

OBJECTIVE

Experienced with HW and SW integration, ML and computer vision. Currently, pursuing a PhD in applications of Robotics, AI and Sensors for precision agriculture. Looking for internship positions in the field of robotics and computer vision.

CORE SKILLS

Python, scikit-learn, PyTorch, C/C++, JavaScript, React, NodeJS, Android/Java, Docker, HTML, CSS, SQL, AWS, Git, Agile, Scrum, LaTeX

EDUCATION

Auburn University

PhD in Biosystems Engineering - Robotics and Perception, Minor in Statistics

Auburn, AL

GPA: 4.0/4.0

Federal University of Santa Catarina

MS in Electrical Engineering - Embedded Systems

Florianopolis, Brazil

GPA: 4.0/4.0

Federal Institute of Santa Catarina

Specialization in Electronic Product Development

Florianopolis, Brazil

GPA: NA/NA

Federal University of Santa Catarina

BS in Electronics Engineering - Embedded Systems

Florianopolis, Brazil

GPA: 7.8/10

WORK EXPERIENCE

Auburn University

Graduate Research Assistant, Department of Biosystems Engineering

Auburn, AL

August, 2019 – Present

- Apply artificial intelligence techniques to improve precision agriculture processes.
- Develop software tools and automation in precision agriculture.
- Remote sensor development and integration with third party software.

Federal University of Santa Catarina

Electronics Engineer, Automation and Systems Department

Florianopolis, Brazil

June, 2017 – October, 2018

- Help students and faculty to design PCB and manufacture them locally, as well as 3D printed models.
- Provide technical assistance for students and faculty design their projects related to electronics.
- Maintain, organize and train students at the prototyping laboratory.

Dynamox

System Developer, R&D

Florianopolis, Brazil

June, 2017 – October, 2018

- Design, prototype and test analog and digital circuits for battery powered devices.
- Develop C/C++ firmware for MSP430/ATMEGA328 microprocessors and Python scripts to interface and test proprietary hardware.
- Develop native Android applications to interface proprietary hardware via BLE and NFC with the company's RESTful API.

InPulse

Electrical Engineer, R&D

Florianopolis, Brazil

March, 2015 – December, 2015

- Fully build a wearable device to capture, process and transmit ECG signals.
- Specified, design and developed the whole prototype consisting of multiple modules integrated in a single PCB connected via BLE with a computer.
- Developed an algorithm in firmware capable of detecting the heartbeat and transfer the time between beats to reduce necessary bandwidth.

Electrical Engineering Intern, R&D

February, 2014 – February, 2015

- Literature review, schematics development and electronic simulation for an electronic pacemaker actuation circuit.
- Firmware development for testing and validation of the simulation for the pacemaker circuit.
- Design, test and add to the PCB project a wireless charging module for the first pacemaker prototype.

Rice University

Research Assistant, RISC Lab

Houston, TX

May, 2013 – December, 2013

- MATLAB GPIB automation to remotely control Tektronix digital oscilloscope and arbitrary waveform generator for a novel secure communication technique.
- RF system implementation and measurements automation using multiple connected instruments.

- MATLAB modelling for RF imaging and positioning systems.

PUBLICATIONS

- (preprint) **Rafael Bidese**, Yin Bao, Alvaro Sanz-Saez, Charles Chen. "Peanut detection, tracking and counting using deep neural networks" in ASABE AIM2021
- H. Aggrawal, **R. Puhl**, C. Studer and A. Babakhani, "Ultra-Wideband Joint Spatial Coding for Secure Communication and High-Resolution Imaging," in IEEE Transactions on Microwave Theory and Techniques, vol. 65, no. 7, pp. 2525-2535, July 2017, doi: 10.1109/TMTT.2017.2657502.
- H. Aggrawal, **R. Puhl** and A. Babakhani, "Ultra-wideband pulse-based directional modulation," 2015 IEEE MTT-S International Microwave and RF Conference (IMaRC), Hyderabad, India, 2015, pp. 292-295, doi: 10.1109/IMaRC.2015.7411369.

AWARDS AND HONORS

Google CS Mentorship Program	2021
Alpha Epsilon ASABE Honor Society	2021
CAPES Academic Excellence Scholarship	2015
Science Without Borders Scholarship	2013
– Awarded a full scholarship to study 2 academic semesters at Rice University.	
NAMITEC-INCT and CNPq Undergraduate Research Scholarships	2011 – 2012

Extra Curricular Activities & Leadership

Research Symposium at Auburn University, Oral Presenter	2021
Engineering Week at Auburn University, Presenter	2019
SEPEX: teaching, extension and innovation week, Presenter	2017, 2018
Summer Camp on Biomedical Engineering, Organizer & Speaker	2014
Brazilian Jiu-Jitsu Club at Rice University, Founder	2013
Culture Fair at Rice University, Brazilian booth	2013
IEEE Student Branch at UFSC, Co-Founder	2010