PEDRO FIGUEIREDO

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EDUCATION

Texas A&M University, United States of America — **January 2020 - Present**
Doctor of Philosophy in Computer Science

Eötvös Loránd University, Hungary — **January 2018 - December 2019**
Bachelor of Science in Computer Science

Universidade Federal da Paraíba*, Brazil — **February 2015 - December 2017**
Bachelor of Science in Computer Engineering
**Transferred to Eötvös Loránd University*

SELECTED PUBLICATIONS AND PREPRINTS

RealMat: Realistic Materials with Diffusion and Reinforcement Learning — **In submission**
Xilong Zhou, ***Pedro Figueiredo***, *Miloš Hašan*, *Valentine Deschaintre*, *Paul Guerrero*, *Yiwei Hu*, *Nima Khademi Kalantari*
- Generates realistic SVBRDF materials using diffusion models and reinforcement learning.
- Leverages Stable Diffusion XL and a trained realism reward function to improve synthetic training data bias.

Neural Importance Sampling of Many Lights — **SIGGRAPH 2025**
Pedro Figueiredo, *Qihao He*, *Steve Bako*, *Nima Khademi Kalantari*
- Improves Monte Carlo rendering by learning continuous spatially-varying light selection distributions.
- Scales to hundreds of lights via residual learning with existing light hierarchy techniques.

Neural Path Guiding with Distribution Factorization — **EGSR 2025**
Pedro Figueiredo, *Qihao He*, *Nima Khademi Kalantari*
- Factorizes the 2D directional distribution into two 1D PDFs using TinyCUDA networks.
- Caches incoming radiance in a secondary network to improve optimization and reduce variance.

Frame Interpolation for Dynamic Scenes with Implicit Flow Encoding — **WACV 2023**
Pedro Figueiredo, *Avinash Paliwal*, *Nima Khademi Kalantari*
- Interpolates dynamic scenes under varying illumination.
- Encodes bidirectional flows in a hypernetwork-driven MLP, outperforming SOTA methods.

EXPERIENCE

Graphics Research Intern — **September 2025 - January 2026**
Intel, *USA*
- Finetuning pre-trained large image and video diffusion models towards novel formulation of consistent scene-wide neural rendering.

Research Intern — **May 2023 - August 2023**
NVIDIA, *USA*
- Researched frame interpolation algorithms focused on rendering applied to DLSS.
- Designed efficiency improvements to current DLSS software, and proposed larger-scale architecture changes for future iterations.

Machine Learning Intern — **May 2021 - August 2021**
Ericsson, *USA*
- Built a containerized resource forecaster using statistical and deep-learning methods.
- Led the development of an internal search engine tool for engineers using SOTA NLP methods.

Software Developer Intern — **May 2018 - December 2019**
Ericsson, *Hungary*
- Prototyped edge-computing containerized solutions and 5G IoT applications hosted on AWS and Azure.

C++ Developer Intern — **January 2016 - December 2017**
LAVID/UFPB, *Brazil*
- Created a real-time image/video processing prototype for the hearing impaired.
- Integrated CNN-based object recognition with text-to-speech for sign language translation (VLIBRAS project).

PROJECTS

Real-Time Affine Transformations of 3D Meshes — **2020**
Eötvös Loránd University, Hungary
- Built an OpenGL app leveraging SDF-based octrees for real-time mesh affine transforms.

Physically-Based Rendering for Motivating Undergraduate Students — **2017**
Universidade Federal da Paraiba, Brazil
- Developed a C++ CPU path tracer to engage undergraduates and combat student evasion.