

Wenqian Ye

85 Engineer's Way, Room 432
Charlottesville, VA
☎ 571-519-9957
✉ wenqian@virginia.edu
📄 Google Scholar
🐙 Github in LinkedIn

Research Interests

My research interest is to develop interpretable representation learning methods based on the learning theory or probabilistic explanation. I am eager to persistently improve my understanding in diverse areas of study including but not limited to 1). Bayesian Machine Learning, 2). Robustness and Fairness in Machine Learning, 3). AI for Healthcare.

Education

- 2023 – Now **PhD in Computer Science**, *School of Engineering and Applied Science*, University of Virginia.
Advisor: Prof. Aidong Zhang
- 2020 – 2022 **MS in Computer Science**, *Courant Institute of Mathematical Sciences*, New York University.
- 2017 – 2020 **BS in Mathematics**, University of Illinois Urbana-Champaign, High Distinction.
Minor in Computer Science and Electrical Engineering

Publications

- 2024 **Yunsheng Ma, Juanwu Lu, Can Cui, Sicheng Zhao, Xu Cao, Wenqian Ye, Ziran Wang**, MACP: Efficient Model Adaptation for Cooperative Perception, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*.
- 2023 **Xuhui Kang, Wenqian Ye, Yen-Ling Kuo**, Imagined subgoals for hierarchical goal-conditioned policies, *CoRL 2023 Workshop on Learning Effective Abstractions for Planning (LEAP)*.
- 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, *IEEE Intelligent Transportation Systems Conference (ITSC)*.
- 2023 **Wenqian Ye, Yunsheng Ma, Xu Cao, Kun Tang**, Mitigating Transformer Overconfidence via Lipschitz Regularization, *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, *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*.
- 2023 **Wenqian Ye[†], Yunsheng Ma[†], Xu Cao**, Uncertainty Estimation in Deterministic Vision Transformer, *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, *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*.

Research Experience

NYU Center of Data Science, NYU Langone Health

Aug. 2022 – **Improving Tuberculosis Chest X-ray Diagnosis in Limited-resource Setting.**

Now 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 limited 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.

Advisors : **Dr. Elena Sizikova**, *Previously Assistant Professor at NYU, now Research Fellow at FDA.*
Dr. Megan Coffee, *Assistant Professor at NYU Grossman School of Medicine.*

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

Jan. 2019 – **Co-founder**, *LiveSensus*.

May 2020 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 at UIUC.*

Chinese Academy of Science

Jun. 2021 – **Combining FCA-Map with Representation Learning for Aligning Large Biomedical Ontologies.**
Aug. 2021

Developed FCA-Map to utilize the Formal Concept Analysis (FCA) formalism for incrementally aligning ontologies. Combined FCA-Map with the representation learning technique Siamese BERT 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 at Chinese Academy of Science*

Industrial 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 & Principal Scientist**, *PediaMedAI Lab.*

Improve pediatrics healthcare with interpretable AI models to assist pediatrician diagnoses and early intervention of pediatric diseases.

2022 – 2023 **Software Engineer**, *Cirrus Logic, Austin, TX.*

Conducted Embedded software validation and testing for audio and haptics application, automation, and analysis. Worked on internal and customer-facing UI design and implemented system-level testing for components including device driver, firmware, and UI software test automation. Implemented 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 Fellowship

Teaching Experience

Fall 2021 **CSCI-GA. 2590: Natural Language Processing**, Prof. He He, 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)

Reviewer & **Journals.**
PC Member IEEE Internet of Things Journal

Conferences.
KDD(2024); CVPR(2024); AAAI(2023); ICML(2022); ICASSP(2023, 2024); MICCAI(2024); ISBI(2024)

Workshops.
MLSP; VTTA(NeurIPS); NIVIT(ICCV); UDM(AAAI, KDD)

Membership **Member.**
IEEE; ACM; IEEE SPS

Mentorship **Mentor.**
ML4H(2023)

Technical Skills

Languages Python, C/C++, R, MATLAB, Golang, SystemVerilog, \LaTeX
Packages PyTorch, TensorFlow, PyTorch Lightning, Huggingface, Scikit-learn
Others AWS, CUDA, MySQL, Git, Jenkins