Michael E. Garbus

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Objective

To find an opportunity that expands my skill set and allows for growth in a small company environment with an emphasis on research and development work.

Summary

- Background & Interests: signal processing, embedded systems, algorithm development, data acquisition, software/hardware interfaces, management of persons and projects, senior management advisory role, human interaction with machines, particle physics.
- R&D to Product: demonstrated ability to generate, research, and develop ideas from conception to final product.
- Intellectual Property: strengthened company's patent portfolio that has provided an edge in the emerging solid state lighting market.

Professional Experience

Renaissance Lighting [start-up company]**,** Herndon, VA
Principal Engineer/Product Development Manager March 2006 – Present

- Provided continuous technical guidance to management of the company
- Authored over 20 internal white papers describing intellectual property, technical solutions to persistent problems, and technical guidance to senior management
- Wrote all firmware and algorithms for embedded microcontrollers of various devices in ANSI C
- Developed and implemented automated color calibration process for production lighting fixtures in Linux and LabVIEW
- Developed system-wide controls architecture for networked lighting systems with high-precision color consistency using sophisticated RS-485 serial protocol
- Co-developed and implemented algorithms and methods for color management system within a PIC 16F678A and PIC 18F2525
- Created custom ergonomic color palette and developed mathematics to map to a standard coordinate space (CIE 1931)
- Developed and implemented PID closed loop control system for color stability, along with other advanced 32-bit floating point mathematical functions, using 8-bit microcontrollers
- Developed advanced custom color algorithms for white correction
- Specified and designed advanced control system using PDA and PC with intuitive and ergonomic GUI
- Produced several Linux and LabVIEW simulators and emulators of internal controls projects
- Developed 18-month high-level schedule and roadmap for course of future technology development and feature integration into product line.
- Managed team of three engineers to produce scalable, networked Bluetooth control system along with intuitive color sequencer software for advanced color shows

Electronic Warfare Associates, Herndon, VA
Electrical Engineer June 2005 – March 2006

- Designed system level architecture of device that passively intercepts, logs, and analyzes IEEE 802.11 a, b, & g wireless traffic for military and intelligence applications
- Provided senior management with a plan to complete all technical aspects of 802.11 project along with descriptions of appropriate personnel and their necessary skill sets
- Build proof-of-concept of portions of system using several open source networking and hacking tools
- Advised senior management of the benefits of developing a relationship with 802.11 hardware manufacturer Atheros Communications which was successfully pursued
- Demonstrated proof-of-concept for inexpensive inter-device compression algorithm for project involving locating the point of origin of an FM signal

NLX Corporation / Rockwell Collins, Sterling, VA
Software Engineer April 2004 – June 2005
- Modeled functionality of classified radio equipment for a B-52 flight simulator in ANSI C
- Developed software interface for DSP audio generation hardware
- Conducted spectral analysis on audio information to correctly model the sounds of a B-52
- Produced specification and managed work by a third-party to produce appropriate audio hardware

Naval Surface Warfare Center Carderock Division, West Bethesda, MD
Electrical Engineer/Computer Engineer June 2003 – April 2004
- Independently created, modeled, and presented phase alignment algorithm in MATLAB which could greatly improve performance of certain systems used during war games with 688 fast attack submarines
- Designed several simple digital LP filter circuit boards used in phase alignment of motion equipment
- Generally increased performance of motion controller by conducting analysis of algorithms used in DSP and increasing SNR and decreasing BER of analog and digital input signals
- Wrote LabVIEW programs to interface and control high speed data recorders
- Installed and aided in debugging of sonar latency test equipment on 688 fast attack submarine

General Electric, Greenville, SC
Co-op/Systems Engineer January 2001 – August 2001 & May 2002 – August 2002
- Wrote all controls and data acquisition software for high-profile experiment involving the identification of the fuel flow rate in a gas turbine that begins to stall the turbine.
- Performed spectral analysis on bearing vibration data to aid in diagnosis of problem.
- Designed and built 4^{th} order Butterworth LP filter for custom GE data acquisition system
- Debugged and corrected binary machine code for persistent problem with older turbines in the field
- Designed and tested controls for pyrometer sensor system for turbine experiment
- Provided general support of quality testing of turbines before being shipped to customers

Hampton University, Hampton, VA
Assistant Physicist May 2000 – August 2000
Work performed at the NSF's Center for Ultrafast Optical Science, Ann Arbor, MI
- Setup and calibrated custom data acquisition system for experimental technology to generate and control a beam of free electrons
- Wrote LabVIEW interface for nuclear and particle physics equipment
- Built (by-hand), calibrated, and installed several scintillating particle detectors

Intern May 1999 – August 1999
Hampton University's Graduate Nuclear and High Energy Physics Department, Hampton, VA
- Developed and implemented automated system for simultaneously testing and calibrating several scintillating particle detectors by integrating oscilloscopes and custom equipment using LabVIEW

Thomas Jefferson National Accelerator Facility, Newport News, VA
Particle Physics Department September 1996 – May 1997 & September 1997 – May 1998
- Wrote ANSI C and FORTRAN simulation of interactions between an electron beam and a beam position measurement system.
- Aided in experiment involving electroproduction of kaons with a polarized electron beam
- Aided in development of GUI's for real-time data collection in accelerator control room

Education
Virginia Tech, Blacksburg, VA Graduated: May 2003
BS Electrical Engineering with Minor in Mathematics

Patents Pending
Aldrich, M., Garbus, M., 20080103714, "Calibration Method and Apparatus for Lighting Fixtures using Multiple Spectrum Light Sources and Light Mixing"