(315) 278-8449
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Xiao Wang

Generative AI/ Efficient AI / LLMs

WebPage:WangXiaoShawn
LinkedIn: Xiao Wang

I am currently pursuing a Ph.D. at the University at Buffalo, where my research focuses on computer vision, large language models, reinforcement learning, and efficient AI. I aim to optimize AI models and methodologies, with the goal of enhancing their performance and scalability. My current projects span areas such as generative AI, video understanding and generation using large language models, human motion estimation, 3D reconstruction and interaction, facial expression analysis, and multimodal language-driven generation. Additionally, I have extensive experience in high-performance computing and full-stack development.

Education

University at Buffalo, SUNY |Department of Computer Science and Engineering
Ph.D. Student in Computer Science *Advisor: Prof. Venu Govindaraju*

Syracuse University |College of Engineering & Computer Science
MS of Computer Science *GPA:3.861*

Publications

- Lu Dong*, **Xiao Wang***, Srirangaraj Setlur, Venu Govindaraju, Ifeoma Nwogu."Ig3D: Integrating 3D Face Representations in Facial Expression Inference" *The 18th European Conference on Computer Vision, ECCV 2024 Workshop*.
- Lu Dong, **Xiao Wang**, Ifeoma Nwogu. "Word-Conditioned 3D American Sign Language Motion Generation" *The 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP 2024)*.
- Bhavin Jawade, Alexander Stone, Deen Dayal Mohan,**Xiao Wang**, Srirangaraj Setlur, Venu Govindaraju. "ProxyFusion: Face Feature Aggregation Through Sparse Experts." *The 2024 Conference and Workshop on Neural Information Processing Systems (NeurIPS 2024)*.
- Lu Dong, Lipisha Nitin Chaudhary, Fei Xu, **Xiao Wang**, Mason Lary, Ifeoma Nwogu. "SignAvatar: Sign Language 3D Motion Reconstruction and Generation." *The 18th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2024)*
- **Xiao WANG**, M-N HONG, P. BERGER. "Determining Key Factors in Consumer Evaluation of an Airport." Journal of Marketing Management, Vol. 4, No. 1, pp. 19-30, June 2016. ISSN 2333-6080.

Research Experience

National AI Institute for Exceptional Education 08/2024-**now**
Position: Research Assistant, Advisor: Dr. Venu Govindaraju @UB, USA

- Leveraging large language models, vision, and video understanding models to generate personalized materials and monitor emotional changes for exceptional children.
- Extracting real-time pose estimation from the video stream and performing real-time analysis, with the results dynamically adjusting interactions with the Misty robot.
- Utilizing the Mistry robot as a carrier for large models to enhance support for exceptional children.
- Focusing on Efficient AI to reduce model size and inference latency while maintaining performance and improving generalization.

Diffusion-based Generative Model for 3D Motion 10/2023–08/2024
Position: Research Assistant, Advisor: Dr. Ifeoma Nwogu @UB, USA

- Developed SignDiffusion, a diffusion-based model generating diverse, realistic, syntax-matched 3D sign language avatars from semantic inputs (audio, text, image, video).
- Showcased superior performance in automatic generation of natural 3D signing avatars through extensive evaluations.

3D Motion Reconstruction and Generation 07/2023–08/2024
Position: Research Assistant, Advisor: Dr. Ifeoma Nwogu @UB, USA

- Created SignAvatar, a framework for synthesizing 3D sign language avatars from videos, text, and images.
- Used Transformer-based VAE, CLIP, and curriculum training to improve generative performance, setting a new field baseline.
- Contributed the ASLGLoss103 dataset based on 3D SMPLX for academic research.

Professional Experience

Data Systems Engineer **2015 Sep—2021 May**
SHAANXI HAINA ELECTRONIC TECHNOLOGY CO., LTD *China*

- Developed a C++ data transfer and database management system, increasing network speed, improving data security, and boosting database update efficiency.

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- Built a C++ API-driven file transfer system, improving data aggregation and warehousing for enhanced data utilization.
- Optimized database performance through table design, indexing, and stored procedures, resulting in faster data retrieval and increased reliability.
- Applied data analysis and modeling for business insights, supporting customer feature extraction, capacity forecasting, and assembly line strategy simulation.

Technical Experience

Revolutionizing Therapy with LLM-Robot Agents
Demo: **LLM-Misty**.

- Integrated Large Language Models (LLMs) with Misty robots to enhance robotic capabilities and foster advanced, intuitive human-robot interactions.
- Demonstrated the potential of LLMs in real-time communication, emotion detection, and personalized therapy sessions for Exceptional Children.

XiaoStyle - Customizable & Secure eCommerce Platform
The source code and demo are available on GitHub at: **XiaoStyle**.

- Developed a scalable eCommerce platform using Python Django, featuring a custom user model, product/category management, cart functionality, and secure payment integration.
- Implemented comprehensive post-order processing, including stock reduction, invoice generation, and real-time email notifications.
- Integrated a review and rating system with interactive features, secure user authentication, and session management for a seamless user experience.

Ultimate Data Navigator: Efficient Data Management System
The source code is available on GitHub at: **Ultimate Data Navigator**.

- Built a high-performance C++ system automating data scanning, gathering, and uploads to a centralized database, handling diverse data types and large volumes efficiently. .
- Implemented modular utilities for scheduling, resource management, and file transfers, allowing flexible and scalable data operations. .
- Enabled cost-effective processing of millions of data entries weekly using open-source components.

Robust Remote Process Control System
The source code is available on GitHub at: **Remote Process Control**.

- Developed a multithreaded process control system with UDP network communication, signals, and configurable process management.
- Facilitated remote process termination and efficient system control with robust error handling and flexible configuration.

C++ Multithreading and OOD for Assembly Line Optimization
Source code available on GitHub at: **AssemblyLineSimulation**

- Developed an assembly line simulation system using C++ and Object-Oriented Design (OOD), leveraging various locking mechanisms such as mutexes, semaphores, spinlocks, condition variables, and recursive mutexes to precisely simulate and optimize production line performance with multithreading.
- Created a built-in statistical analysis module to evaluate the effectiveness of different assembly line strategies.