre-trained Models. *ArXiv preprint arXiv:2110.01094*, 2021.

## RESEARCH EXPERIENCE

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| <b>New York University</b><br>Courant Institute of Mathematical Sciences | Sept. 2020 – Aug. 2022 |
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- Project: Uncertainty Estimation in Deterministic Vision Transformer
    - \* Proposed a regularization method, termed CoBiLiR, to solve the distance-awareness in both aspects of Lipschitzness and Contraction problems. This project was conducted on Prof. Andrew Gordon Wilson's Bayesian Machine Learning course.
    - \* Developed a CoBiLiR self-attention based Transformer Gaussian Process (TGP) model, which integrates distance preserving hidden mappings in the transformer blocks via CoBiLiR, and GP as a distance-aware output layer for high quality uncertainty estimation
    - \* Conducted experiments on the commonly-used uncertainty benchmarks and demonstrated the superiority of the proposed TGP model in prediction, calibration, and uncertainty estimation with little penalty on time complexity
    - \* Completed a co-first author paper accepted at AAAI Workshop on Uncertainty Reasoning and Quantification in Decision Making (UDM-AAAI), 2023
  - Project: Masked Domain Adaptation (MDA): Lipschitz Regularized Masked Self-supervised Learning for Chest X-ray Domain Adaptation
    - \* Introduced Masked Domain Adaptation (MDA), a novel and robust self-supervised domain adaptation procedure with Lipschitz Regularized Self-Attention (LRSA) module for domain adaptation in chest X-ray image analysis.
    - \* Investigated the connection between MDA and inverse problems, and analyze the ability of the LRSA module and masked self-supervised learning strategy to learn the true data distribution.

- \* Empirically evaluated MDA on two Tuberculosis classification benchmarks (Montgomery and Shenzhen datasets), and demonstrate state-of-the-art classification results compared to existing self-supervised domain adaptation methods
- Project: ViTASD: Robust ViT Baselines for Autism Spectrum Disorder Facial Detection
  - \* Proposed a model employing plain vision transformers to extract features from patients' face images and adopt a lightweight decoder with a Gaussian Process Layer for ASD detection.
  - \* Demonstrated that ViTASD can distill knowledge from larger structures to match performance in smaller ones. Introduced Knowledge Distillation loss on both the feature attention maps and classification logits.
  - \* Showed that pediatric ASD can be formulated as a facial image classification problem using a ViT, which achieves state-of-the-art performance in both accuracy and AUROC, while generating attention maps consistent with distinguishable ASD features

## Chinese Academy of Sciences

Jun. 2021 – Aug. 2021

Academy of Mathematics and Systems Science

- Project: Combining FCA-Map with Representation Learning for Aligning Large Biomedical Ontologies
  - \* Developed FCA-Map to utilize the Formal Concept Analysis (FCA) formalism for aligning ontologies in an incremental way.
  - \* Combined FCA-Map with the representation learning technique Siamese BERT so as to take advantage of the semantic representation in numerical latent space.
  - \* Evaluated our method on the OAEI 2020 LargeBio small version tasks. Our method obtains the highest recall and F-measure for FMA-NCI (92.3% and 93.9%) and FMA-SNOMED (83.1% and 87.4%)

## TEACHING EXPERIENCE

### CSCI-GA. 2590 Natural Language Processing

Sept. 2021 – Dec. 2021

Graduate Teaching Assistant, New York University

Instructor: Prof. He He

- Graded the written assignments, exams and final projects. Set up the autograder for code assignments.
- Held the 1 hour Q & A section during weekly office hours.
- Answered questions and provide guidelines for students on the CampusWire forum

## WORKING EXPERIENCE

### Cirrus Logic Inc.

Jul. 2022 – Now

Embedded Software Engineer

Austin, TX

- Conduct Embedded software validation and testing for audio and haptics application – unit test design, automation, analysis, and report.
- Work on internal and customer-facing UI design and implementation System level testing for components including device driver, firmware, UI Software test automation.
- Implement DSP algorithm prototype in Python/Matlab and fixed-point firmware in C/C++.

### LiveSensus

Jan. 2019 – May 2020

Co-founder

Champaign, IL

- Built a machine learning model and open-sourced dataset consisting of 30 hours of audio labeled with MOS scores for quality estimation during Vo-IP.
- Designed and developed both simulators to re-create quality degradation in videos and audios for dataset and survey launched on AWS and LiveSensus website.
- Collaborated with four other founders, Professor Sanjay Patel and a leading live streaming company, five founders selected from 40 students under *Alchemy Foundry* at UIUC *Coordinated Science Laboratory*(CSL).

## SELECTED GRADUATE COURSES

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| <b>Foundations of Machine Learning</b> , New York University        | Spring 2022 |
| <b>Convex and Non-Smooth Optimization</b> , New York University     | Spring 2022 |
| <b>Mathematics of Deep Learning</b> , New York University           | Spring 2022 |
| <b>Deep Reinforcement Learning</b> , New York University            | Fall 2021   |
| <b>Graphics Processing Units (GPUs)</b> , New York University       | Fall 2021   |
| <b>Bayesian Machine Learning</b> , New York University              | Fall 2021   |
| <b>Advanced Machine Learning</b> , New York University              | Spring 2021 |
| <b>Natural Language Processing</b> , New York University            | Fall 2020   |
| <b>Machine Learning</b> , University of Illinois Urbana-Champaign   | Spring 2020 |
| <b>Distributed System</b> , University of Illinois Urbana-Champaign | Spring 2020 |
| <b>Abstract Algebra</b> , University of Illinois Urbana-Champaign   | Fall 2019   |
| <b>Graph Theory</b> , University of Illinois Urbana-Champaign       | Fall 2019   |

## ACADEMIC SERVICE

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Reviewer of *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2023  
Reviewer of *The AAAI Conference on Artificial Intelligence (AAAI)*, 2023  
Reviewer of *International Conference on Machine Learning (ICML)*, 2022

## ACADEMIC SOCIETY AFFILIATIONS

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| Member of <i>Association for the Advancement of Artificial Intelligence (AAAI)</i> | 2022 – Present |
| ACL Year-Round Mentorship Program  | 2021 – Present |
| Member of <i>Institute of Electrical and Electronics Engineers (IEEE)</i>          | 2018 – Present |

## TECHNICAL SKILLS

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**Programming Languages:** Python, C/C++, R, MATLAB, Golang,  $\text{\LaTeX}$   
**Libraries:** PyTorch, PyTorch Lightning, Huggingface, Scikit-learn  
**Others:** AWS, CUDA, MySQL, Git, Jenkins