MOHAMMAD REZA KARIMI DASTJERDI

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Overview

I am a specialist in computer vision and machine learning. My expertise is to develop learning-based solutions for problems at the intersection of computer vision and computer graphics. My skills span over:

- **Lighting Estimation**
- **Image-based Lighting**
- **High Dynamic Range Imaging**
- **Generative Models**
- **Novel View Synthesis**

Education

PhD Candidate of Electrical Engineering, Université Laval, Canada   Sep. 2019–Present
Dissertation: Lighting Estimation and Capturing for Photo-realistic Virtual Object Insertion

MSc in Culture Technology, KAIST, South Korea   Sep. 2017–Jul. 2019
Thesis: Cinemagraph Generation from a Static Image with Generative Adversarial Networks

BSc in Computer Engineering, K.N.Toosi University of Technology, Iran   Sep. 2011–Sep. 2016

Publications

- J. Giroux, **M. Karimi Dastjerdi**, Y. Hold-Geoffroy, J. Vazquez-Corral, J. Lalonde, Towards a Perceptual Evaluation Framework for Lighting Estimation, IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR) 2024. [Project page]
- **M. Karimi Dastjerdi**, Y. Hold-Geoffroy, J. Eisenmann, J. Lalonde, EverLight: Indoor-Outdoor Editable HDR Lighting Estimation, International Conference on Computer Vision (ICCV) 2023. [Project page]
- **M. Karimi Dastjerdi**, Y. Hold-Geoffroy, J. Eisenmann, S. Khodadadeh, J. Lalonde, Guided Co-Modulated GAN for 360° Field of View Extrapolation, IEEE International Conference on 3D Vision (3DV) 2022, **Oral presentation**, [Project page]
- P. Gera, **M. Karimi Dastjerdi**, C. Renaud, P. J. Narayanan, J. Lalonde, Casual Indoor HDR Radiance Capture from Omnidirectional Images, The British Machine Vision Conference (BMVC) 2022, **Spotlight presentation**, [Projet page]

Research Experience

Research Assistant, Computer Vision and Systems Laboratory, Université Laval   Sep. 2019–Present

- Proposing different methods based on Neural Radiance Fields (NeRF) and 360° cameras to capture HDR radiance of indoor scenes.
- Advised two graduate students and mentored multiple interns in their projects.

Research Intern, Adobe   May. 2022–Mar. 2023

- Proposed a lighting estimation method that works for both indoor and outdoor domains seamlessly and produces high dynamic range, high-resolution panoramas ready to use as HDRI in rendering engines.
- Introduced lighting comodulation in GANs, combining the flexibility and intuitiveness of parametric lighting models with the generative power of GANs, resulting in easily editable outputs.
- Adobe is currently integrating the proposed method for the Match Image feature of Adobe Substance 3D Stager.

Research Scientist Intern, Adobe   May. 2021–Nov. 2021

- Presented an end-to-end trainable pipeline based on GANs specifically tailored to the 360° FOV extrapolation.
- Introduced guided co-modulation mechanism in GANs to edit the content of the generated pixels without any GAN inversion.
- At the time, demonstrated state-of-the-art results both quantitatively and qualitatively.
- It is currently being integrated for face anonymization in Adobe Photoshop and Match Image in Adobe Substance 3D Stager.
- This work is featured at **Adobe Max Sneaks 2022** as **#ProjectBeyondTheSeen**.

Patents

- **M. Karimi Dastjerdi**, Y. Hold-Geoffroy, S Bi, J. Eisenmann, J. Lalonde, Artificial Intelligence Techniques For Extrapolating HDR Panoramas From LDR Low FOV Images, **Joint Patent between Adobe and Université Laval** - In preparation.
- **M. Karimi Dastjerdi**, Y. Hold-Geoffroy, J. Eisenmann, V. Kim, J. Lalonde, Extrapolating Panoramas from Images using a Generative Model - Worldwide applications, Application no. 18055716 - Pending.
- J. Noh, H. Lee, B. Kim, G. Kim, J. Lelong, **M. Karimi Dastjerdi**, A. Kim, J. Lee, Image Processing Method and Device Therefor, US patent - Patent no. 11893704. February 2024.