Zitian Zhang

PhD Candidate, Université Laval

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Education

2023 – Present **PhD Candidate in Computer Science, Université Laval**

- Research with Prof. Jean-François Lalonde, Computer Vision and Systems Lab
- Interests: Object compositing, Image relighting, Image editing, Diffusion models
- Title: Image Compositing and Relighting via Generative Models

2020 – 2023 M.Eng. in Computer Technology, South China University of Technology

- GPA: 3.7/4
- Research with Assoc. Prof. Chuhua Xian, Multimedia Lab
- Interests: Consistent Depth Estimation, Indoor Light Estimation

2016 – 2020 B.Mgmt. in E-Commerce, Xidian University

- GPA: 3.7/4, Top 1
- Designed and developed a 2D mini game as a game designer at Tuyou Games

Research Experience

Indoor Lighting Estimation Project with Meta, 1st author, CIC33 (oral) Sep 2024 – Oct 2025

– Project page: lvsn.github.io/coloraccuracy

– High performance HDR indoor environmental lighting estimation.

SpotLight: Local Lighting Control with Shadows via Diffusion Jun 2024 – Jul 2025
2nd author

– Project page: lvsn.github.io/spotlight

– Achieved precise local lighting control without requiring additional training.

ZeroComp: Zero-shot Object Compositing from Image Intrinsics via Diffusion, 1st author, WACV 2025 (oral) Sep 2023 – Oct 2024

– Project page, code and pre-trained weights: lvsn.github.io/ZeroComp

– Tackled the challenge of enabling realistic 3D object compositing without relying on paired composite-scene image datasets

– Designed and implemented a diffusion-based model trained solely on synthetic indoor RGB and intrinsic dataset, while generalizing well across various scenes

– Extended the framework applicability to 2D object compositing and material editing tasks

– Created an evaluation dataset, featuring automatically generated, realistic object composites

Delving into Multi-illumination Depth Estimation, 2nd author, TMM Jul 2021 – Jun 2023

– Introduced a single-view multi-illumination RGB-D dataset for enhancing training

– Developed a post-processing module, enabling a robust prediction in changing environments

Publications

[1] Z. Zhang, J. U. Davis, J. P. A. Vu, J. Kuang, and J.-F. Lalonde, "Improving the color accuracy of lighting estimation models," *arXiv preprint arXiv:2509.18390*, 2025.

[2] F. Fortier-Chouinard, Z. Zhang, L.-E. Messier, M. Garon, A. Bhattad, and J.-F. Lalonde, "Spotlight: Shadow-guided object relighting via diffusion," *arXiv preprint arXiv:2411.18665*, 2024.

[3] Z. Zhang, F. Fortier-Chouinard, M. Garon, A. Bhattad, and J.-F. Lalonde, "Zerocomp: Zero-shot object compositing from image intrinsics via diffusion," in *2025 IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, IEEE, 2025, pp. 483–494.

[4] Y. Liang, Z. Zhang, C. Xian, and S. He, "Delving into multi-illumination monocular depth estimation: A new dataset and method," *IEEE Transactions on Multimedia*, 2024.

[5] C. Xian, K. Qian, Z. Zhang, and C. C. Wang, "Multi-scale progressive fusion learning for depth map super-resolution," *arXiv preprint arXiv:2011.11865*, 2020.

Patents

Zitian Zhang, Frédéric Fortier-Chouinard, Mathieu Garon, Anand Bhattad, and Jean-François Lalonde. *Systems and Methods for Compositing a Virtual Object in a Background Image.* U.S. Provisional Patent Application N° 63/705,195, filed October 9, 2024. (in application)

Internships

Intern Research Scientist, *Adobe Research London* Jun 2025 – Aug 2025

– Worked on image relighting problems with Valentin Deschaintre, Iliyan Georgiev, Michael Fischer, and Yannick Hold-Geoffroy

Unreal Engine Game Developer Intern, *Alibaba Lingxi Interactive* Jun 2022 – Aug 2022

– Project: *Oasis: A Simulation Game*

– Independently created a functional and engaging mini simulation game using Unreal Engine 4, driven by a passion for games and rendering.

– Designed and implemented the scene setup, game logic, and UI using Unreal Engine 4 blueprints and C++.

– Developed a basic AI for NPCs using behavior trees to ensure smooth and dynamic gameplay.

Rendering Developer Intern, *Revobit* Dec 2021 – May 2022

– Developed high-quality, photo-realistic rendering solutions tailored to the digital fashion industry, enhancing the presentation of apparel and accessories.

– Diagnosed and resolved a rendering artifact with transparent materials by applying energy distribution principles in the BSDF reflection model.

– Optimized the real-time rendering system and customized shader pipelines for a physically-based rendering framework.

Skills

Python, C++, PyTorch, Blender, Diffusion Models, Image Editing, Light Estimation, Unreal Engine

SERVICE

3DV reviewer Aug 2025 - Present

TVCG reviewer Nov 2024 - Present