John D. Varela

1624 SW 40th Terrace ● Gainesville, FL 32607 ● (407) 412-0103 ● JDV3727@Gmail.com

INTERESTS

Analog & mixed signal IC design, power and energy micro-systems, wireless power, energy harvesting, MEMS, low power devices.

EDUCATION

Bachelor of Science in Electrical Engineering May 2018
University of Florida, Gainesville, FL
Cumulative GPA: 3.30/4.00

Associate of Arts May 2017
Santa Fe College, Gainesville, FL

RELEVANT COURSES

Analog IC Design, VLSI circuits, Power Electronics, RF Electronics, Microelectronic Fabrication, Mixed Signal IC Test, Solid State Electronics, Linear Controls, Digital Design, Microprocessors Applications

RESEARCH

Research Assistant, *Interdisciplinary Microsystems Group* Oct 2016 - Present
University of Florida
Project: Chip-scale MEMS Receiver for Low-Power Wireless Charging **Funding:** U.S Army
Advisors: Dr. David Arnold and Dr. Alexandra Garraud

- Designed the transmitter electronics to provide control of a chip-scale MEMS receiver for low-power electrodynamic resonant wireless charging
- Worked on the physics modeling and circuit simulations to achieve high coupling coefficients and high efficiency AC-DC conversion through impedance matching techniques for MHz range receivers
- Prototyped and characterized different wireless power transfer transmitters and receivers

Research Assistant, *Multifunctional Integrated Systems and Technology (MIST)* Jun 2015 - Dec 2015
University of Florida
Project: MIST Makers **Funding:** NSF
Advisors: Dr. David Arnold and Dr. Toshikazu Nishida

- Studied different Internet of Things (IoT) communication protocols and stack implementations
- Designed hardware and software of an autonomous internet connected door locking system that notifies the user when the door is unlocked, and provides weather information
- Created documentation to aid Senior Design students chose and implement IoT technology

HONORS AND AWARDS

Best research poster & Best research demo

- Awarded by the MIST center Industry board for the demo and poster titled "Chip-Scale MEMS Receiver for Low-Power Wireless Charging"

NSF REU Fellowship Fall 2017

- A $2,000 Fellowship awarded by the NSF to work on the chip-scale MEMS receiver for low-power wireless charging project

Helen E. Khouri Scholarship Fall 2017

- $1,000 ECE scholarship

PUBLICATIONS AND PRESENTATIONS

Publications

- N.Garraud, D.Alabi, S.Chyczewski, **J. D. Varela**, D.P.Arnold, A.Garraud. (2017) "Extending the range of wireless power transmission for bioimplants and wearables." Journal of Physics: Conference series (in press)

Poster Presentations

- **J.D Varela**, N. Landy, M. Griessler. (2015, Dec). IoT Smart Devices. MIST meeting, Gainesville, FL
- N.Garraud, D.Alabi, **J. D. Varela**, D.P.Arnold, A.Garraud. (2017, Dec). Chip-Scale MEMS Receiver for Low-Power Wireless Charging. MIST meeting, Gainesville, FL

UNIVERSITY INVOLVEMENT

Gator Robotics Club, *University of Florida* Aug 2013 - Dec 2015

Vice President of Gator Robotics May 2015 - Dec 2015

- Worked and communicated ideas to a multidisciplinary audience of engineers and non-engineers to expand the club's projects and impact on student involvement
- Created workshop classes to introduce freshman level students to robotics and engineering
- Gained valuable leadership and project managing experience to execute plans and ideas effectively

Electrical Lead Jan 2015 - Dec 2015

- Led the electrical team of Tailgator, an autonomous robot designed to grill food
- Directed the project from the prototyping stages to the board design and programming stages
- Managed a $2,000 budget and met project deadlines

External Operations Director May 2014 - May 2015

- Established industry connections to find sponsorship for our projects and create info sessions
- Created social events and shared projects with other clubs at the university

Machine Intelligence Lab, *University of Florida* May 2014 - Jan 2015

- Designed the circuit board for an underwater light sequence generator for the autonomous boat, "Propagator", for its RoboBoat competition

INDUSTRY EXPERIENCE

Applications Engineer Intern, *Texas Instruments, DLP* Jun 2017 - Aug 2017
Dallas, TX

- Researched and developed a way to implement 3D structured light using the DLPDLCR2000EVM
- Studied the robustness of a grey-code pattern approach and determined areas of interest as part of a trade study

Applications Engineer Intern, *Texas Instruments, DLP* Jun 2016 - Aug 2016
Dallas, TX

- Contributed with the board design and took charge of the kernel programming to bring the DLPC2607 EVM to the Beagle Bone Black (BBB) in the DLP Pico-projection team
- Created, and tested a prototype adapter PCB that enabled the DLPC2607 to function with the BBB to ensure software compatibility and speed up design process
- Established connections within and outside TI to make the project possible

Design Engineer Intern, *General Electric, Appliances* Jan 2016 - May 2016
Louisville, KY

- Oversaw different Accelerated Life Tests chambers and performed several EMI and electrical tests to ensure parts and boards met regulation requirements
- Took part in the design and testing of a new LED system for the refrigerators shelf and investigated the cause of Ground Fault Circuit Interrupter (GFCI) false triggering due to electrical noise by running spectral tests

Math Tutor, *Santa Fe College* Jan 2014 - May 2014
Gainesville, FL

- Tutored students in math topics ranging from pre-calculus to differential equations
- Gained valuable skills to help me teach others and express efficiently

SKILLS

Software: Altium Designer**,** Cadence, SPICE, ADS, HFSS, Linux
Programming Languages: C++, C, Java, Python, MATLAB, LabVIEW, VHDL
Languages: Bilingual, fluent in English and Spanish