Eduardo Moura Cirilo Rocha

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EXPERIENCE

Robotics Software Engineer

RFA Engineering – under contract to John Deere ISG

Jan 2020 – present Berkeley, 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

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 Des 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 Brasília, 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

Jan 2018 – Dec 2019

- Focused on Automation, Machine Learning, and Modern Controls.

B.S. Mechatronics Engineering

Universidade de Brasília, Brazil
University of Wisconsin-Madison

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

deeplearning.ai (Coursera) 2019
TensorFlow in Practice Specialization

LinkedIn Learning 2020
- 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
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Prof. Rebecca Willett
University of Chicago
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A DAY OF MY LIFE