

## Xin Xing

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### EDUCATION

#### University of Kentucky

Lexington, KY

*Ph.D. Candidate, Computer Science*

2018 - 2023 (Expected)

Academic advisor: *Dr. Nathan Jacobs*

#### Universität Stuttgart

Stuttgart, Germany

*Master, Information Technology*

2012 - 2016

#### Shandong University

Jinan, China

*B.S., Communications Engineering*

2007 - 2011

#### Xi'an Jiaotong University

Xi'an, China

*Exchanging Student, Electronic Engineering*

2008 - 2009

### RESEARCH AND WORK EXPERIENCE

#### University of Missouri

Columbia, MO

*Visiting Research Assistant*

2022-Present

Machine learning and deep learning application on medical data analysis.

Academic advisor: Dr. Ai-Ling Lin and Dr. Nathan Jacobs

#### University of Kentucky

Lexington, KY

*Research Assistant*

2018-Present

Machine learning, deep learning, and computer vision, specifically image category, multimodal learning, and medical image analysis.

Academic advisor: Dr. Nathan Jacobs

#### Southern Illinois University

Carbondale, IL

*Teaching Assistant*

9/2016 - 12/2017

ECE222 Introduction to Digital Computation

ECE296L Introduction to Software Tools and Robotics

ECE412 Wireless Communication

#### EuTEC Sony

Stuttgart, Germany

*Research Intern*

2/2015 - 7/2015

Blind Source Separation (BSS) and Machine Learning

Project advisor: Dr. Stefan Uhlich

## PUBLICATIONS

### Published

- T. Hammond, S. Green, Y. Jacobs, G. Chlipala, **X. Xing**, S. Heil, A. Chen, C. Aware, A. Flemister, A. Stromberg, P. Balchandani, AL Lin. “Gut microbiome association with brain imaging markers, APOE genotype, calcium and vegetable intakes, and obesity in healthy aging adults”, *Frontiers in Aging Neuroscience*, 2023
- G. Liang, MS. Atoum, **X. Xing**, I. Alsmadi. “Benchmark assessment for the DeepSpeed acceleration library on image classification”, *Cluster Computing*, 2023
- X. Xing**, G. Liang, C. Wang, N. Jacobs, and AL. Lin. “Self-Supervised Learning on Covid-19 Chest X-ray Image Classification Using Masked Autoencoder”, *Bioengineering*, 2023
- X. Xing**, MU. Rafique, G. Liang, H. Blanton, Y. Zhang, C. Wang, N. Jacobs, and AL. Lin. “Efficient Training on Alzheimer’s Diseases Diagnosis with Learnable Weighted Pooling for 3D PET Brain Image Classification”, *Journal of Electronic*, 2023.
- X. Xing**, C. Peng, Y. Zhang, AL. Lin, and N. Jacobs. “AssocFormer: Association Transformer on Multi-label Classification”, *The 33rd British Machine Vision Conference (BMVC)*, 2022
- Yanckello LM, Fanelli B, McCulloch S, **Xing X**, Sun M, Hammond TC, Colwell R, Gu Z, Ericsson AC, Chang YH, Bachstetter AD, Lin AL. “Inulin Supplementation Mitigates Gut Dysbiosis and Brain Impairment Induced by Mild Traumatic Brain Injury during Chronic Phase”, *J Cell Immunol.* 2022.
- T. Hammond, E. Powell, S. Green, G. Chlipala, J. Frank, A. T Yackzan, LM Yanckello, YH Chang, **X. Xing**, S. Heil, JE Springer, K. Pennypacker, A. Stromberg, L. Sawaki, AL Lin. “Functional recovery outcomes following acute stroke is associated with abundance of gut microbiota related to inflammation, butyrate and secondary bile acid”, *Frontiers in Rehabilitation Sciences*. 2022
- Khanal S., Brodie B., **Xing X.**, Lin AL, and Jacobs N., 2022. “Causality for Inherently Explainable Transformers: CAT-XPLAIN”. *arXiv preprint arXiv:2206.14841*.
- E. Xing, **X. Xing**, L. Liu, Y. Qu, N. Jacobs, G. Liang. “Neural Network Decision-Making Criteria Consistency Analysis via Inputs Sensitivity”. *International Conference on Pattern Recognition (ICPR)*, 2022.
- X. Xing**, G. Liang, Y. Zhang, S. Khanal, AL. Lin and N. Jacobs. “ADVIT: VISION TRANSFORMER ON MULTI-MODALITY PET IMAGES FOR ALZHEIMER DISEASE DIAGNOSIS”. *The IEEE International Symposium on Biomedical Imaging (ISBI)*, 2022.
- G. Liang, **X. Xing**, L. Liu, Q. Ying, AL. Lin and N. Jacobs. “Alzheimer’s Disease Classification Using 2D Convolutional Neural Networks”. *International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, 2021.
- Q. Ying, **X. Xing**, AL Lin, N. Jacobs, and G. Liang. “Multi-Modal Data Analysis for Alzheimer’s Disease Diagnosis: An Ensemble Model Using Imagery and Genetic Features”. *International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, 2021.

