Madison N Emas

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Education

University of Florida ***August 2018 - Present***
Ph.D., Electrical and Computer Engineering

University of Florida ***May 2019***
Master of Science, Electrical and Computer Engineering
GPA: 3.96

University of Florida ***August 2018***
Bachelor of Science, Computer Engineering
GPA: 3.71

Publications

M. N. Emas, A. Baylis, and G. Stitt, "High-frequency absorption-fifo pipelining for stratix 10 hyperflex," in *The 26th IEEE International Symposium on Field-Programmable Custom Computing Machines (FCCM)*, April 2018.

G. Stitt, A. Gupta, **M. N. Emas**, D. Wilson, and A. Baylis, "Scalable window generation for the intel broadwell+arria 10 and high-bandwidth fpga systems," in *Proceedings of the 2018 ACM/SIGDA International Symposium on Field-Programmable Gate Arrays (FPGA)*, pp. 173-182, February 2018.

Engineering Experience

ARC Lab Research Assistant, University of Florida ***May 2016 - May 2019***
Research with scalable applications and high-performance reconfigurable computing in NSF SHREC/CHREC. Performed application studies on Arria 10 and Stratix 10. Recent research focused on large design space exploration. Currently working on implementing elastic IP: auto-generated resource constrained FPGA IP.

Teaching Assistant, University of Florida ***May 2015 - Present***
Teaching Assistant for Digital Logic, Microprocessor Applications, Digital Design, Design 1, and Reconfigurable Computing. Developed new course material and labs, gave lectures, and performed help sessions for students.

Research Intern, Microsoft ***May 2019 - August 2019***
Worked with AI & Advanced Architectures Group within Microsoft Azure Hardware Systems Group to scale the Brainwave Neural Processing Unit (NPU) for next generation FPGAs. Research included design space exploration and device-specific optimizations to scale existing designs for Stratix 10's Hyperflex architecture. Wrote scripts to complement existing tools to allow for more extensive design space exploration.

Integrated Product and Process Design , University of Florida ***August 2017 - May 2018***
Worked on Honeywell sponsored undergraduate team project designing flexible and cost effective SpaceWire test equipment using the Zynq-7000. Developed VHDL entities and wrote an Ethernet-to-fabric driver for the embedded ARM processor.

Electrical Engineering Intern, Harris Corporation ***May 2017 - July 2017***
Worked on FPGA development in the End-to-End SmallSat Solutions group. Performed verification for design modules. Created entities to emulate communication protocols for use in verification.

Technical Skills

Programming Languages : VHDL, Python, Tcl, C, C++
Programming and Simulation Tools : Quartus, ModelSim, Vivado, Visual Studio
PCB Design Tools : Altium, Cadence
Operating Systems : Ubuntu, Windows