Yanhui Guo

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EDUCATION BACKGROUND

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

(M.S.) Huazhong University of Science and Technology **Wuhan, China**
Artificial Intelligence and Automation

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

PROFESSIONAL EXPERIENCE

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

Noah's Ark Lab, Canada **Markham, Canada**
(***Full-time***) ***Researcher*** *Sep. 2023- Present*

- Research on 4D dynamic scene editing.
- 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 model and prompt tuning.
- One paper on continual prompt tuning (Submitted to ACL 2024).
- Developing attribute extraction models for product recommendation.

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)
- Winning runner-up in the ActivityNet Challenge (CVPR2022 Workshop, Video Link)
- Developing and delivering temporal action localization models (Paper Link)

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

- Developing a deep motion generation model for automatic 3D digital human animation.
- Working on a neural solver for optical motion capture data cleaning and generation.

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

- Working on the system development of micro-drones.
- Developing dynamic obstacle avoidance algorithms for flying robots.

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

- Participate in developing a multi-agent AI system of a MOBA game (Honor of Kings).

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 attribute extraction models for product recommendation.

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

- A flexible and easy-to-use text-driven tool to create and edit 3D objects from real-world images. (Two US patents, NeurIPS 2023)

Adversarial Neural Degradation for Blind Super-Resolution *McMaster University*

- We proposed 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 *Noah's Ark Lab, Canada*

- A flexible and easy-to-use text-driven tool to create and edit 3D objects from real-world images. (One US patent, winning second prize in CVPRW 2022)

Degradation-Invariant Image Representation Learning *McMaster University*

- A deep degradation-independent representation learning method for robust image restoration.

Monitor-Induced Data Collection for Image Restoration *McMaster University*

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

Solving a Parametric Image Restoration Problem *McMaster University*

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

PUBLICATIONS

- **Yanhui Guo**, Shaoyuan Xu, Jinmiao Fu, Bryan Wang. "Q-Tuning: Continual Queue-based Prompt Tuning for Language Models", (Under Review, **ACL 2024**)(Paper Link)
- **Yanhui Guo**, Fangzhou Luo, Xiaolin Wu. " Learning Degradation Independent Representations for Camera ISP Pipelines", (Under Review, **CVPR2024**)(Paper Link).
- **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).
- Fangzhou Luo, **Yanhui Guo**, and Xiaolin Wu. "AND: Adversarial Neural Degradation for Learning Blind Image Super-Resolution", (**NeurIPS 2023**)(Paper Link).
- **Yanhui Guo**, Fangzhou Luo, Shaoyuan Xu. "Self-Supervised Face Image Restoration with a One-Shot Reference", (**ICASSP 2024**)(Paper Link).
- **Yanhui Guo**, Peng Dai, Juwei Lu and Li Cheng. "Refining Implicit Neural Action Field for Temporal Action Localization", (One US patent, **CVPR Workshop 2022**)(Paper Link).
- **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).
- Fangzhou Luo, **Yanhui Guo** and Xiaolin Wu. "Functional Neural Networks for Parametric Image Restoration Problems", (**NeurIPS 2021**)(Paper Link).
- **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, NeuIPS 2022, ECCV 2022, CVPR 2023, WACV 2024, CVPR 2024.
- Coding Skills: Python, Matlab, C++, JavaScript, PyTorch, Tensorflow, Git, Opencv, Unity3D