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Swiss Army Knife Engineer	(440) 941-1241	

Skills Profile

Technical

- Design, layout, and prototype of application specific electronics
- Design, prototype, and testing of data acquisition and control systems applied to autonomous robotics
- Programming in several industry standard programming languages: LabVIEW, MATLAB, C, C++, Java, Visual Basic .NET, PHP, HTML, and Shell Scripting
- Interfacing with various SQL-based backend RDBMS
- System administration of Windows, Linux, and Mac OS servers and end-user workstations

Business and Management

- Management of small engineering teams
- Management of large, non-technical student groups
- Bill of materials generation and procurement

Employment History

- Partner**, osmisys, llc; Medina, OH March 2010-PRESENT
- Partner in the startup of a contract engineering firm
 - Acted as a contract engineer for the Cleveland Clinic Foundation's BME Research Lab
- Software Engineering Consultant**, Silicon Turnkey Express, LLC; Highland Heights, OH February 2010-PRESENT
- Developed custom firmware for embedded computers
 - Provided customers with patches to the Linux kernel and U-boot software packages
 - Debugged applications on embedded machines of various architectures including PowerPC and ARM
 - Setup of project management solutions in order to reduce risk in the engineering work path
 - BSP development for embedded machines utilizing Freescale MPC512x and MPC85xx series processors
- Research Engineer**, Case Western Reserve University; Cleveland, OH January 2008-PRESENT
- Designed and prototyped control systems for an autonomous lawn-mowing robot
 - Implemented Kalman Filtering to achieve accurate localization of autonomous guided vehicles
 - Led a team of undergraduate and graduate students to the Institute of Navigation's 5th, 6th, and 7th Annual Autonomous Lawn mowing competitions
 - Placed 3rd in a field of eight teams in the 2008 Autonomous Lawn mowing Competition
 - Placed 1st in a field of six teams in the 2009 Autonomous Lawn mowing Competition
 - Placed 1st in a field of fourteen teams in the 2010 Autonomous Lawn mowing Competition
- Electrical Engineering Intern**, ENSCO, Incorporated; Springfield, VA June 2009-August 2009
- Implemented signal processing algorithms in MATLAB, C, and C++
 - Integrated various sensors such as Inertial Measurement Units, Stereo Cameras, and Global Positioning System Receivers
 - Acted as a member of an engineering research & development department in order to solve geo-location/navigation problems
- Robotics Specialist/Test Automation Intern**, MTD Products, Incorporated; Valley City, OH June 2008-November 2008
- Designed and prototyped an autonomous navigation and control system for automated testing of riding lawnmowers
 - Validated control system on a test unit for long periods of time
- Software Engineer**, Case Western Reserve University; Cleveland, OH November 2006-November 2007
- Acted as a software developer for the 2007 DARPA Urban Challenge team for Case Western Reserve University
 - Implemented control and observer algorithms for autonomous operation of an autonomous goal-seeking lane-following robot
 - Researched the effects and accuracies of GPS (Global Positioning Systems)
 - Performed multisensory integration to provide failsafe real-time autonomous guided vehicle robot localization
 - Acted as a member of a thirty person software engineering development team
- Private Research Consultant**, Washington & Lee University; Lexington, VA July 2006-August 2006
- Automated geology experiments with LabVIEW and C++
 - Integrated motion control hardware and vision acquisition hardware

Electrical Engineering Intern, EI Detection & Imaging Systems, Endicott Interconnect; Saxonburg, PA June 2005-August 2006

- Automated timely product testing with LabVIEW
- Analyzed product testing failure modes with Java, Visual Basic.NET, and C++
- Learned the fundamentals of CdZnTe radiation detection semiconductors and data acquisition circuits
- Assisted in the proof of complex product simulation models and theories
- Developed server/client-based product simulation system for the engineering Research & Development group

Information Technology Intern, South Butler County School District; Saxonburg, PA June 2004-August 2004

- Administrated servers, workstations, networking hardware, telephony systems, and audio visual equipment

Education History

Graduate Student, Case Western Reserve University; Cleveland, OH May 2010-PRESENT

- Enrolled as an Electrical Engineering student in the Masters of Science program with a 3.5 cumulative GPA
- Performed autonomous robotics research with Dr. Roger Quinn, Director of the Center for Biologically Inspired Robotics
- Implemented data acquisition, signal processing, and control algorithms for autonomous guided vehicles in LabVIEW and MATLAB
- Maintained project management solutions to implement source code control to enable research collaboration

Undergraduate Student, Case Western Reserve University; Cleveland, OH August 2006-May 2010

- Graduated with a Bachelors of Science degree in Electrical Engineering with a 3.308 cumulative GPA
 - Received the John L. Fuller '36 Award for Outstanding Graduating Engineer in the Case School of Engineering
 - Received the IEEE/HKN Outstanding Graduating Engineer Award
- Acted as team leader for a four person Electrical Engineering Senior Design Project
 - Successfully designed and prototyped a novel ultrasonic ranging sensor
 - Achieved highest group score among all senior design projects
 - Received The Electrical Engineering and Computer Science Senior Project Award
 - 1st place among all 2008-2009 academic year senior design projects
- Acquired leadership positions on campus
 - President, Show Director, Light Director, and Audio Designer for the Case Footlighters student musical organization
 - Vice President, Case Western Reserve University Student Chapter of the IEEE
 - Student Representative and Photographer for the Case School of Engineering
 - Student Representative, Volunteer, and Photographer for the Case Alumni Association
 - Alumni Member of the Ohio Sigma Chapter of the Sigma Phi Epsilon National Fraternity
- Awarded funding by the Case Alumni Association to participate in research with Dr. Wyatt S. Newman in the field of autonomous robotic control
- Awarded funding by the Provost's SOURCE (Support of Undergraduate Research and Creative Endeavors) office to design and build autonomous robot controllers with Dr. Roger D. Quinn

Student, Knoch Senior High School; Saxonburg, PA August 2002 -June 2006

- Graduated in top ten percent of graduating class
- Acquired leadership positions in several student organizations

Publications

- B. Hughes, D. Bennett, A. Schepelmann, A. Smith, H. Snow, and R.D. Quinn. (2010) "Vision-Aided Navigation System for Autonomous Lawnmowing," Institute of Navigation Global Navigation Satellite Systems Conference (2010 ION GNSS), Portland, OR, 21-24 September 2010.
- K.A. Daltorio, A.D. Rolin, J.A. Beno, B.E. Hughes, A. Schepelmann, J.M. Green, and R.D. Quinn. (2010) "An Obstacle-Edging Reflex for an Autonomous Lawnmower," Institute of Navigation/IEEE PLANS Conference (2010 ION/IEEE PLANS), Palm Springs, CA, 3-6 May, 2010.
 - Received the Walter R. Fried Award for Best Paper at the 2010 PLANS Conference
- A. Schepelmann, H. Snow, B. Hughes, F.L. Merat, R.D. Quinn, J.M. Green. (2009) "Vision-Based Obstacle Detection and Avoidance for the CWRU Cutter Autonomous Lawnmower," IEEE International Conference on Technologies for Practical Robot Applications (TePRA'09), Woburn, MA, U.S.A., 9-10 November, 2009.
- B. Hughes, J. Beno, A. Schepelmann, D. Bennett, H. Snow, and R.D. Quinn. (2009) "Guidance and Navigation System for an Autonomous Lawnmower: CWRU Cutter," Institute of Navigation Global Navigation Satellite Systems Conference (2009 ION GNSS), Savannah, GA, 22-25 September 2009.