Yanhui Guo

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EDUCATION BACKGROUND

(Ph.D.) McMaster University **Hamilton, ON, Canada**
Image/Video Restoration, 2D/3D Computer Vision, LLM and Generative AI *Jan.2020 - Jan.2024*

My research interests lie in computer vision and machine learning, especially in image restoration, video understanding, and 2D/3D content generation. Since joining the industry, I have been working on search and recommendation systems, while exploring creative generation with images and videos.

PROFESSIONAL EXPERIENCE

5+ YOE in industy w/ focus on Deep Learning, Computer Vision & NLP and Recommendation

Amazon, US **Seattle, United States**
(***Full-time***) ***Applied Scientist*** *May. 2024- Present*

- Building ranking models and running A/B tests to enhance the search experience for global customers in Amazon's emerging stores.
- Leveraging LLMs to reduce irrelevant results in a multi-stage search framework.
- Developing foundational personalization models based on customer behavior to enable personalized search experiences.
- Creating substitute recommendation pipelines using multilingual, multimodal LLMs to improve shopping experiences across different languages.
- Working on Agentic AI to develop image and video creation tools for marketing purposes.

Noah's Ark Lab (AI Lab), Canada **Toronto, Canada**
(***Full-time***) ***Senior Researcher*** *Sep. 2023- April. 2024*

- Research on multi-view consistent inpainting algorithms.
- Research on 4D dynamic scene editing with Gaussian splatting.
- Three US patents on video understanding and 3D content generation

Amazon, US **Seattle, United States**
(***Internship***) ***Applied Scientist*** *June. 2023- Sep. 2023*

- Research on large language models and prompt tuning.
- One paper on continual prompt tuning (NAACL 2024).
- Developed attribute extraction models for product recommendation on AWS SageMaker.

Noah's Ark Lab (AI Lab), Canada **Toronto, Canada**
(***Full-time***) ***Researcher*** *Feb. 2022- June. 2023*

- Developed and delivered video understanding models for video search in Petal Search.
- Won runner-up in the Video ActivityNet Challenge (CVPR 2022).
- Research on 3D shape reconstruction and video understanding.
- One paper on text-to-driven 3D generation (NeurIPS 2023, Paper Link).

NetEase Games, AI Lab **Hangzhou, China**
(***Full-time***) ***Artificial Intelligence Engineer*** *July. 2019-Jan. 2020*

- Developed a deep motion generation model for automatic 3D digital human animation.
- Worked on feature engineering and product recommendation models based on language and vision features.

The Hong Kong Polytechnic University **Hong Kong, China**
(***Full-time***) ***Research Assistant in ME*** *Jan. 2019-July. 2019*

- Worked on the robotic system of micro-drones and navigation algorithms.
- Developed dynamic obstacle avoidance algorithms for flying robots.

Tencent, Game AI Group **Shenzhen, China**
(***Internship***) ***Machine Learning Engineer*** *Apr. 2018-July. 2018*

SELECTED RESEARCH PROJECTS

Conversational Multi-Constraint Multi-Item Recommender System *Amazon, Seattle, US*

- Research on building a recommendation system that allows customers to put multiple shopping requirements in a single query and deliver good recommendation bundles to the customers.

Universal User Representations for Personalization *Amazon, Seattle, US*

- Conducting research to develop an LLM-based universal representation of customer preferences for products, enabling efficient transfer learning across multiple tasks in recommendation.

Continual Prompt Tuning for Large Language Models *Amazon, Seattle, US*

- Research on the application of prompt tuning for LLMs. We developed a queue-based continual prompt tuning method and text-based attribute extraction models for product recommendation.

Text-driven Real-world Mesh Retexturing *Noah's Ark Lab, Canada*

- Developed an easy-to-use tool to create and edit 3D objects from real-world images and a text-driven algorithm for mesh retexturing. (Two US patents, NeurIPS 2023)

AI Medical Assistant with Large Language Models (LLMs) *McMaster Children's Hospital*

- Turned an LLM (GPT 4) into a helpful medical assistant by giving customized demonstrations as prompts, which can help doctors summarize the diagnosis and treatment records of patients.

Temporal Action Localization in Untrimmed Videos for Video Search *Noah's Ark Lab, Canada*

- Developed efficient temporal action localization models and model blending methods for the action localization task for video search. (One US patent, winning second prize in CVPRW 2022)

PUBLICATIONS

Generative AI

[1] **Yanhui Guo**, Xinxin Zuo, Peng Dai, and et al., "Decorate3D: Text-Driven High-Quality Texture Generation for Mesh Decoration in the Wild", (**Two US patents**, **NeurIPS 2023**)(Project, Paper Link).

[2] Hengkang Wang, ... **Yanhui Guo**, "Temporal-Consistent Video Restoration with Pre-trained Diffusion Models" (Under Review, 2025).

Natural Language Processing

[3] **Yanhui Guo**, Shaoyuan Xu, Jinmiao Fu, Bryan Wang. "Q-Tuning: Continual Queue-based Prompt Tuning for Language Models", (**NAACL 2024**)(Paper Link).

Search and Recommendation

[4] Mingdai, Fan Yang, **Yanhui Guo**, and et al., "PCL: Prompt-based Continual Learning for User Modeling in Recommender Systems", (**WWW 2025**)(Paper Link).

Computer Vision

[5] **Yanhui Guo**, Chenghuan Guo, Yan Gao, Yi Sun, "Learning by Taking Notes: Memory-Guided Continual Learning for Generative Multimodal Models" (**ICCV 2025 MMFM4**)

[6] Binh M Le, ... **Yanhui Guo** and etc., "QID: Efficient query-informed ViTs in data-scarce regimes for OCR-free visual document understanding" (**CVPR 2025 MULA**)

[7] **Yanhui Guo**, Fangzhou Luo, Xiaolin Wu. " Learning Degradation Independent Representations for Camera ISP Pipelines", (**CVPR 2024**)(Paper Link).

[8] Fangzhou Luo, **Yanhui Guo**, and Xiaolin Wu. "AND: Adversarial Neural Degradation for Learning Blind Image Super-Resolution", (**NeurIPS 2023**)(Paper Link).

[9] **Yanhui Guo**, Fangzhou Luo, Shaoyuan Xu. "Self-Supervised Face Image Restoration with a One-Shot Reference", (**ICASSP 2024, Oral**)(Paper Link).

[10] **Yanhui Guo**, Peng Dai, Juwei Lu and Li Cheng. "Refining Implicit Neural Action Field for Temporal Action Localization", (**A US patent**, **CVPR Workshop 2022**)(Paper Link).

[11] **Yanhui Guo**, Xiao Shu and Xiaolin Wu. "Data Acquisition for Dual-reference Deep Learning of Image Super-Resolution", (**Transactions on Image Processing (TIP)**)(Paper Link).

[12] Fangzhou Luo, **Yanhui Guo** and Xiaolin Wu. "Functional Neural Networks for Parametric Image Restoration Problems", (**NeurIPS 2021**)(Paper Link).

[13] **Yanhui Guo**, Xi Zhang and Xiaolin Wu. "Deep Multi-modality Soft-decoding of Very Low Bit-rate Face Videos", 2020 ACM International Conference on Multimedia (**ACM MM 2020**)(Paper Link).

Others

- Journal/Conference Reviewer: CVPR 2022, ICML 2022, NeurIPS 2022, ECCV 2022/2024, CVPR 2023, ICME 2024, WACV 2024/2025, CVPR 2024/2025, NeurIPS 2025.
- Coding Skills: Python, C++, PyTorch, Tensorflow, AWS Services, Spark, SQL, Git, OpenCV, Unity3D