

# Eduardo Rodrigues

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## Education

### Center of Informatics of the Federal University of Pernambuco - CIn/UFPE

Recife, Pernambuco, Brazil

B.Sc. IN COMPUTER SCIENCE

2013 - 2018

## Experience

### Voxar Labs - CIn/UFPE

Recife, Pernambuco

RESEARCHER

2015 - 2018

- Academic research and software development focused in mixed reality, virtual reality, augmented reality, human-computer interaction, natural interaction, multitarget tracking and computer vision. The results can be found in my personal website.
- Advisor: Veronica Teichrieb

### SUATI

Recife, Pernambuco

SOFTWARE ENGINEER (INTERNSHIP)

2015 - 2016

- Refactoring of the data layer code and implementation of new features on the company's major product.

### Young Talents for Science - CAPES

Recife, Pernambuco

RESEARCHING

2015 - 2016

- Academic research program where I created a computer vision algorithm using openCV to count bat populations based on a statistical approach.

## Research and Development

### Voxar Shift

Voxar Labs

RESEARCHER/DEVELOPER

Mar. 2018 - present

- Innovation project to create products on top of research technologies
- Objective-C/C/C++

### Samsung

Voxar Labs

RESEARCHER/DEVELOPER

Set. 2017 - Feb. 2018

- Object tracking related research using computer vision algorithms
- C/C++/OpenCV

### Voxar Labs

Voxar Labs

RESEARCHER/DEVELOPER

Jan. 2017 - Jul. 2017

- Mixed Reality interface and interaction for consumer TVs
- C#/Unity3D

### SimplifiqueGP

Voxar Labs

DEVELOPER

Jul. 2016 - Dec. 2016

- Multiplatform 3D rendering for engineering
- C/C++/C#/Objective-C/OpenGL/OpenSceneGraph

### Voxar Labs

Voxar Labs

RESEARCHER / DEVELOPER

Mar. 2015 - Jun. 2016

- Multitarget tracking research focused on tracking and counting bat populations
- C/C++/OpenCV/OpenGL/ThreeJS/D3/Python

## Languages

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### Portugues

NATIVE

### English

INTERMEDIATE

## Programming skills

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### Languages

C/C++, C#, OBJECTIVE-C, PYTHON

### Libraries and tools

UNITY3D, OPENCV, OPENGL, GIT, VISUAL STUDIO, TERMINAL

## Teaching experience

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### Teaching Assistant

ALGEBRA FOR COMPUTER SCIENCE

Informatics Center - UFPE

Aug. 2014 - Dec. 2014

### Teaching Assistant

PROGRAMMING INTRODUCTION

Informatics Center - UFPE

Jan. 2014 - Jul. 2014

## Publications

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- [1] **Mixed Reality TVs: Applying Motion Parallax for Enhanced Viewing and Control Experiences on Consumer TVs.** Rodrigues, Eduardo, Lucas Silva Figueiredo, Lucas Maggi, Edvar Neto, Layon Tavares Bezerra, João Marcelo Teixeira, and Veronica Teichrieb. *Symposium on Virtual and Augmented Reality (SVR)* . 2017.
- [2] **Multi-objective tracking applied to bat populations.** Rodrigues, Eduardo, João Marcelo Teixeira, Veronica Teichrieb, and Enrico Bernard. *Symposium on Virtual and Augmented Reality (SVR)* . 2016.

## Projects

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### A Comparative Evaluation of Direct Hand and Wand Interactions on Consumer Devices

THIS WORK EVALUATES THE USE OF TWO INPUT TECHNIQUES FOR VR APPLICATIONS: WANDS AND HANDS.

EXPERIMENTS WERE PERFORMED USING CONSUMER DEVICES (LEAP MOTION CONTROLLER AND HTC VIVE), AIMING

AT UNDERSTANDING HOW POPULAR HARDWARE RESPOND TO USERS' NEEDS. FIVE DISTINCT SCENARIOS WERE

TESTED, EXPLORING BOTH NEAR AND FAR OBJECT INTERACTION. THE EVALUATION WAS DIVIDED INTO THREE STEPS:

USER PROFILE EVALUATION, SYSTEM PERFORMANCE EVALUATION, AND SYSTEM USABILITY SCALE QUESTIONNAIRE.

