Rafael Bidese

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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 — Auburn, AL
PhD in Biosystems Engineering - Robotics and Perception, Minor in Statistics — GPA: 4.0/4.0

Federal University of Santa Catarina — Florianopolis, Brazil
MS in Electrical Engineering - Embedded Systems — GPA: 4.0/4.0

Federal Institute of Santa Catarina — Florianopolis, Brazil
Specialization in Electronic Product Development — GPA: NA/NA

Federal University of Santa Catarina — Florianopolis, Brazil
BS in Electronics Engineering - Embedded Systems — GPA: 7.8/10

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.

WORK EXPERIENCE

Auburn University — Auburn, AL
Graduate Research Assistant, Department of Biosystems Engineering — 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.

CoachComm — Auburn, AL
Assistant Electrical Engineer, Engineering Department — August, 2019 – May, 2020
- Maintained proprietary software tools used for production and development.
- Designed experiments, tested and analyzed data for product development and evaluation.
- Debugged, tested and improved radio equipment under development.

Superior Linen Supply — Kansas City, MO
Electrical Engineer — October, 2018 – July, 2019
- Implemented maintenance management software, project management and CRM tools.
- Manage in-house maintenance team and contract outsourcing for electrical and IT projects.

Federal University of Santa Catarina — Florianopolis, Brazil
Electronics Engineer, Automation and Systems Department — 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 — Florianopolis, Brazil
System Developer, R&D — 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 Florianopolis, Brazil
Electrical Engineer, R&D 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 Houston, TX
Research Assistant, RISC Lab May, 2013 – December, 2013
- MATLAB GPIB automation to remotely control Tektronix digital oscilloscope and arbitraty 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.

TEACHING EXPERIENCE

Auburn University Auburn, AL
Instrumentation and Controls for Biological Systems Spring, 2020
- Hold the lab sessions
- Teach two instruction sessions: digital communication and ADC/DAC.

Federal University of Santa Catarina Florianopolis, Brazil
Transducer's Laboratory Spring & Fall 2016
- Responsible for planning laboratory experiments and grading reports.
- Responsible for assisting the students during the laboratory sessions.

AWARDS AND HONORS

Google CS Mentorship Program 2021
Alpha Epsilon ASABE Honor Society 2021
CAPES Academic Excelence 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