

NTUMBA ELIE, NSAMPI

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BIO

I am a Computer science master's student at China's Northwestern Polytechnical University. I specialize in Computer vision and Computational Photography. I am currently doing research work in Low-level vision tasks (Image enhancement, Image relighting) and High dynamic range imaging. I am also interested in problems at the intersection of computer vision, computer graphics, machine learning, and human-computer interaction. I am actively looking for a Ph.D. position (2022 intake).

EDUCATION

Northwestern Polytechnical University

Master's (Ms. Eng.) in Computer Science

School of Computer Science

Xi'an, Shaanxi, China

August 2019 - Present

Zhejiang Normal University

Bachelor's (B. Eng.) in Software Engineering

College of Mathematics and Computer Science

Jinhua, Zhejiang, China.

September 2015- July 2019

RESEARCH EXPERIENCE

Northwestern Polytechnical University

Computer Vision and Computational Photography Lab

Group led by Dr. Qing Wang

Xi'an, China

February 2020 - Present

The lab studies problems in computer vision, image processing, and computational photography. Specific research directions include Light Field image processing, Image Relighting, Novel View Synthesis, and Multi-modal machine learning.

My main responsibilities in the lab as a member of the team include:

- The design and implementation of ideas given by either the principal investigator or by senior students.
- Running experiments such as reproducing other methods, and comparing their results against ours. Specifics on each project are included in the projects section.

WORK EXPERIENCE

Golden Entertainment

Full-Stack Software Development

Jinhua, China

June 2019-July 2020

During my time as a member of the software development team, my main work included:

- The Development of the User interface for the online gaming platform.
- Translation of the design blueprints into concrete front-end code.
- The development of the platform mobile platform.
- The Development of micro-services for the database management.

PROJECTS AND PUBLICATIONS

Shadow Guided Network For Any-to-Any Relighting

Role : Team Leader

CVPR 2021 NTIRE Challenge, 4th place

- Goal : relight a given input image based on the illumination implicitly given in a guide image.
- We propose to solve the problem by introducing a shadow network to guide the overall relighting process.
- The proposed shadow network produces plausible shadows from the illumination direction inferred from the guide image via an illumination estimation network.
- We rank 4th on the final challenge.

Learning exposure correction via consistency modeling

Role : First Author

BMVC 2021

- Goal : Promote an image suffering from under or over-exposure to a well-exposed one.
- We propose a new network architecture and training pipeline for the exposure correction problem.
- We introduce a feature loss to model exposure consistency such that images of the same content but different exposure result in the same feature representation.
- We achieve state-of-the-art results and outperform previous methods by a significant margin.

Physically Inspired Neural Rendering For any-to-any Relighting

Role : Second Author

Under Review

- We propose a new learning pipeline for any-to-any relighting by breaking the problem into sub-tasks, each solved via an independently trained network.
- We consider lighting effects such as attached shadows and cast shadows, based on which we propose a neural rendering approach that takes physically meaningful attributes as inputs.
- Our results are more realistic compared to previous works. Even in the case of occluded regions, our method is able to infer plausible geometry.

SKILLS

Programming:

Python, Matlab, LaTeX

Tools:

Linux(OS), Pytorch(Deep learning), Blender(3D, scripting)

Languages:

French (Native), English (Fluent), Chinese (Intermediate).

REFERENCES

Qing Wang (Academic advisor)

Professor

School of Computer Science.

Northwestern Polytechnical University.

Xi'an, Shaanxi, China.

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Xiangfu Zhao

Professor

School of Mathematics and Computer Science.

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ADDITIONAL NOTE

Depending on the prospective advisor's research direction and available funding, or ongoing projects i am open to change research direction.