Mike Nowak

Embedded Developer, Researcher, Software Engineer

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Education

Sept. 2009 – April 2013 Bachelor of Science in Computer Engineering, University of Michigan
Ann Arbor, MI

Work Experience

Dec. 2015 – Current Software Engineer, Anuvu (formerly Global Eagle Entertainment/Global Eagle)
Lombard, IL

- Designed, implemented in C, tested, deployed, and maintained the control system software for a 3-axis mechanically steered aircraft satellite antenna in order to connect over 200 customer aircraft to the internet
- Configured, built, and deployed a custom embedded Linux operating system for an ARM-based aircraft satellite antenna in order to provide a base level of software functionality for this unit
- Implemented support tools in Python to aid in the development, qualification, testing, and ongoing maintenance of aircraft satellite antennas
- Provided software support for and assisted with DO-160 qualification of a 3-axis mechanically steered aircraft satellite antenna in order to ready and prepare this product for commercial deployment
- Performed debugging of and created bugfixes for the software of existing deployed products to keep such units mission-ready and improve their reliability in the field

Jan. 2015 – Dec. 2015 Staff I Software Engineer, Broadcom Inc.
San Jose, CA

- Designed and implemented a bus-level simulation of a PCIe interface controller in C to provide early testing and debugging capabilities to software engineers working with this hardware
- Developed and configured a Linux software environment for an embedded x86_64 CPU card in order to provide a reference design for embedded network devices (such as network switches, etc)

June 2013 – Jan. 2015 IC Design Engineer, Broadcom Inc.
Santa Clara, CA

- Helped design and implement register transfer logic for a network accelerator hardware block in Verilog in order to provide high-bandwidth network capability to a server-class chip being developed

Oct. 2010 – April 2013 Student Researcher, Computational Material Physics, University of Michigan
Ann Arbor, MI

- Helped program electronic structure software in C++ to assist research into finite element method electronic structure calculations
- Developed novel finite element meshing tools in Python to be used for electronic structure calculations and research

Oct. 2009 – Aug. 2010 — Backup Operator and Programmer, Computer Aided Engineering Network, Univ. of Michigan
Ann Arbor, MI

- Programmed backup scripts in Bash and Perl to provide data security to the University of Michigan engineering campus

May 2009 – Aug. 2009 — Research Intern, Experimental Condensed Matter and Material Physics, Wayne State Univ.
Detroit, MI

- Programmed an Ising model simulation in C++ to aid research into the doping of novel magnetic materials; made use of computer graphics and OpenGL

Other Experience

June 2012 – April 2013 — Flight Termination Group Lead, Mich. Balloon Recovery and Satellite Testbed, Univ. of Mich.
Ann Arbor, MI

- Helped design, build, test, and deploy a "flight termination unit" for balloon flights utilizing a microprocessor and custom printed circuit board in order to ensure that flights ended as planned; included circuit design, component selection, schematic capture, PCB layout, microcontroller programming, board fabrication, and both lab and field testing

2008 – 2009 — Innovative Vehicle Design Team Member, Dearborn Center for Math, Science and Tech.
Dearborn, MI

- Designed and implemented a Linux-based drive-by-wire control system for an electric vehicle in C++ in order to fulfill the design specifications of the Innovative Vehicle Design Team and compete in a design competition

Publications

Nov. 2013 — Higher-order adaptive finite-element methods for Kohn Sham density functional theory
Journal of Computational Physics, Volume 253, 15 November 2013, Pages 308-343
P. Motamarri, M.R. Nowak, K. Leiter, J. Knap, V. Gavini

Technical Skills

- Extremely proficient at developing software with C, C++, and Python for Linux/POSIX and Windows environments
- Experience developing real-time code for embedded platforms including those based off of ARM (Cortex-A8, Cortex-M3) and TI (MSP430, PRU) microprocessors/microcontrollers
- Experience designing and implementing real-time embedded control systems with microsecond and millisecond response times for devices including those controlled by electric motors; includes the use of signal filtering (using FIR filters, etc), and feedback control loops (using PID controllers, etc)
- Significant experience creating and deploying custom Linux operating system builds for embedded systems; experience with U-boot
- Experience developing logic and digital hardware for integrated circuits using the Verilog hardware description language; some Altera FPGA experience
- Experience with basic circuit design, component selection, schematic capture, PCB design, and PCB layout
- Experience with hardware debugging including the use of oscilloscopes, voltmeters, ammeters, etc
- Working knowledge of and basic proficiency with JavaScript, CSS, and HTML
- Some experience with computer graphics including the use of OpenGL
- Thorough with technical documentation of designs