THE RESULTS SHOWED THAT EVEN WITH A LOWER TASK ACCURACY, NATURAL INTERACTION PROVIDED BY USING A

HAND REPRESENTATION ON THE VIRTUAL WORLD GAINED USER'S PREFERENCE WHEN INTERACTING WITH VIRTUAL

ELEMENTS THAT WERE CLOSE TO USER. FOR DISTANT OBJECT INTERACTION, IT STILL NEEDS SOME IMPROVEMENTS.

(C#/UNITY3D)

## ARGo

AN AUGMENTED REALITY FRAMEWORK THAT MAKES THE CREATION PROCESS OF AN AR APPLICATION EASIER THEN NEVER, AVOIDING THE NEED OF DEEP KNOWLEDGE IN COMPUTER GRAPHICS, FOCUSING ONLY ON CONTENT CREATION WITH JUST A FEW LINES OF CODE.(OBJECTIVE-C/C/C++/SWIFT)

## Mixed Reality TVs

A UNITY ENGINE PROJECT DEVELOPED USING THE KINECT SDK. THIS PROJECT ADDRESS THE INTERACTIVITY WITH SMART TVs BY USING BODY GESTURES COMBINED WITH THE VISUALIZATION MODIFICATION THROUGH THE MOTION PARALLAX EFFECT. THIS APPLICATION IS CAPABLE TO FULLY CALIBRATE THE TV VIRTUAL ENVIRONMENT WITH THE REAL WORLD, SO THE TV BECOMES A MIXED REALITY DISPLAY, SHOWING ITS CONTENT COUPLED WITH THE REAL WORLD PROVIDING THE USER A NEW SET OF INTERACTION TECHNIQUES SUCH AS VISUALLY PINPOINT AND TOUCH THE VIRTUAL ITEMS OF A TV MENU BY USING METAPHORS BASED ON NATURAL PHYSICAL INTERACTIONS SUCH AS COLLISIONS, LIGHTS, SHADOWS AND MAGNETIC ATTRACTIONS. (C#/UNITY3D)

## UnityRTGI

A UNITY ENGINE PROJECT WHERE THE USER CAN IMPORT .OBJ EXTENSION FILES (LOCAL OR ONLINE) DURING EXECUTION TIME WITHOUT THE NEED OF COMPILING THE ASSET WITH THE PROJECT. (C#/UNITY3D)

## S.i.R.A.C

THIS PROJECT IS A COMPUTER VISION ALGORITHM THAT TRACK BATS IN A CLUTTER ENVIRONMENT FROM A THERMAL IMAGE TO ACCOUNT THE POPULATION OF THEIR COLONY. AFTER TRACK THE BATS THE ALGORITHM GENERATES A TEXT FILE THAT IS LOADED BY A 3D VIEWER THAT RECONSTRUCTS ALL THE SCENE IN A 3D ENVIRONMENT IN ORDER TO HELP THE ANALYSIS OF THE TRACKED FLIGHTS BY RESEARCHERS IN AREAS LIKE BIODIVERSITY AND BIOLOGY.. (C/C++/PYTHON/OPENCV/OPENGL/THREEJS/D3)

## MONO

A GAME JAM PROJECT THAT IS A PUZZLE/PLATFORM GAME WHERE THE PLAYER CHANGES THE WORLD COLORS BETWEEN BLACK AND WHITE TO OVERCOME THE PROPOSED CHALLENGES. (C#/UNITY)

## x:pression

A COMPUTER VISION ALGORITHM THAT MAKE A REAL TIME TRACKING OF THE USER'S FACE AND DETECT THE USER'S ACTUAL EMOTION BASED ON THE EXTRACTED FEATURES. (C/C++/CLM-FRAMEWORK)

## Features Extractor

A COMPUTER VISION ALGORITHM USING OPENCV LIBRARY THAT TRACKS A GIVEN TEXTURE ON A WEB CAM IMAGE AND RENDER A 3D OBJECT ON THE TEXTURE SURFACE. (C/C++/OPENCV/OPENGL)

## 3D Render

3D RENDER: BASIC RENDERING PROGRAM OF A 3D WORLD WITH AN OBJECT LOADER FOR .OBJ EXTENSION FILES USING OPENGL. (C/C++/OPENGL)

## Awards

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### NATIONAL

Jul. 2016 **Codecup Hackaton**, Second Place

Jun. 2015 **Codecup Hackaton**, First Place

*Pernambuco, Brazil*

*Pernambuco Brazil*