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Ressa Reneth Sarreal

4th-Year ECE PhD Candidate

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Portfolio: rsarreal3.github.io

Current 4th-year Electrical and Computer Engineering (ECE) PhD Candidate at the Georgia Institute of Technology (GT) with 6+ years experience developing biomedical technology such as magnetic stimulators and self-powered glucose sensors. **Areas of expertise:** neurophysics, biomedical devices, analog design, digital design, MEMS, object-oriented programming, electromagnetism. **Impact:** Actively working towards diversifying the working community through program development, mentorship, and coaching.

EDUCATION

Doctor of Philosophy, ECE Georgia Institute of Technology, GPA: 3.76/4.00	Aug 2018 — Present
Master of Science, ECE Georgia Institute of Technology, GPA: 3.75/4.00	Aug 2018 — May 2020
Bachelor of Science, Computer Engineering University of Maryland, Baltimore County, GPA: 4.00/4.00	June 2014 — May 2018

EXPERIENCE

Graduate Research Assistant Translational BioSystems Group, GT	Aug 2018 — Present Atlanta, GA
Electrical Hardware Design Intern Honeywell Aerospace	May 2021 — Aug 2021 Clearwater, FL
Graduate Student Senator Graduate Student Government Association, GT	Jan 2021 — May 2021 Atlanta, GA
Instrumentation and Electronics Laboratory GTA School of Electrical and Computer Engineering, GT	Aug 2018 — Dec 2018 Atlanta, GA
Research Assistant and Project Lead BioElectronics Laboratory, UMBC	Dec 2015 — May 2018 Baltimore, MD
Peer Advisor Meyerhoff Scholars Program, UMBC	May 2016 — May 2018 Baltimore, MD
Initiation Coordinator and Corresponding Secretary Tau Beta Pi Engineering Honor Society, UMBC	May 2016 — May 2018 Baltimore, MD
Programmable Logic Devices TA Department of Computer Science and Electrical Engineering, UMBC	Jan 2018 — May 2018 Baltimore, MD
C Programming and Embedded Systems TA Department of Computer Science and Electrical Engineering, UMBC	Aug 2017 — Dec 2017 Baltimore, MD
Assistant Secretary IEEE Student Chapter, UMBC	Aug 2016 — May 2017 Baltimore, MD
Electronic Circuits TA Department of Computer Science and Electrical Engineering, UMBC	Jan 2017 — May 2017 Baltimore, MD
Research Intern Robotics Institute, Carnegie Mellon University	June 2016 — Aug 2016 Pittsburgh, PA
Physics I/II Learning Assistant Department of Physics, UMBC	Jan 2015 — May 2016 Baltimore, MD
Development Intern Empathic Design and Technology Lab, Drexel University	June 2015 — Aug 2015 Philadelphia, PA

SKILLS

Languages	English (Native), Tagalog (Proficient), Spanish (Educational Level)
Programming	C/C++, Python, Assembly, Verilog, VHDL
Hardware	MEMS cleanroom fabrication, Micro-scale soldering, 3D printing, Aerosol jet printing, Inkjet printing, Parylene coating, Profilometer characterization, Laser cutter
Software	MATLAB, COMSOL, LTSpice, PSpice, Cadence, AutoCAD, Fusion 360, Eagle PCB design, Xilinx ISE, Vivado, Visual Studio, ROS

PUBLICATIONS AND CONFERENCES

1. **RR Sarreal**, D Blake, P Bhatti, “Development and Characterization of a Micromagnetic Alternative to Cochlear Implant Arrays”, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 20(21), 6087, 2022.
2. **RR Sarreal**, P Bhatti, “Development of Cochlear Implant Alternative Magnetic Stimulation Design” [Oral Presentation], *American Cochlear Implant Alliance Conference*, 2022.
3. **RR Sarreal**, P Bhatti, “Characterization and Miniaturization of Silver-Nanoparticle Microcoil via Aerosol Jet Printing Techniques for Micromagnetic Cochlear Stimulation”, *Sensors*, 20(21), 6087, 2020.
4. **RR Sarreal**, and P Bhatti, “Development of Silver-Nanoparticle-Based Microcoil for Electromagnetic Cochlear Stimulation” [Oral presentation], *15th annual IEEE International Conference on Nano/Micro Engineered and Molecular Systems* 2020.
5. **R Sarreal**, and G Slaughter, “Dual Glucose and Lactate Electrochemical Biosensor” [Oral presentation], *13th annual IEEE International Conference on Nano/Micro Engineered and Molecular Systems*, pp 64-67, 2018.
6. T Kulkarni, A Holtschneider, **RR Sarreal**, and G Slaughter, “Dynamic modeling of direct electron transfer PQQ-GDH MWCNTs bioanode function” [Oral presentation], *12th annual IEEE International Conference on Nano/Micro Engineered and Molecular Systems*, pp 379-382, 2017.
7. **RR Sarreal**, T Mueller-Sim, and G Kantor, “Development of LIDAR-based, Autonomous Agricultural Robot Navigation Guidance System” [Poster presentation], *OurCS*, 2017.
8. **RR Sarreal**, T Kulkarni, and G Slaughter “Self-Powered Glucose Sensor” [Poster presentation], *Annual Biomedical Research Conference for Minority Students*, 2016.
9. G Marcu, N Dowshen, S Saha, **RR Sarreal**, N Andalibi, “TreatYoSelf: Empathy-driven behavioral intervention for marginalized youth living with HIV”, *Proceedings of the 10th EAI International Conference on Pervasive Computing Technologies for Healthcare*, pp 69-76, 2016.

PROJECTS

Details are available online at the portfolio website: rsarreal3.github.io

Robot Swarm Tracking , Digital Image Processing, GT	May 2020 — Aug 2020
Health Classification using Cell Test Features , Machine Learning in Biosciences, GT	Jan 2020 — May 2020
Parcel Tracking System , Capstone, UMBC	Aug 2017 — May 2018
Two-Way Set-Associative Cache , Principles of VLSI Design, UMBC	Jan 2018 — May 2018
FPGA Pong , Programmable Logic Devices, UMBC	Jan 2018 — May 2018
Parallelized MIPS Instruction Pipeline , Computer Architecture, UMBC	Aug 2017 — Dec 2017
Microcontroller Music Box , C Programming and Embedded Systems, UMBC	Aug 2017 — Dec 2017
UDP TicTacToe , Computer Networks, UMBC	Aug 2017 — Dec 2017

EXTRACURRICULAR ACTIVITIES AND SERVICE

Member , UMT Student Program Committee, GT	Aug 2020 — Present
Member (Brown-Black Belt) , Tech Taiko, GT	Aug 2018 — Present
Member , Yellow Jacket Roller Derby, GT	January 2022 — Present
Member , Club Gymnastics, GT	January 2022 — Present
Member (1st-Degree Black Belt) , Tech TKD, GT	Aug 2019 — December 2022
Volunteer , Fernbank LINKS	April 2019
Member (1st-Degree Black Belt) , Club Taekwondo, UMBC	Aug 2014 — Aug 2018
Volunteer , Movable Feast	Oct 2016
Volunteer , First Lego League	Oct 2014, Oct 2015

AWARDS & HONORS

2018	GT President's Fellowship
2016	MARC U*STAR Scholar
2014	Meyerhoff Scholar; National Security Agency Scholar; Dean's List (for next four consecutive years); President's List (for next four consecutive years)