

Benjamin Nitkin

Cell: (617) 309 - 0152

6971 S Quince St
Centennial CO, 80112

ben@nitkin.net
www.nitkin.net

Education

Lafayette College – BS Electrical and Computer Engineering – Easton, PA

August 2011 - May 2015

GPA: 3.70

Graduated with departmental honors. On Dean's List for 6 of 8 semesters

Graduated Cum Laude. Completed honors thesis in ECE: "Phased Array Ultrasonics Applied to Low-Cost Localization"
Developed software and electrical systems for a mechanical engineering senior project to develop an autonomous robot.
Created a special-interest house focused on making technology, in all its facets, more accessible.

Skills at a Glance

Computer Science

Core Languages

C, C++, Java

Scripting/Utility

Matlab, Python, Bash, PyGame

Programming Environments

Xilinx ISE Webpack

IAR Embedded Studio (EWARM)

MPLAB X (Microchip IDE)

VIM

Arduino IDE

Linux

Arch, Red Hat, Ubuntu, Puppy, ROS

5 years of experience, personal and professional

Web Development

Websites

nitkin.net, hutchens.org,

janehughesfiction.com, ligerbots.com

Frameworks

Drupal, Wordpress

Languages

PHP, Javascript

Electrical Engineering - Digital

Microcontrollers

STM32F0xxx (Cortex-M0)

LPC433x (Cortex-M4)

PIC32

AVR ATTiny

Arduino

Experience optimizing for timing- and power-critical applications

FPGA/CPLD

Xilinx Spartan-6 FPGA

Xilinx XC9500, CoolRunner CPLDs

Experience optimizing for resource usage and speed

Low-level Communication

SPI, UART, RS-232, RS-485, MIL-STD-

1553, LVDS, Servo/ESC PWM,

Hamming codes, Manchester coding,

RFID

Protocols

Ethernet, SD Card, Custom

Electrical Engineering – Analog

Test Equipment

Rigol 1054Z and other oscilloscopes, signal generator, SMT soldering (TQFP, 0805, etc.)

Software

LTSpice, KiCad, SPICE (PSpice)

Design & Projects

Acoustic Phased Array

LF Mixer

Optical encoder

Solar charger

AM radio

RFID door lock

USA commemorative trinket

Autonomous Robotics (IGVC)

FIRST (2877 / The Ligerbots)

More details available upon request.

Other Skills

- Independent problem solver
- Extensive project experience
- Analysis and design of analog and digital circuits
- Strong at interpreting oscilloscope outputs
- Proficient in Java, Python and C
- Enjoy team environments
- Comfortable in Autodesk Inventor
- Linux user since 2009
- Experience with Windows and Macintosh OS
- Run a Linux VPS hosting website and mailserver
- Capable in both Microsoft Office (Word/Excel/Powerpoint) and LibreOffice

Work Experience

Software Engineer – United Launch Alliance – Centennial, CO

October 2016 – present

Development, testing, and integration of a real-time flight simulator used to validate Atlas & Delta rocket flight SW

- Developed set of runscripts to automatically check and correct potential issues to reduce operator error
- Took leadership position in developing SLS-ICPS SCRAMnet interface specification and validating compliance
- Routinely performed causal analysis to work from system-level anomalies to single lines of code
- Communicated with others on a company-wide level to gather the data required for the flight simulator
- Created scripts to plot outputs of simulated runs and quickly evaluate success or failure
- Wrote a module to interface with the SLS core stage, using either a NASA emulator or a CSV table

Electronics & Software Eng. (consulting) – Redgarden Engineering – Boulder, CO November 2015 – present

Design, implementation, and testing of embedded display systems, both microcontroller- and Linux-based:

- RS485 communication between ARM-Cortex microcontrollers
- Custom packet protocol for image data
- Optimized C code to improve MCU performance by a factor of eight
- Debugged system with oscilloscope and logic analyzer
- Implemented a method to replace a bootloader from firmware
- Developed a web dashboard to display statuses from a modular display
- Created a RESTful interface to convey display status to a central server
- Wrote a mothership server in Django to provide unified view of displays

Design and testing of a 24-channel high-speed FPGA-based DAQ:

- Allowed for configuring for sampling time, enabled channels, and output frequency via SPI
- Created testbenches to verify functionality
- Specified a packet format to transmit configuration and data over SPI with a microcontroller
- Wrote detailed documentation describing how to program and retrieve data from the FPGA

Digital Engineering Internship – Lafayette College – Easton, PA

May – July 2014

Developed curriculum material for introductory Digital courses

- Wrote and updated lab documentation for Digital I and introduce students to Xilinx ISE
- Designed and tested a breakout board to interface a PIC32 with a college-designed robot
- Researched Linux toolchains as labs transitioned from Windows

Web Designer – CHA / Unimed – Cambridge, MA & Sao Paulo, Brazil

December 2012 – June 2014

Web design and development for an international healthcare training program: chaunimed.org

- Designed and implemented website to support a primary care training course
- Website for course support and user collaboration and features blogs, secure storage, and a simple interface

Power Engineering Internship – MKS Instruments – Wilmington, MA

May – July 2013

Worked with high-current power supplies and switching regulators

- Tested and repaired high-voltage switching power supplies
- Soldered and debugged a prototype surface-mount PCB, saving MKS assembly turnaround time

Summer Internship – Parametric Technology Company – Needham, MA

June – August 2011

Member of creative marketing and web development team

- Worked on corporate website testing and quality assurance

Webmaster – FIRST Team 2877: The Ligerbots – Newton, MA

2008 – 2011

Web design, development, and maintenance for my award-winning high school FIRST team website

- Independently designed and implemented a robust site with extensive content, and an interactive calendar

Activities and Projects

- Bicycled cross-country on Bike & Build's 2015 South Carolina to Santa Cruz route to benefit affordable housing
- Founded a tinkering-themed Living Learning Community for the 2013-15 academic years focused on fostering understanding of and appreciation for the technology that surrounds us daily
- Created nitkin.net to log personal projects including a wooden combination lock, a vector oscilloscope display, an RFID door lock, a solar charger, and RepRap three dimensional printer; recently migrated site to a VPS
- Other interests: hiking, cycling, woodworking, gardening, photography
- Mechanical Engineering Senior Design Project: worked with software and electronics on a team to design an autonomous vehicle for the IGVC competition.