

# Ricardo Rossiter Barioni

## PERSONAL DETAILS

<i>Birth</i>	April 22, 1996
<i>Phone</i>	55-81-985582677
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<i>Github</i>	github.com/rrbarioni

## PROFESSIONAL EXPERIENCE

Machine Learning Engineer @ SiDi  
*Recife, Brazil*

Jan 2021 - Current

Academic Researcher @ Voxar Labs  
*Recife, Brazil*

Aug 2016 - Aug 2020

## EDUCATION

M.Sc. in Computer Science  
*Federal University of Pernambuco (UFPE), Recife, Brazil*

Aug 2018 - Jul 2020

B.Sc. in Computer Science  
*Federal University of Pernambuco (UFPE), Recife, Brazil*

Apr 2014 - Jul 2018

## PUBLICATIONS

Improving Non-Stationary Acoustic Source  
Classification with Metric Learning  
*Paper at 2023 XLI Simpósio Brasileiro de Telecomunicações e  
Processamento de Sinais (SBrT)*

Oct 2023

Non-Stationarity Objective Assessment for Acoustic  
Source Classification  
*Paper at 2023 XLI Simpósio Brasileiro de Telecomunicações e  
Processamento de Sinais (SBrT)*

Oct 2023

A Metric Learning Based Solution for Non-Stationary  
Acoustic Source Classification  
*Paper at 2022 XL Simpósio Brasileiro de Telecomunicações e  
Processamento de Sinais (SBrT)*

Sep 2022

HuTrain: a Framework for Fast Creation of Real  
Human Pose Datasets

Jul 2020

*Poster at 2020 21st International Symposium on Mixed and Augmented Reality (ISMAR)*

**Songverse: a music-loop authoring tool based on Virtual Reality**

Jul 2020

*Extended Paper at 2020 11st Journal on Interactive Systems (JIS)*

**Usability and effects of text, image and audio feedback on exercise correction during augmented reality based motor rehabilitation**

Sep 2019

*Elsevier Computer & Graphics (C&G) Special Issue at 2019 21th Symposium on Virtual and Augmented Reality (SVR)*

**BalletVR: a Virtual Reality System for Ballet Arm Positions Training**

Aug 2019

*Full paper at 2019 21th Symposium on Virtual and Augmented Reality (SVR)*

**Songverse: a music-loop authoring tool based on Virtual Reality**

Aug 2019

*Full paper at 2019 21th Symposium on Virtual and Augmented Reality (SVR)*

**Human Pose Tracking from RGB Inputs**

Aug 2018

*Full paper at 2018 20th Symposium on Virtual and Augmented Reality (SVR)*

**ARkanoidAR 2.0: Otimizações em uma solução de realidade aumentada com base em testes de usabilidade**  
*Poster at 2018 26th Congresso Brasileiro de Engenharia Biomédica (CBEB)*

Aug 2018

**ARkanoidAR: an Augmented Reality System to Guide Biomechanical Movements at Sagittal Plane**

Jun 2017

*Full paper at 2017 19th Symposium on Virtual and Augmented Reality (SVR)*

## **RESEARCH AND DEVELOPMENT**

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**Academic Research**

Jan 2018 - Aug 2020

*Voxar Labs, Recife, Brazil*

Academic researches focused in natural interaction and machine learning.

Technique enhancement of human pose estimation methods from RGB inputs.

**Academic Research**

Mar 2019 - Aug 2020

*CIn Projeto Samsung, Recife, Brazil*

Enhancement of user experience on extended realities, in collaboration with Voxar Labs.

**Academic Research**

Jul 2017 - Mar 2019

*CIn Projeto Samsung, Recife, Brazil*

Enhancement of computer vision's state of art methods, in collaboration with Voxar Labs.

### **Undergraduate Research**

**Aug 2016 - Nov 2017**

*Voxar Labs, Recife, Brazil*

Academic researches focused in natural interaction and augmented reality.

Technique enhancement of therapeutic exercise orientations on augmented reality applications using biomechanical gestures recognition and functional gestures recognition methods exploration.

### **Undergraduate Research**

**May 2017 - Jun 2017**

*Voxar Labs, Recife, Brazil*

Academic researches focused in data visualization.

Development of a web tool for analyzing bat populations from thermal images obtained on caves.