Hammond TC, **Xing X**, Yanckello LM, Stromberg A, Chang YH, Nelson PT, Lin AL. “Human Gray and White Matter Metabolomics to Differentiate APOE and Stage Dependent Changes in Alzheimer’s Disease”. *J Cell Immunol*. 2021.

G. Liang, C. Greenwell, Yu Zhang, **X. Xing**, X. Wang, R. Kavuluru, and N. Jacobs. “Contrastive cross-modal pre-training: A general strategy for small sample medical imaging”, *IEEE Journal of Biomedical and Health Informatics (JBHI)*, 2021

**X. Xing\***, G. Liang\*, H. Blanton, MU. Rafique, C. Wang, AL. Lin, and N. Jacobs. “Dynamic Image for 3D MRI image Alzheimer’s Disease Classification”, *Workshop of European Conference on Computer Vision (ECCVW)*, 2020. (\* first co-author)

T.C. Hammond\*, **X. Xing\***, C. Wang, D. Ma, K. Nho, P. K. Crane, F. Elahi, D. A. Ziegler, G. Liang, Q. Cheng, L. M. Yanckello, N. Jacobs, and AL. Lin. “Beta-amyloid and tau drive early Alzheimer’s disease decline while glucose hypometabolism drives late decline”. *Communications Biology*, vol. 3, no. 1, p. 352, Jul. 2020. (\* first co-author)

Y. Zhang, X. Wang, H. Blanton, G. Liang, **X. Xing**, and N. Jacobs. “2d convolutional neural networks for 3d digital breast tomosynthesis classification”, *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2019.

G. Liang, X. Wang, Y. Zhang, **X. Xing**, H. Blanton, T. Salem, and N. Jacobs. “Joint 2d-3d breast cancer classification”, *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2019.

K. Chen, **X. Xing**, M. R. Palash, J. Liu, J. Martin. “Network-Side Multipath Access Management in Wireless Networks with Software-Defined Networking”, *IEEE Transactions on Vehicular Technology* 68 (10), 10030-10044, 2019

K. Chen, **X. Xing**, M. R. Palash, J. Liu, J. Martin. “Improving Wireless Network Performance under MPTCP based Multipath Access”, *Proc. of the 43rd IEEE Conference on Local Computer Networks*, 2018 [**Best paper award**: 1 out of 45 accepted papers out of 150 submissions].

J. Liu, **X. Xing**, K. Chen, J. Martin. “On design challenges of an endpoint flow association optimization service in a multi-provider wireless heterogeneous network”, *Proc. of the IEEE International Conference on Communication (ICC)*, 2018.

### Under Review

**X. Xing**, Z. Xiong, A. Stylianou, C. Peng, L. Gong, R. Pless, AL. Lin, and N. Jacobs. “Prompt Hallucination for Multi-Label Image Classification”, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2024.

**X. Xing**, Z. Xiong, A. Stylianou, S. Sastry, L. Gong, and N. Jacobs. “Vision-Language Pseudo-Labels for Single-Positive Multi-Label Learning”, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2024.

## ABSTRACT

Verma G, **Xing X**, Jacob Y, Delman BN, Murrough J, Lin AL, Balchandani P. “Machine learning based classification of major depressive disorder using clinical symptom scales and ultrahigh field MRI features”, *Joint Annual Meeting ISMRM-ESMRMB & ISMRT 31st Annual Meeting*, 2022.

Hammond, T., **Xing, X.**, Nelson, P., Ham, S., Lin, A. (2020) “Metabolite differences in vascular dementia and control human brain tissue”, *Alzheimer’s Association International Conference*, 2020.

Hammond, T., **Xing, X.**, Nelson, P., Ham, S., Lin, A. (2020) “Gray and white matter metabolite differences in Alzheimer’s disease and normal human brain tissue”, *Alzheimer’s Association International Conference*, 2020.

Hammond, T., **Xing, X.**, Nelson, P., Ham, S., Lin, A. (2020) “Metabolite Differences in TDP-43 proteinopathy and control human brain tissue”, *Alzheimer’s Association International Conference*, 2020.

Hammond, T., **Xing, X.**, Jacobs, N., Lin, A. (2020) “ $\beta$ -Amyloid and tau drive early Alzheimer’s disease decline while glucose hypometabolism drives late decline”, *Alzheimer’s Association International Conference*, 2020.

## SKILLS

### Programming

Python, Matlab, C++

### Experience

Pytorch, Tensorflow, Pandas, scikit-learn, OpenCV, Numpy, FSL, Freesurfer, SPM

## AWARDS

Conference Travel Grant, University of Kentucky, 2022.

Spotlight, XAI4CV: Explainable Artificial Intelligence for Computer Vision Workshop at CVPR 2022.

Best Paper Award, Proc. of the 43rd IEEE Conference on Local Computer Networks (LCN), 2018.

## SERVICE

Reviewer for International Conference on Computer Vision (ICCV) 2023.

Reviewer for ACM Multimedia (MM) Workshop UAVs in Multimedia 2023.

Reviewer for IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2023, 2024.

Reviewer for Transactions on Knowledge Discovery from Data (TKDD).

## MEMBERSHIP

Institute of Electrical and Electronics Engineers (IEEE), Student Member

British Machine Vision Association (BMVA), Member