

# PEDRO FIGUEIRÊDO

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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*

## RESEARCH PROJECTS

**Implicit Representation of 3D Geometry** October 2021 - Present  
*Texas A&M University, United States of America* *Nima Kalantari, PhD and John Keyser, PhD*

- We improve on state-of-the-art methods for representing geometry as Signed Distance Fields. Based on [DeepSDF](#).
- Our method leverages hyper-network learning to improve the capacity of implicit neural representation networks.

**Meta-Learned Video Frame Interpolation** September 2020 - Present  
*Texas A&M University, United States of America* *Nima Kalantari, PhD*

- We generate novel interpolating frames in videos using deep learning. Inspired by [Jiang et. al.](#)
- Our method leverages meta-learning to allow fast optimization at test time for implicit neural representation solutions.

**Outdoor Scene Relighting** January 2020 - October 2020  
*Texas A&M University, United States of America* *Nima Kalantari, PhD*

- We use deep learning to change lighting conditions in outdoor scenes. Inspired by [Xu et. al.](#)
- Our solution encodes lighting direction using a MLP and processes lighting and albedo separately to obtain state-of-the-art results.

**Real-Time Affine Transformations of 3D Meshes** August 2018 - December 2019  
*Eötvös Loránd University, Hungary* *Csaba Bálint, MSc*

- Created OpenGL application using octrees to leverage signed distance functions as a way of performing fast affine transformations in 3D meshes. Novel mesh representation allows real-time computation of operations not feasible in real-time before.
- Research on signed distance functions and real-time cone tracing presented at [international conference](#).

**Physically-Based Rendering for Motivating Undergraduate Students** January 2017 - December 2017  
*Universidade Federal da Paraíba, Brazil* *Christian Pagot, PhD*

- Developed CPU [Pathtracer application](#) in C++ for motivating computer engineering undergraduate students.
- [Published paper](#) discusses positive effects of implementing abstract calculus and physics concepts during undergraduate learning.

## EXPERIENCE

**Graduate Research and Teaching Assistant** January 2020 - Present  
*Texas A&M University, United States of America*

- Graduate Research Assistant and Member of the [Aggie Graphics Group](#). Advised by [Dr. Nima Kalantari](#).
- Graduate Teaching Assistant for undergraduate and graduate courses.

**Machine Learning Intern** May 2021 - August 2021  
*Ericsson, United States of America*

- Designed and developed hardware resource forecaster for network infrastructure. Containerized solution uses statistical and deep-learning methods trained on existing logged usage data. Allows on-demand probability forecast suiting diverse use-cases.
- Lead the development of smart search engine for network defects. Containerized API and interface allows engineers to quickly find previously logged solutions of similar defects across Ericsson global. Uses combination of existing search algorithms and trained NLP models for enhanced suggestions. Validated and approved by network engineers.

**Software Developer Intern** May 2018 - December 2019  
*Ericsson, Hungary*

- Developed prototypes for Ericsson's edge computing platform leveraging quick 20ms response times from 5G hardware.
- Engineered and deployed 5G IoT applications for cloud computing hosted on AWS and Microsoft Azure.

**C++ Developer Intern** January 2016 - December 2017  
*LAVID/UFPB, Brazil*

- Developed software for image and video processing focused on data structure refactoring and algorithm optimization. Work resulted in 200% faster, more efficient modules and overall better user experience validated with user studies.
- Implemented application that leveraged object recognition via CNNs and text-to-speech tools for the visually impaired.
- Worked on main open-source project in Brazil for sign language translation, [VLIBRAS](#).

## SKILLS

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**Programming Languages** Proficient: Python, C/C++. Familiar: HTML, CSS, JavaScript, Java, Swift, SQL, Shell.  
**Libraries** Numpy, OpenCV, Pytorch, OpenGL, FFMPEG, C++ STD, Bootstrap.  
**Technologies** AWS, Azure, Singularity, Docker, Git.  
**Languages** English: certified advanced. Portuguese: native. Spanish: conversational.

## VOLUNTEERING

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### Student Volunteer

April 2021

[ACM Intelligent User Interfaces - IUI](#), United States of America

- Session facilitator for virtual sessions.

### Student Volunteer

August 2020

[ACM SIGGRAPH](#), United States of America

- Organized virtual sessions in the first virtual SIGGRAPH conference.

### Project Engineer Officer

October 2017 - February 2018

IEEE, Brazil

- Organized projects and workshops focused on teaching new programming languages to undergraduate students.

## AWARDS

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- Outstanding Bachelor's Thesis Award at Eötvös Loránd University. 2020
- First Place Award on the Scientific Students' Associations (TDK) at Eötvös Loránd University. 2019
- National Higher Education Scholarship at Eötvös Loránd University. 2019
- Stipendium Hungaricum Scholarship at Eötvös Loránd University. 2018

## PUBLICATIONS

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- **Figueirêdo, P.**, Kim, Y., Le Minh, N., Sitt, E., Ying, X., Zsók, V. 2020. [How to Increase Interest in Studying Functional Programming via Interdisciplinary Application](#). *Proceedings Eighth and Ninth International Workshop on Trends in Functional Programming in Education, Vancouver Canada and Krakow Poland, 11th June 2019 and 12th February 2020*. 321, 37-54. DOI: 10.4204/EPTCS.321.3
- **Figueirêdo, P.H.V. de** 2017. [Relato de Experiência Sobre o Aprendizado de Introdução à Renderização Baseada em Física em um Curso de Graduação da Área de Computação](#). *Comunicações em Informática*. 1, 1 (dez. 2017), 18-21. DOI:10.22478/ufpb.2595-0622.2017v1n1.37497.