

# Hui Shen

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## Education

**The Ohio State University**, B.S. in Computer & Information Science Expected to graduate in Dec.2024

- GPA: 3.96/4.0, Major GPA: 4.0/4.0, Summa Cum Laude (Expected)

### Core Courses

- **Mathematics:** Calculus II, Linear Algebra, Probability and Statistics, Discrete Mathematics
- **Computer Science:** Software Development and Design, Data Structures and Algorithms, Computer Networking and Internet Technologies, Principles of Programming Languages, Survey of Artificial Intelligence, Introduction to Operating Systems, Introduction to Database Systems, Introduction to Computer Architecture

## Publications & Manuscripts

### Famba-V: Fast Vision Mamba with Cross-Layer Token Fusion

*Hui Shen*, Zhongwei Wan, Xin Wang, Mi Zhang

ECCV 2024 The Fourth Workshop on Computational Aspects of Deep Learning (Best Paper Award)

### Artificial Intelligence of Things: A Survey

Shakhrul Iman Siam, Hyunho Ahn, Li Liu, Samiul Alam, *Hui Shen*, Zhichao Cao, Bhaskar Krish-namachari, Mani Srivastava, Mi Zhang

ACM Transactions on Sensor Networks

### FedAIoT: A Federated Learning Benchmark for Artificial Intelligence of Things

Samiul Alam, Tuo Zhang, Tiantian Feng, *Hui Shen*, Zhichao Cao, Dong Zhao, JeongGil Ko, Kiran Somasundaram, Shrikanth S Narayanan, Salman Avestimehr, Mi Zhang

Journal of Data-centric Machine Learning Research

### Attention Entropy-Guided Dynamic Cache Allocation for Efficient Multimodal Long-Context Inference

Zhongwei Wan, *Hui Shen*, Xin Wang, Mi Zhang

Submitted to NAACL, under review.

### MTL-SVD: Minimizing Singular Value Truncation Loss for Large Language Model Compression

Xin Wang, Samiul Alam, Zhongwei Wan, *Hui Shen*, Mi Zhang

Submitted to NAACL, under review.

### MEIT: Multi-Modal Electrocardiogram Instruction Tuning on Large Language Models for Report Generation

Zhongwei Wan, Che Liu, Xin Wang, Chaofan Tao, *Hui Shen*, Zhenwu Peng, Jie Fu, Rossella Arcucci, Huaxiu Yao, Mi Zhang

Submitted to ICLR, under review.

### Benchmarking and Boosting Radiology Report Generation for 3D High-Resolution Medical Images

Che Liu, Zhongwei Wan, Yuqi Wang, *Hui Shen*, Haozhe Wang, Kangyu Zheng, Mi Zhang, Rossella Arcucci

Submitted to ICLR, under review.

## Research Interest

**Fields:** Generative Models, Efficient AI, Edge AI, Medical AI

## Research Experience

**Research Assistant**, Advisor: Prof. Mi Zhang

Apr, 2023 – Present

*AIoT and Machine Learning Systems Lab, Department of Computer Science and Engineering*

**The Ohio State University**, OH, USA

### Selected Projects:

**Project:** Famba-V: Fast Vision Mamba with Cross-Layer Token Fusion

- Applied token fusion techniques to enhance the training efficiency of Vision Mamba models by selectively fusing similar tokens across layers.
- Developed cross-layer token fusion strategies that optimize the trade-off between accuracy and efficiency, surpassing uniform token fusion methods.
- Demonstrated the effectiveness of Famba-V, showing reduced training time, lower peak memory usage, and improved accuracy-efficiency trade-offs compared to existing techniques.

#### **Project: Artificial Intelligence of Things: A Survey**

- Conducted a systematic and comprehensive review of Artificial Intelligence of Things (AIoT) research, covering key components of sensing, computing, and networking & communication.
- Led the Computing section of the survey, analyzing and synthesizing research on AIoT computing paradigms, architectures, and techniques

#### **Project: FedAIoT: A Federated Learning Benchmark for Artificial Intelligence of Things**

- Developed the first federated learning benchmark focused on authentic IoT devices, incorporating eight diverse datasets that capture unique IoT modalities and challenges.
- Designed a unified end-to-end federated learning framework for AIoT, including non-IID data partitioning, IoT-specific preprocessing, and IoT-factor emulators.

**Research Assistant**, Advisor: Prof. Jingbo Meng

Sep, 2023 – Present

*Computational and Statistical Models Group, School of Communication*

**The Ohio State University**, OH, USA

#### **Project: Exploring the role of generative AI on human-human interactions in online social networks for social support**

- Developed a GPT-4-based bot designed to interact in online social networks where users seek support for various personal challenges such as bullying, heartbreak, and financial distress
- Investigated the impact of AI-powered interactions on human behavior and support dynamics within online social networks, analyzing how the presence of a generative AI bot influences user responses and overall community support

## **Teaching Experience**

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**The Ohio State University**, OH, USA

**Teaching Assistant**

Aug, 2024 – Dec, 2024

*Systems II: Introduction to Operating Systems (CSE 2431)*

**Teaching Assistant**

Aug, 2024 – Dec, 2024

*Introduction to Digital Logic (ECE 2060)*

## **Work Experience**

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**Software Engineer Intern**, Swire Coca-Cola China – Hangzhou

June, 2022 – Aug, 2022

- Developed Python scripts to streamline workflows for various departments within the company.

## **Skills**

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**Programming Languages:** Python, C/C++, Java, SQL, JavaScript, HTML/CSS, C#

**Tools and Frameworks:** Git, PyTorch, LaTeX, Markdown, Docker, React, Vue