Brian K. Post *Ph.D. Candidate*

CONTACT INFORMATION

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RESEARCH INTERESTS

Control theory, industrial robotics, flexible motion systems, engineering design, mobile robotics, engineering education, machine dynamics, industrial controls, mechatronics

EDUCATION

The Georgia Institute of Technology, Atlanta, Georgia USA

M.S., Mechanical Engineering, August 2010
GPA: 4.00/4.00

- Emphasis: Control Systems
- Minor: Robotics For Manufacturing

Purdue University, West Lafayette, Indiana USA

B.S., Mechanical Engineering, May 2007
GPA: 3.74/4.00

PUBLICATIONS

Post, Brian K., Alexandre Mariuzza, Wayne J. Book, and William Singhose. Flatness-Based Control of Flexible Motion Systems. In: *Proceedings of the ASME Dynamic Systems and Controls Conference :* October, 2011.

Post, Brian K. and Wayne J. Book. Current and Future Applications of Flexible Manipulators. In: *Proceedings of the 3rd International Joint Topical Meeting on Emergency Preparedness & Response and Robotics & Remote Systems:* August, 2011.

Post, Brian K. and Wayne J. Book. A Robust Nonlinear Observation Strategy for the Control of Flexible Manipulators. In: *Proceedings of the International Conference on Robotics and Automation:* May, 2011.

Riechert, Susan E., and Brian K. Post. From Skeletons to Bridges and Other STEM Enrichment Exercises for High School Biology. In: *The American Biology Teacher:* vol. 72, issue 1, pg 20−22 January, 2010.

Hyder, Andrew C., Brian K. Post, and Dirk Schaefer. A Framework for Developing a Cohesive Set of Remote Laboratories for Distributed Distance Learning Settings. In: *Proceedings of the ASEE 2009 Annual Conference and Exposition:* June, 14-17 2009.

Johnson, Ashley N., Jason D. Weaver, Akibi Archer, Brian K. Post, Marion Usselman, and Donna Llewellyn. A Comparative Analysis of Engineering Clubs in Atlanta Area High Schools. In: *Proceedings of the ASEE 2009 Southeastern Section Conference:* April, 5-7 2009.

Post, Brian K., and Susan E. Riechert. Bridging the Gap: Connecting Biology and Engineering in the High School Curriculum. In: *Proceedings of the ASEE 2009 Southeastern Section Conference:* April, 5-7 2009.

AWARDS

National Science Foundation

- Student and Teacher Enhancement Parnership - STEP Fellowship, 2008-2009

General Motors
- Manufacturing Education Program - GM Manufacturing Scholar, 2009-2010

Rockwell Automation
- Rockwell Automation Fellowship, 2009

Woodruff School of Mechanical Engineering
- Fluid Power and Motion Control Industry Status Review - Best Poster, 2009
- WSSAC Apprentice Award - Best Teaching Assistant, 2008
- Graduate Teaching Assistantship, 2007-2008
- Graduate Research Assistantship, 2008-Present

Science Applications International Corporation
- Georgia Tech Student Paper Competition - Runner Up, 2009

3rd International Joint Topical Meeting on Emergency Preparedness & Response and Robotics & Remote Systems
- Best Student Paper Competition - 1st Place, 2011

Teaching Experience

Georgia Institute of Technology - Woodruff School, Atlanta, Georgia USA

Teaching Assistant **August 2007 to May 2008**
- Instructor for ME 3057: Experimental Methods Laboratory
  - Fall 2007 (2 sections), Spring 2008(2 sections)
  - Responsible for in lab lecture, guidance through lab experiments, and grading lab reports

Teaching Assistant **August 2008 to May 2009**
- Instructor for ME 4012: Motion Control
  - Spring 2009
  - Responsible for developing, implementing, and administering laboratory exercises and grading lab reports, course homeworks, and exams

Teaching Practicum **Spring 2009**
- ME 7757
  - Worked closely with a Woodruff School faculty member in all aspects of teaching a course
  - Responsibilities included:
    - Delivering lectures
    - Setting and grading homework
    - Developing and administering laboratories
    - Creating, administering, and grading exams
    - Attending lectures on teaching pedagogy

Georgia Institute of Technology - CEISMC, Atlanta, Georgia USA

NSF MSP Physical Science Content Advisor **Fall 2009 to Summer 2011**
- Center for the Integration of Math Science and Computing (CEISMC): Rockdale/Newton County 8^{th} Grade Math and Science Partnership
- Responsibilities included:
  - Developing engaging physical science content activities for middle school teachers
  - Instructing professional development workshops
  - Guiding and actively participating in a Japanese lesson study approach for curriculum improvement

