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: Data-driven Lighting for 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

- S. Borse, K. Bhardwaj, **M. Karimi Dastjerdi**, H. Park, S. Kadambi, S. Shivakumar, P. Mandke, A. Nayak, H. Teague, M. Hayat, F. Porikli. SubZero: Composing Subject, Style, and Action via Zero-Shot Personalization. Under review.
- **M. Karimi Dastjerdi**, F. Fortier-Chouinard, Y. Hold-Geoffroy, C. Demers, M, Hébert, N. Kalantari, J. Lalonde. PanDORA: Casual HDR Radiance Acquisition for Indoor Scenes. Under review. [Project page]
- F. Baradaran Rahimi, **M. Karimi Dastjerdi**, M, Hébert, J. Lalonde, C. Demers. Agile Digitization for Historic Architecture Using 360° Capture, Deep Learning, and Virtual Reality. Accepted to Journal of Automation in Construction.
- 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.

Interim Engineering Intern, Qualcomm — Sep. 2024–Dec. 2024

– Developed a hardware-friendly algorithm for personalization in text-to-image diffusion models.
– Qualcomm has filed two Invention Disclosure Forms (IDFs) based on the outcomes of this internship.

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 integrated the proposed method into 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.
- Adobe integrated the proposed method into Adobe Photoshop for face anonymization and into the Match Image feature of 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, Worldwide applications, Application no. 18238290 - Pending.
- **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.

Honors and Awards

ICCV Doctoral Consortium (Oct. 2023)
Winner of Otis-Lalonde Scholarship (Mar. 2023)
Bourse en vision artificielle 2e et 3e cycle, Québec, Canada
Presentation Competition: First Place (Apr. 2022), **Second Place** (Apr. 2021)
Journées de la relève en intelligence et données, Québec, Canada
Machine Vision: Explorer League: First Place (Sep. 2015) **Second Place** (Nov. 2014)
SharifCup Open Robotics Competition, Sharif University of Technology, Tehran, Iran

Professional Experiences

Chair, IEEE Young Professionals Affinity Group, IEEE Quebec Section (2021 - 2023)

Reviewer, SIGGRAPH ASIA (2024), ECCV (2024), CVPR (2024), IEEE TVCG (2024, 2023), 3DV (2024, 2021), CVPR workshop (2024), ICCV workshop (2021).

Student Committee Member, ICRoM 2014, 2016.

Technical Committee Member, The 2nd International Students Competition in Robotic, Amirkabir University of Technology, Tehran, Iran. Mar. 2016.

Technical Committee Member, The 1st KNTU Workshop on Robotics and Embedded Systems, Khazar University, Baku, Azerbaijan. Dec. 2015.

Computer skills

Programming languages Python, C++, and C

Machine Learning PyTorch, Keras, Tensorflow

Computer Graphics Blender, Maya, Unity3D

Language

English (Proficient) Persian (Native) Korean (Basic) French (Basic)