



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

(M.S.) **Huazhong University of Science and Technology**

Wuhan, China

Artificial Intelligence and Automation

Sep.2017 - June.2019

7+ Years of Experience in Machine Learning & Deep Learning & 2D/3D Computer Vision

PROFESSIONAL EXPERIENCE

3+ Years of Industry Work Experience in Machine Learning, NLP, and Computer Vision

Noah's Ark Lab, Canada

Markham, Canada

(Full-time) Researcher

Sep. 2023- Present

- Research on 4D dynamic scene editing with Gaussian splatting.
- Research on text-to-image and text-to-video diffusion models.

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 (Submitted to ACL 2024).
- Developed attribute extraction models for product recommendation on AWS SageMaker.

Noah's Ark Lab, Canada

Markham, Canada

(Full-time) Researcher

Feb. 2022- June. 2023

- Research on 3D shape reconstruction and video understanding.
- One paper on text-to-driven 3D generation (NeurIPS 2023, [Paper Link](#)).
- Won runner-up in the ActivityNet Challenge (CVPR2022 Workshop, [Video Link](#)).
- Developed and delivered temporal action localization models for video search ([Paper Link](#)).

NetEase Games, AI Lab

Hangzhou, China

(Full-time) Machine Learning 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 PROJECTS

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 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.

Adversarial Neural Degradation for Blind Super-Resolution

McMaster University

- Developed a novel adversarial neural degradation model to train a super-resolution model for improving restoration performance on real-world images. (NeurIPS 2023).

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)

Monitor-Induced Data Collection for Image Restoration

McMaster University

- Proposed an automatic system for real-world super-resolution data collection (TIP 2022).

Solving a Parametric Image Restoration Problem

McMaster University

- Proposed a novel system called functional neural network (FuncNet) to solve a parametric image restoration problem with a single model. (NeurIPS 2021)

PUBLICATIONS

- [1] **Yanhui Guo**, Shaoyuan Xu, Jinmiao Fu, Bryan Wang. "Q-Tuning: Continual Queue-based Prompt Tuning for Language Models", (Under Review, **ACL 2024**) ([Paper Link](#))
- [2] **Yanhui Guo**, Fangzhou Luo, Xiaolin Wu. "Learning Degradation Independent Representations for Camera ISP Pipelines", (Under Review, **CVPR2024**) ([Paper Link](#)).
- [3] **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](#)).
- [4] Fangzhou Luo, **Yanhui Guo**, and Xiaolin Wu. "AND: Adversarial Neural Degradation for Learning Blind Image Super-Resolution", (**NeurIPS 2023**) ([Paper Link](#)).
- [5] **Yanhui Guo**, Fangzhou Luo, Shaoyuan Xu. "Self-Supervised Face Image Restoration with a One-Shot Reference", (**ICASSP 2024**) ([Paper Link](#)).
- [6] **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](#)).
- [7] **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](#)).
- [8] Fangzhou Luo, **Yanhui Guo** and Xiaolin Wu. "Functional Neural Networks for Parametric Image Restoration Problems", (**NeurIPS 2021**) ([Paper Link](#)).
- [9] **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, CVPR 2023, WACV 2024, CVPR 2024, ECCV 2024.
- Coding Skills: Python, C++, PyTorch, Tensorflow, AWS SageMaker, SQL, Git, OpenCV, Unity3D