## **Eduardo Moura Cirilo Rocha**

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**6** 608-207-8271

**♥** Berkeley, CA

in https://www.linkedin.com/in/eduardo-rocha-a26029107/

• https://mcreduardo.github.io/projects/

## **EXPERIENCE**

### **Robotics Software Engineer**

## RFA Engineering - under contract to John Deere ISG

₩ Jan 2020 - present

Parkelev, CA

- Designed data pipelines for stereo image acquisition and logging, including FPGA acceleration for disparity matching and 3D reprojection.
- Worked on multiple Computer Vision applications, including obstacle detection for autonomous vehicles.
- Specified and documented requirements for perception and classification systems following industry standards.
- Developed a Deep Learning framework for Object Detection and Segmentation and deployed models to embedded hardware.
- Developed applications in a continuous integration environment.

#### Research Assistant

### **University of Wisconsin-Madison**

m Jan 2018 - Dec 2019

Madison, WI

- Designed the state of the art method for assessing corn silage quality in real-time via image analysis and Deep Learning.
- Designed specialized camera systems for in-field data acquisition at high rates, including the mechanical designs for harsh environments.
- Worked on various projects involving Computer Vision and Machine Learning for agricultural applications.

#### Product Engineering Intern

## John Deere Intelligent Solutions Group Automation Delivery Organization

May 2019 - Aug 2019

Oes Moines, IA

- Used Computer Vision and Deep Learning for object detection.
- Implemented robotic arm control and object detection using stereo vision.

#### Mechatronics Laboratory Intern

#### **University of Wisconsin-Madison**

May 2016 - Aug 2016

Madison, WI

- Designed and fabricated an injection pump for use in 4D Angiography.

#### Lab Assistant

#### Laboratory of Aerial Robotics, Universidade de Brasilia

Mar 2014 - July 2017

Prasília, Brazil

- Designed and assembled autonomous unmanned aerial vehicles.
- Implemented algorithms for cooperative control of multiple aircraft.

## **SKILLS**

**Computer Vision** 

Machine Learning

Perception Systems / Stereo cameras

**Autonomous Vehicles** 

**Robotics** 

Modern and Classical Controls

Embedded Hardware / System on a Chip

Systems Engineering

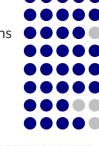
Test-Driven Development

Software Development Life-cycle

Continuous Integration

Agile Development

C, C++, Python
Version control / Git
Docker, Artifactory, Jenkins
OpenCV, Sklearn
Tensorflow, Keras
Linux, Unix
RTOS, ROS
Matlab, Simulink



Portuguese, English Spanish, German Polish



## **EDUCATION**

# M.S. Biological Systems Engineering University of Wisconsin-Madison

Focused on Automation, Machine Learning, and Modern Controls.

B.S. Mechatronics Engineering

## Universidade de Brasília, Brazil University of Wisconsin-Madison

math Aug 2012 - Dec 2017

- Graduated first in my class.
- Received the Brazil Scientific Mobility Program fully-funded scholarship.
- Received the VISP Academic Excellence Award, Fall 2015, University of Wisconsin-Madison.

## **PROJECTS**

#### Research Project: SilageSnap Application [App link]

Developed a mobile application capable to assess corn kernel particle size distribution in water separated corn silage using image analysis (C++, OpenCV, Swift).

#### Senior Thesis: Injection pump for use in 4D Neuroangiography

Designed and fabricated an injection pump for use in 4D Neuroangiography, including all mechanical, electrical, and controls design (PLC, CNC machining, 3D scanning/printing, Classical Controls).

## Social Extension Project/Competition Team: UnBeatables

Developed behavioral algorithms for autonomous humanoid robots control in robotic soccer competitions. Trained Deep Learning models for object detection (C++, TensorFlow, OpenCV).

#### **Competition Team: Draco Volans Aerodesign**

Developed algorithms for structural optimization and simulation of aircraft. (C, Matlab, Ansys).

## SELECTED PUBLICATIONS

Monhollen, N. S., K. J. Shinners, J. C. Friede, E. M.C. Rocha, and B. D. Luck. 2019. In-field machine vision system for identifying corn kernel losses. Computers and Electronics in Agriculture 174: 105496. [link]

Drewry, J. L., B. D. Luck, R. L. Willett, E. M. C. Rocha, and J. D. Harmon. 2019. Predicting kernel processing score of harvested and processed corn silage via image processing techniques. Computers and Electronics in Agriculture 160: 144-152. [link]

## **FURTHER EDUCATION**

**♀** LinkedIn Learning



- C++: Advanced Topics
- Test-Driven Development in C++
- DevOps Foundations: Continuous Delivery /Continuous Integration

## **EXTRACURRICULARS**

- Data Structures teaching assistant, Universidade de Brasilia (Mar 2014 July 2014, Mar 2015 - July 2015)
- Digital Circuits teaching assistant, Universidade de Brasilia (Aug 2014 Dec 2014)
- Speaker of International Reach Cross-Cultural Speakers Program, UW-Madison (Sep 2015 – Aug 2016)
- Portuguese tutor in the program Greater University Tutoring Service, UW-Madison (Jan 2016 - Aug 2016)

## REFERENCES

#### **Prof. Brian Luck**

- University of Wisconsin-Madison
- @ bluck@wisc.edu

#### Prof. Rebecca Willett

- University of Chicago
- @ willett@uchicago.edu

## A DAY OF MY LIFE