NSF MSP Physical Science Content Advisor **Summer 2011 to Present**

- Center for the Integration of Math Science and Computing (CEISMC): Rockdale/Newton County 5^{th} Grade Math and Science Partnership
- Responsibilities include:
  - Developing engaging physical science content activities for elementary school teachers
  - Instructing professional development workshops

CEISMC Summer Camp Instructor **Summer 2009 and 2010**

- Taught one week summer camps for high school students interested in engineering, encompassing fundamentals of civil engineering (2009) and hovercraft (2010)
- Responsibilities included:
  - Developing the course structure
  - Delivering lectures on:
    - Engineering design fundamentals
    - Statics
    - Hovercraft physics
- The camps culminated in design/build/test competitions:
  - Balsa wood bridges
  - Hovercraft races

CEISMC K.I.D.S. Club Instructor **Fall 2009 to Present**

- Weekend outreach program designed to engage Atlanta area elementary school students through hands on science activities
- Activities Taught:
  - Watter bottle rockets
  - Liquid nitrogen ice cream
  - How boats float

Marietta High School, Marietta, Georgia USA

STEP Fellowship **May 2008 to May 2009**

- 10 hours per week commitment teaching at Marietta High School
  - Developed hands on activities for improving the high school curriculum by tying in real world applications and technology
  - Mentored an after school engineering club focused on developing problem solving skills and connecting real world technology to material learned in class
  - Courses taught in conjunction with the high school faculty:
    - Conceptual Physics
    - College Preparatory Physics
    - Engineering Drawing and Design

Professional Experience

Oak Ridge National Laboratory, Oak Ridge, Tennessee

Robotics and Energetic Systems Group Intern **Summer 2006 and 2007**

- Major Projects
  - **DARPA Revolutionizing Prosthetics Project:** Using mezzofluidics to upgrade the utility of modern prosthetic devices. Involved component design using rapid prototyping and conventional machining as well as performing hydraulic system tests with small-scale hydraulic devices.
  - **DARPA Trauma Pod Project:** Development of a mobile vehicle capable of navigating to, diagnosing, treating, and extracting a wounded soldier in a hazardous environment. Involved the adaptation of a robotic scrub nurse

and a tool changer to a standard DaVinci Surgical Robot. The task required component design and custom electrical and pneumatic fixture design using SolidWorks and a 3D Printer.

Y-12 National Security Complex, Oak Ridge, Tennessee

Oak Ridge Metrology Center Intern **Summer 2005**

- Major Projects
  - **Gage Block Comparator System:** Collaborated with NIST to upgrade the primary gage block comparator system for gage block calibrations.
  - **Calibrations:** Analyzed data and prepared calibration reports.
  - **Coordinate Measuring Machines:** Troubleshooting machine mapping as well as its correlation to the primary standards (both laser and line scale). Digital VMS and Quindos were also used to prepare calibration programs for customer parts as well as upgrade the CMMs to a more modern user interface.

The University of Tennessee, Knoxville, Tennessee

Biology in a Box Outreach Program Assistant **Summer 2004**

Technical Skills

Extensive hardware and software experience in robotics, motion control, and mechatronic systems

- **Matlab experience:** linear algebra, Fourier transforms, numerical methods, control system design, polynomials, visualization, machine vision
  - **Matlab toolboxes:** control systems, filter design, neural networks, machine vision, system identification, Simulink, xPC Target
- **LabVIEW experience:** linear algebra, UDP/TCP communication, real time control, control system design, machine vision, data acquisition, serial communication, GUI Design, system identification, nonlinear control
  - **LabVIEW modules:** control design and simulation, vision development, LabVIEW RealTime, mathscript RT, data logging and supervisory control
- **Experience with embedded systems for control and simulation:** xPC Target, NI CompactRIO, NI PXI, NI RealtimeDesktop, Freescale HCS12, Arduino,
- **Programming Languages:** C, C++, LabVIEW, Matlab, html, BASIC, Ladder Logic, Maple
- **Other Engineering Software:** SolidWorks, Catia, AutoCad, RSLogix5000
- **Computer Applications:** TEX (LATEX, BibTEX), most common productivity packages (for Windows, OS X, and Linux platforms)
- **Operating Systems:** Microsoft Windows family, Apple OS X, Linux, Unix

Engineering Expertise

Subjects: Linear and Nonlinear Systems Theory, Feedback Control, Variable Structure Systems and Sliding Mode Control, Autonomous Control, Dynamics and Vibrations, System Dynamics, Engineering Design, Machine Design and Fabrication, Mechatronics, Mechanics of Materials, Heat Transfer, Fluid Power Systems, Haptics

References

Available upon request