

Connor Goldberg

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Summary

I am a motivated, hardworking, challenge seeking student looking for the opportunity to join a team to apply and expand my knowledge and experience in embedded systems, software, and digital logic. Available June 2016

Education

Rochester Institute of Technology, Rochester, NY

Degree: Bachelor and Master of Science in Electrical Engineering, expected May 2017

GPA: 3.8 / 4.0

Relevant Courses:

- Digital Systems (Cell layouts and ASIC design)
- Embedded Systems (Embedded C & Assembly)
- Advanced Programming for Engineers (C++)
- Computer Systems (Architecture, FPGAs)
- Data & Communication Networks
- Intro to Computer Science (Python)

Skills

Verilog, Embedded Systems, Digital Systems, Reverse Engineering, Computer Architecture, FPGA Design, VHDL, Software Engineering, Linux, Python, C++, C, C#, Assembly Language, Serial Communications, Website Design, Public Speaking, American Sign Language, Spanish

Relevant Tools: Cadence Virtuoso Design Environment, NC Verilog, Synopsis DC, PrimeTime, Altera Quartus, TI Code Composer Studio, Visual Studio

Professional Experience

Embedded Systems Teaching Assistant at RIT: August 2016 – Present

Instructing a lab section for the Embedded Systems Design course. This course explores digital systems design using a TI MSP430 development board. Assembly and C code is written to perform various hardware tasks to introduce the students to low-level programming. Responsibilities as TA include teaching the weekly lab section, providing office hours, and grading labs.

Computer/Reverse Engineer at Harris: June 2016 – August 2016

I worked on an R&D effort focusing on both hardware and software engineering. The project involved developing tools and methods for a reverse engineering effort of an electronic control unit. There was a large involvement of communication protocols (UART, RS232, CAN), embedded systems design, and some real time data processing which was all extremely fun and rewarding.

Embedded Software Engineer at RailComm: January 2015 – August 2015

Wrote and tested custom firmware for a new embedded platform that was being developed and deployed. The firmware was custom to the embedded system, and was primarily C++ running on Linux. Other responsibilities: circuit analysis and testing, designing and performing tests for various use cases, scripting in Python, and internal application development in C#.

Digital Systems Teaching Assistant at RIT: January 2014 – May 2014

Instructed a lab for Digital Systems II; this included teaching the lab in addition to grading and providing office hours for help. The lab involved VHDL and Verilog on an FPGA to make several small projects that eventually combine into to a fully functional RISC CPU.

Website Design: 2014 – present

Designed and help to maintain the website for Chapel Field Schools at <http://chapelfield.org>.

Recent Projects and Labs

High Altitude Balloon (in-progress)

Designing a high altitude balloon system as part of the multidisciplinary senior design program. The system will carry a CubeSat so it can test its subsystems in a near-space environment prior to its actual launch. The balloon will continuously transmit GPS and telemetry information to the ground via amateur TV.

High-Speed Digital & Mixed Signal PCB Design (in-progress)

For this project I am designing a wireless audio receiver from scratch, capable of receiving high-quality audio over Bluetooth or Wi-Fi. This includes the system architecture, bill of materials (BOM), library components, board schematic and layout. Final design will be fabricated at RIT.

Multi-Channel ADPCM CODEC

A top-down methodology was used to design an RTL database for a 32-channel ADPCM CODEC based on the ITU standards: G.726 and G.711. Each module in the database was written in Verilog then synthesized and verified at the RTL and netlist level. Various verification strategies were used including hardware testbench modeling, software modeling, and bit exact test vectors. The test vectors were generated from a C model of the ADPCM algorithm that was also designed. <http://connorgoldberg.com/projects/mcac/>

Custom 32-bit RISC Processor and Python Assembler

Designed a 32-bit RISC processor in Verilog. The processor was a 3-stage pipeline complete with an L1 cache and floating point unit. The processor was designed and testbenched using Altera Quartus and Modelsim, then tested on an Altera FPGA. Also wrote my own assembler for this processor in Python. The assembler was written using OOP methodologies and provided robust parsing and error-checking. http://connorgoldberg.com/projects/risc_721/

45 nm Standard Cell Library

Used Cadence Virtuoso to design digital logic circuits at the full custom level, including schematics, circuit simulation, and transistor layouts. DRC and LVS were used to compare the along with a parasitic extraction that was performed on each cell to enhance the simulation results. http://connorgoldberg.com/projects/cell_layouts/

Assembler in C++

Assembler for a custom CPU architecture was designed and implemented using C++. The assembler checked for user errors and assembled the assembly code into working machine code for 18 different instructions, complete with labels and hex addresses. The resulting machine code ran on an FPGA. <https://github.com/connorjan/RISC-Assembler>

Website

Created personal web server using Jekyll on a CentOS server. <http://connorgoldberg.com>

Activities

RIT Racquetball Club/Team:

- Member (2012 – present); President (2015 – 2016); Vice-President (2016 – present)

IEEE RIT Chapter: Student Member (2016 – present)

RIT Rubik's Cube Club: Co-Founder, Vice President (2013 – 2014)

RIT Varsity Swimming Team: Athlete (2012-2013)

Other Interests

Racquetball, Swimming, Running, Biking, Hiking, Geocaching, Kickstarter, Hockey, Web and App development

Volunteering

New Prospect Church Food Pantry, Relay for Life