



# Yanhui Guo

 [HomePage](#)

 [gyhui.liam@gmail.com](mailto:gyhui.liam@gmail.com)

 [+1-289-309-8828](tel:+1-289-309-8828)

 [Linkedin](#)

## EDUCATION BACKGROUND

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(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

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**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

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**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.

### 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

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- [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

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- 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