## **CERTIFICATES**

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**Deploying Machine Learning Models in Production**

**2023**

*DeepLearning.AI, Coursera*

**Machine Learning Modeling Pipelines in Production**

**2023**

*DeepLearning.AI, Coursera*

**Probability & Statistics for Machine Learning & Data Science**

**2023**

*DeepLearning.AI, Coursera*

**Introduction to Embedded Machine Learning**

**2023**

*Edge Impulse, Coursera*

**Machine Learning Data Lifecycle in Production**

**2023**

*DeepLearning.AI, Coursera*

**Types of Conflict**

**2023**

*UCI, Coursera*

**Mathematics for Machine Learning: Linear Algebra**

**2023**

*Imperial College London, Coursera*

**Conflict Resolution Skills**

**2023**

*UCI, Coursera*

**Communication in the 21st Century Workplace**

**2022**

*UCI, Coursera*

**Effective Problem-Solving and Decision-Making**

**2022**

*UCI, Coursera*

**Work Smarter, Not Harder: Time Management for Personal & Professional Productivity**

**2022**

*UCI, Coursera*

**Digital Signal Processing 1: Basic Concepts and Algorithms**

*EPFL, Coursera*

2022

**Device-based Models with TensorFlow Lite**

*DeepLearning.AI, Coursera*

2022

**Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization**

*DeepLearning.AI, Coursera*

2021

**Introduction to Machine Learning in Production**

*DeepLearning.AI, Coursera*

2021

**Sequence Models**

*DeepLearning.AI, Coursera*

2020

## PROJECTS

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**HuTrain**

2020

This project is a framework for creating human pose estimation datasets quickly and easily. By using Python and libraries such as PyTorch and OpenCV, HuTrain comprises steps such as automatic camera calibration, refined human pose estimation and known dataset formats conversion.

**Dog Breed Recognition**

2020

This project is an algorithm for recognizing dog breeds from RGB images. By using Python and the PyTorch open-source machine learning framework, it applies convolutional neural network techniques for the classification of dog breeds and supports the enrolling of new dog breeds dynamically.

**Credit Risk Analysis**

2020

A project for the evaluation of the non-payment risk of bank clients. This credit risk analysis was implemented using Python and libraries such as Pandas, scikit-learn and Seaborn.

**Ballet VR**

2019

This system is a virtual reality application for guiding ballet dancers through learning and practicing basic ballet arm positions. By using a Microsoft Kinect for tracking the dancer's performed poses, the system compares them with basic arm positions, proposed by École Française, and allows the dancer to practice autonomously.

**WRITEME**

2019

This system consists of a web interface where developers can obtain recommendations of sections, based on research and the most popular open-source repositories, for the READMEs they are writing.

### **SongVerse**

2019

This project is a Digital Music Instrument (DMI) that allows the user to create music in a virtual reality scenario where, by using wand controllers, the user interacts with an environment that resembles the outer space.

### **Onboarding Visualization**

2018

This tool was built with the purpose of helping open-source maintainers to measure the effectiveness of their onboarding process, and give helpful tips on how to improve it.

### **Musical Invaders**

2018

Based on the original 1978 arcade shooting game called Space Invaders, it is a web game where the player controls a spaceship, whose objective is to prevent aliens to reach earth by shooting musical notes. Not only fun, but Musical Invaders also encourages players to be creative by improvising new melodies while playing.

### **BatVis**

2017

This project is a web application for visualizing bats tracking data obtained from thermal images in caves. This application is able to provide insights, such as changes in bats populations and flight behavior, in a more intuitive fashion, which can be used to the biomonitoring of population tendencies, habitat use and the effects of climate change.

### **ARkanoidAR**

2017

This project is an augmented reality system that guides physiotherapy patients through the rehabilitation process of biomechanical movements at the sagittal plane. The system uses Microsoft Kinect for tracking the user's poses and instructs the user which movements must be performed by providing a series of visual and auditory feedback.

## **LEADERSHIP AND AWARDS**

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### **Reviewer at Symposium on Virtual and Augmented Reality 2020 (SVR)**

*Brazil*

Aug 2020

### **Publication at Congresso Brasileiro de Engenharia Biomédica 2018 (CBEB)**

*Hotel Atlântico Búzios, Búzios, Brazil*

Oct 2018

### **Participation and Presentation at Symposium on Virtual and Augmented Reality 2017 (SVR)**

*PUCPR, Curitiba, Brazil*

Nov 2017

**Volunteer at Olimpíada Brasileira de Robótica  
2017 (OBR)**

*Arena Pernambuco, São Lourenço da Mata, Brazil*

Aug 2017

**Teacher Assistant of Programming Language Paradigms**

*Federal University of Pernambuco (UFPE), Recife, Brazil*

Aug 2016 - Mar 2017

**Participation at International Free Software Forum  
2017 (FISL)**

*PUCRS Center of Events, Porto Alegre, Brazil*

Jul 2016

**Teacher Assistant of Algorithms and Data Structures**

*Federal University of Pernambuco (UFPE), Recife, Brazil*

Mar 2015 - Mar 2016

**Awarded B in First Certificate in English (FCE)**

*University of Cambridge, United Kingdom*

Jan 2013

## **SKILLS**

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<i>Languages</i>	Portuguese (native), English (advanced)
<i>Software</i>	Python, TensorFlow, OpenCV, PyTorch, Keras, NumPy, Matplotlib, Pandas, scikit-learn, Bash, C++, SQLite, Git, Docker
<i>Interests</i>	Machine Learning, Speech Processing, Computer Vision