ERIC DEFELICE

eric.defelice@gmail.com
www.ericdefelice.com

Summary

I am a highly motivated engineer with over six years of professional experience in firmware, hardware and communication system design. I have a passion for innovation, exhibited through my numerous professional and personal projects.

Work Experience

Senior Engineer, Qualcomm*, Nov. 2012 - Present*

- Engineer responsible for the hardware and firmware architecture design of a microcontroller system used to control the data processing in a WIFI product. Wrote firmware for an ARM M3 processor to control the PHY level data processing pipelines.
- Designed LTE modem algorithms in C++, and implemented microkernels using assembly instructions ran on custom vector processing engines. Improved the performance of LTE cell search algorithm implementation by 20%.
- Worked on micro-architecture design, RTL implementation, and synthesis of LTE modem cores. Integrated many sub-block designs into a top level modem design and delivered on time for successful IC tapeout.
- Created numerous perl and python scripts to streamline development flows, improving efficiency and decreasing development time.

Digital Design Engineer, Harris Corporation, *June 2008 – Nov. 2012*

- Digital designer responsible for digital circuit design, FPGA development, and digital signal processing algorithm design and implementation on products for the public safety market.
- Developed and implemented system-on-chip designs utilizing softcore NIOS II processors for Altera FPGAs using custom IP blocks.
- Wrote functional tests and device drivers in C for USB, SRAM, and other peripherals.
- Designed hardware & firmware to implement Class 1 Bluetooth functionality in a product.
- Modeled digital signal processing algorithms such as IQ calibration and audio noise cancellation and efficiently implemented designs in FPGAs.

Undergraduate Researcher, University of Florida, *Summer 2006 & 2007*

- Designed and created an upright balancing robot utilizing a state space control system with an extended Kalman filter. Implemented design with custom PCBs and an Atmel microcontroller running control software written in C.
- Created Matlab models for system analysis of an autonomous submarine motor controller.
- Created an autonomous obstacle avoiding robot using a PID control loop on an Atmel microcontroller coded in C.

Selected Projects

3D Game Engine, *2015*
Created a 3D video game engine using C++ and DirectX 11. Features include a custom rendering engine with multiple shaders, procedural generation for game worlds, and custom physics engine. Created various technical demos using the engine.

Graduate Thesis: "Inter-Cell Interference Coordination in LTE networks", *2014*
Wrote graduate research paper on Inter-Cell Interference Coordination techniques in LTE advanced networks, analyzing performance of current solutions and presenting a novel MIMO based solution. Compared algorithm performance using Matlab simulations.

Facial Expression Recognition Engine, *2013*
Designed and implemented a real-time expression recognition engine in Matlab. Engine includes OpenCV face detection and a cascaded image processing pipeline.

JPEG Compression Engine, *2012*
Implemented a JPEG compression system in Matlab including transformation, quantization, and symbol modeling and coding using local and global Huffman codes.

Education

M.S. in Electrical Engineering, Rochester Institute of Technology, *Nov. 2014.* Focus in digital signal processing.
B.S. in Electrical Engineering, Rensselaer Polytechnic Institute, *June 2008.*

Skills

Languages: C, C++, Matlab, HLSL, Python, JavaScript, VHDL, Verilog, Assembly, HTML, CSS, SQL, Perl
Tools: Subversion, Git, ClearCase, DirectX, OpenCV, Ember.js, Node.js, Visual Studio, Eclipse, Unix
Expertise: Image and video processing, Graphics programming, Advanced algorithm design and implementation