

# Ricardo Bigolin Lanfredi

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Salt Lake City, Utah

## EDUCATION

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### PhD in Electrical and Computer Engineering

August 2017 - August 2022

University of Utah - Salt Lake City, UT

Advisor: Tolga Tasdizen - GPA: 4.0/4.0

### Master in Engineering

September 2012 - February 2016

CentraleSupélec - Châtenay-Malabry, France

Ranked 2nd best engineering school in France - GPA: 4.16/4.33

### BS in Electrical Engineering

March 2010 - January 2016

Universidade Federal do Rio Grande do Sul (UFRGS) - Porto Alegre, Brazil

Ranked among 5 best universities in Brazil - Graduated with honors - GPA: 10/10

## PROFESSIONAL EXPERIENCE

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### Graduate Assistant

January 2018 - Present

Scientific Computing and Imaging Institute at the University of Utah

- Working with medical image analysis for chest x-rays, focusing on interpretability and robustness of deep learning models, and on the use of eye-tracking data collected from radiologists for implicit localization of abnormalities.

### Applied Scientist Intern

May 2019 - August 2019

AWS Rekognition at Amazon

### Data Analyst

March 2016 - July 2017

Lojas Quero-Quero - Cachoeirinha, Brazil

- Supported the purchase division of the retail company and developed, in a team, an internal web application (full stack) for storing prices from competitors

### Research Intern

August 2014 - January 2015

GE Healthcare - Buc, France

- Modeled a medical X-ray system for simulation, using physics and signal processing

### Research Assistant

February 2011 - June 2012

Applied Mathematics Department - UFRGS

- Optimized and implemented new algorithms in C++, for visualization and numerical calculation of structural properties of porous structures.

## TEACHING EXPERIENCE

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### Teaching Assistant

January 2019 - May 2019

Department of Electrical and Computer Engineering at the University of Utah

Deep Learning for Image Analysis

- Created and graded assignments and gave a few lectures for 40 students

### Teaching Assistant

August 2018 - December 2018

Department of Electrical and Computer Engineering at the University of Utah

Electrical Eng. for Nonmajors

- Instructed 60 students in laboratory sessions

## HONORS AND AWARDS

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- Graduate Student Travel Assistance Award** October 2019  
◦ Awarded by University of Utah Graduate School.
- MICCAI 2019 Graduate Student Travel Award** October 2019  
◦ Awarded to outstanding graduate student authors.
- Magna Cum Laude** (Latin Honor - Láurea Acadêmica) - UFRGS January 2016  
◦ Prize for academic excellence, after obtaining 100% A grades during studies.
- 3rd place in Innovation Prize 2014** - CentraleSupélec June 2014  
◦ For the robotics team project CHAR++, among more than 100 projects.
- Eiffel Excellence Scholarship** - Campus France July 2012 - June 2014  
◦ Scholarship for top international students during their master's and PhD courses.
- Honorable Mention** - Brazilian Physics Olympics November 2009

## CONFERENCE PUBLICATIONS

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1. R B Lanfredi, J Schroeder, C Vachet, T Tasdizen. *Interpretation of Disease Evidence for Medical Images Using Adversarial Deformation Fields*. Early acceptance for the main conference at **MICCAI 2020**.
2. R B Lanfredi, J Schroeder, C Vachet, T Tasdizen. *Adversarial regression training for visualizing the progression of chronic obstructive pulmonary disease with chest x-rays*. Early acceptance for the main conference at **MICCAI 2019**.
3. M Javanmardi, R B Lanfredi, M Cetin, T Tasdizen. *Image Segmentation by Deep Learning of Disjunctive Normal Shape Model Shape Representation*. **DiffCVML (CVPR Workshop) 2018**. Presented by Lanfredi, R B.

## JOURNAL PUBLICATIONS

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1. J Schroeder, R B Lanfredi, T Li, J Chan, C Vachet, R Paine, V Srikumar, T Tasdizen. *Prediction of Obstructive Lung Disease from Chest Radiographs via Deep Learning Trained on Pulmonary Function Data*. **International journal of chronic obstructive pulmonary disease**, vol. 15, 3455-3466. 2021.
2. W L Roque, K Arcaro, R B Lanfredi. *Trabecular network tortuosity and connectivity of distal radius from microtomographic images*. Published in Portuguese. **Brazilian Journal of Biomedical Engineering**, v. 28, Issue 2. 2012.

## ABSTRACTS

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1. J Chan, R B Lanfredi, T Tasdizen, V Srikumar, J Schroeder. *Using Deep Learning to Predict Severity of Restrictive Pulmonary Function From Chest Radiographs of Patients With Interstitial Lung Disease*. **ARRS 2019 Annual Meeting and Scientific Program**. Awarded with ARRS Magna Cum Laude for best in subspecialty.

## IN PREPARATION/SUBMITTED

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1. R B Lanfredi et al. *Comparing radiologists' gaze and saliency maps generated by interpretability methods for chest radiographs*. In preparation.
2. R B Lanfredi, M Zhang, W Auffermann, J Chan, PA Duong, V Srikumar, T Drew, J Schroeder, T Tasdizen. *REFLACX, a dataset of reports and eye-tracking data for localization of abnormalities in chest x-rays*. In preparation.
3. R B Lanfredi, J Schroeder, T Tasdizen. *Quantifying the Preferential Direction of the Model Gradient in Adversarial Training With Projected Gradient Descent*. Submitted to Pattern Recognition.