Wenqian Ye

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⌂ My Webpage
 Github   in Linkedin

Research Interests

My main research interest is to develop improved representation learning methods that have solid interpretability based on the learning theory or probabilistic explanation. I am eager to persistently improve my levels of understanding in diverse areas of study including but not limited to 1). Bayesian Machine Learning, 2). Fairness/Robustness in Machine Learning, 3). AI for Social Good (Healthcare, Autonomous Systems).

Education

2023 – Now **PhD, Computer Science**, *School of Engineering and Applied Science*, University of Virginia.

2020 – 2022 **MS, Computer Science**, *Courant Institute of Mathematical Sciences, New York University*.

2017 – 2020 **BS, Mathematics**, University of Illinois Urbana-Champaign, Champaign, IL, Minor in Computer Science and Electrical Engineering, High Distinction.

Publications

Preprints

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. CSCI-GA. 2590 NLP Course Project.

Published

2023 **Yunsheng Ma, Wenqian Ye, Xu Cao, Amr Abdelraouf, Kyungtae Han, Rohit Gupta, Ziran Wang**, CEMFormer: Learning to Predict Driver Intentions from In-Cabin and External Cameras via Spatial-Temporal Transformers, In *IEEE Intelligent Transportation Systems Conference (ITSC)*.

2023 **Wenqian Ye, Yunsheng Ma, Xu Cao, Kun Tang**, Mitigating Transformer Overconfidence via Lipschitz Regularization, In *The Conference on Uncertainty in Artificial Intelligence (UAI)*.

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, In *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*.

2023 **Wenqian Ye*, Yunsheng Ma*, Xu Cao** , Uncertainty Estimation in Deterministic Vision Transformer , In *AAAI Workshop on Uncertainty Reasoning and Quantification in Decision Making (UDM-AAAI)*.

2021 **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)*.

Research Experience

NYU Center of Data Science, NYU Grossman School of Medicine

Aug,2022 – Now

Improving Tuberculosis Chest X-ray Diagnosis in Low Resource Areas.

Propose a method using the Invertible Vision Transformer (IViT) with self-supervised learning for chest X-ray few-shot learning. Incorporate IViT into different self-supervised joint learning frameworks and demonstrate that mask recovery is particularly well-suited for few-shot domain adaptation using joint mask recovery auxiliary tasks domain alignment. We choose one of the most significant healthcare cases for low resource areas: tuberculosis (TB) diagnosis for further evaluation. Our results demonstrate that our method achieves state-of-the-art performance in cross-domain few-shot TB detection, outperforming existing few-shot domain adaptation methods.

Advisor : **Dr. Elena Sizikova**, *Previous Assistant Professor*, NYU Center of Data Science (*Page*),
Dr. Megan Coffee, *Assistant Professor*, NYU Grossman School of Medicine and Columbia Mailman School of Public Health (*Page*)

IBM-Illinois Center for Cognitive Computing Systems Research (C3SR)

Jan 2019 – May 2020

Co-founder, *LiveSensus*.

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).

Advisor : **Prof. Sanjay J. Patel**, *Professor of Electrical and Computer Engineering and Computer Science*, University of Illinois at Urbana-Champaign (*Page*)

Chinese Academy of Science

Jun 2021 – Aug 2021

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%)

Advisor : **Prof. Songmao Zhang**, *Professor*, Academy of Mathematics and Systems Science, Chinese Academy of Science

Work Experience

2023 – Now

Adjunct Researcher, *NYU Grossman School of Medicine*, New York University.

Exploring Artificial Intelligence-based Diagnosis of Tuberculosis and COVID on Radiologic Imaging from Low Resource Settings and An Artificial Intelligence Algorithmic Approach to Screening for Monkeypox with Dermatologic Images.

2022 – Now

Co-Founder, *PediaMedAI Lab*, Shenzhen Children's Hospital.

Improving pediatrics healthcare, using interpretable AI tools to assist pediatrician diagnoses, early intervention of pediatric diseases.

2022 – 2023

Software Engineer, *Cirrus Logic*, 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, and UI Software test automation. Implement DSP algorithm prototype in Python/Matlab and fixed-point firmware in C/C++.

Fellowships & Awards

2023 UAI Scholarship

2023 AAAI Student Scholarship Grant

2023 UVA Computer Science Scholar

Teaching Experience

Fall 2021   **CSCI-GA. 2590: Natural Language Processing**, *Prof. He He (Page)*, New York University.
Graded the written assignments, exams and final projects. Set up the autograder for code assignments. Held the TA section during weekly office hours. Answered questions and provide guidelines for students on the CampusWire forum.

Services

Organizer   **Workshops**.
LLVM-AD (WACV 2024)

Program Committee   **Workshops**.
UDM-KDD (SIGKDD 2023)

Reviewer   **Journals**.
IEEE Internet of Things Journal

Conferences.
ICASSP 2023; AAAI 2023; ICML 2022

Workshops.
IEEE Workshop on Machine Learning for Signal Processing (MLSP); VTTA (NeurIPS 2022)

Membership   **Member**.
Institute of Electrical and Electronics Engineers (IEEE); Association for Computing Machinery (ACM); IEEE Signal Processing Society (SPS); ACL Mentorship Program

Technical Skills

Languages   Python, C/C++, R, MATLAB, Golang, SystemVerilog, LaTeX

Packages   PyTorch/TensorFlow, PyTorch Lightening, Huggingface, Scikit-learn

Others   AWS, CUDA, MySQL, Git, Jenkins