

# Eduardo Moura Cirilo Rocha

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## EXPERIENCE

**Product Engineering Intern,** (May 2019 - Present)  
**John Deere Intelligent Solutions Group, Automation Delivery Organization**

- Used Computer Vision and Deep Learning techniques for Image Classification and Semantic Segmentation (Python, C++, OpenCV, Tensorflow, Sklearn).
- Implemented control systems for electric linear actuators (system linearization, classical controls, electrical system design).

**Research Assistant,** (January 2018 - Present)  
**University of Wisconsin-Madison**

- Designed a new method to assess corn kernel particle size distribution in chopped and processed corn silage and earlage via image analysis and Deep Learning techniques (Matlab DL TB, Python, Tensorflow, R).
- Helped in various projects, including the optimization of vehicle traffic for silage harvesting, and a study of the effects of soil compaction in crop yield for vehicle traffic control.

**Intern,** (May 2016 - August 2016)  
**Mechatronics Laboratory, University of Wisconsin-Madison**

- Designed and fabricated an injection pump for use in 4D Neuroangiography in the Wisconsin Institute for Medical Research.
- Did all the mechanical, electrical and automation design (CNC machining, 3D scanning and printing, PLC, classical controls).

**Lab Assistant,** (March 2014 - July 2017)  
**Laboratory of Aerial Robotics, Universidade de Brasilia**

- Designed and assembled autonomous unmanned aerial vehicles.
- Implemented algorithms for cooperative control of multiple aircraft in simulation and real environments (Matlab, Simulink).
- Projected and implemented an algorithm to calibrate IMUs using a gyroscope.

## EDUCATION

**M.S. in Biological Systems Engineering** (January 2018 - Expected December 2019)  
**University of Wisconsin-Madison**

- Focus in Modern Controls and Machine Learning applications.
- Thesis: Assessing Corn Kernel Particle Size Distribution in Chopped and Processed Corn Silage and Earlage via Image Analysis.

**B.S. in Automation and Controls Engineering** (August 2012 - December 2017)  
**Universidade de Brasilia**

**University of Wisconsin-Madison - Visiting International Student**

- Graduated first in a class of 40.
- Brazil Scientific Mobility Program fully-funded scholarship recipient.
- Exchange & Visiting International Student Academic Excellence Award recipient for Fall 2015, University of Wisconsin-Madison.

## SKILLS

<i>Programming:</i>	C, C++ (OpenCV), Python (TensorFlow, Numpy, Sklearn), R, Matlab (Control System, ML and DL Toolboxes).
<i>Other Tools and Software:</i>	Simulink, SolidWorks, AutoCAD, LaTeX, git, docker, Ansys (structural analysis).
<i>Hardware:</i>	PLC (Rockwell Automation and B&R), Gumstix Overo COM, VHDL, Microcontrollers (MSP430 and Arduino).
<i>Operational Systems:</i>	Linux, Mac OS X, Microsoft Windows.

## ACADEMIC RESEARCH AND PROJECTS

Research Project: Development of a Corn Silage Image Processing App

University of Wisconsin-Madison (November 2015 - May 2016)

- Developed a mobile application capable to assess corn kernel particle size distribution in water separated corn silage using image analysis methods (C++, OpenCV, Swift).
- Application is available for IOS and Android: SilageSnap.

Extension Project: UnBeatables

University of Brasilia (January 2017 - December 2017)

- Developed behavioral algorithms for control of autonomous humanoid robots in robotic soccer competitions - Latin American and Brazilian Robotics Competition, and RoboCup (C++).
- Took the robots to public schools and hospitals as part of a social program.

Competition team: Draco Volans - Aerodesign

University of Brasilia (December 2013 - August 2016)

- Developed algorithms for structural optimization of aircraft and structural simulation with isotropic and orthotropic materials (C, Matlab, Ansys APDL).

## EXTRACURRICULAR ACTIVITIES

- Data Structures undergrad teaching assistant, Universidade de Brasilia (March 2014 - July 2014, March 2015 - July 2015)
- Digital Circuits undergrad teaching assistant, Universidade de Brasilia (August 2014 - December 2014)
- Speaker of the program International Reach Cross-Cultural Speakers Program, University of Wisconsin-Madison (September 2015 - August 2016)
- Portuguese tutor in the program Greater University Tutoring Service, University of Wisconsin-Madison (January 2016 - August 2016)

## LANGUAGES

Portuguese (native), English (fluent), Spanish (advanced), German (intermediate), Polish (beginner)