Gregory C. Causey

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Dept. of Mechanical & Aerospace Engineering
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OBJECTIVE To obtain a full time position which enables me to fully utilize my multi-disciplinary background in mechanical engineering and computer science. Specific areas of experience include robotics, flexible automation, system programming, system integration, and embedded control. Interests include the design, construction, and programming of electro-mechanical systems; the design and development of object-oriented software; networked applications for user interaction and control; and networked, distributed control architectures for industrial systems.

SELECTED WORK EXPERIENCE

Post-Doctoral Associate 1999 - Present
Case Western Reserve University, Department of Mechanical & Aerospace Engineering
Center for Automation and Intelligent Systems Research (CAISR)

- Designed and implemented a distributed, object-oriented controller for a high-speed parts feeding system using C, C++, Java, and V+. Created on-line and hard-copy documentation for the software.
- Designed and constructed a second generation high-speed, flexible parts feeding system.
- Published and presented papers at international conferences dealing with flexible parts feeding systems.
- Completed a Masters Degree in Computer Science concentrating in the area of object-oriented machine control architectures.
- Designed and oversaw the construction and programming of a robotic testbed for studying the flight control schemes used by moths (Tobacco Hornworm moth).
- Research into the theory, control, and modeling of flexible parts feeding systems.

System Administrator (Part-time) 1998 - Present
Case Western Reserve University, CAISR

- General system administration tasks on a mixture of Sun workstations, PC's, and single board computers running SunOS, Solaris, Linux, and Windows NT, VxWorks, QNX, and LynxOS.
- Spear-headed the implementation of secure access to lab resources.
  - Remote login access via OpenSSL and OpenSSH.
  - Secure mail access using POP3S and stunnel.
  - Removal of all insecure/unnecessary services on lab computers.

Staff Engineer 10/2000 - 10/2001
Eveready Battery Company, Inc. Advanced Equipment Technology Group

- Designed a mechanical interface between production modules and product transport enabling the rapid replacement of failing hardware and off-line module set-up and calibration.
- Performed all design work using SDRC I-DEAS solid modeling software.

Research Assistant 1994 - 1998
Case Western Reserve University, Department of Mechanical & Aerospace Engineering, CAISR

- Industry sponsored, agile manufacturing research project utilizing a number of Adept SCARA robots, machine vision, flexible part feeders, object-oriented software, and real-time processing.
- Assembly team leader responsible for all mechanical aspects of the project. Design and implementation of: the workcell; assembly hardware; flexible parts feeders; grippers; interchangeable assembly stations.
- Implemented a controller (using C++ and V+) for the flexible parts feeders by modifying existing workcell software and merging it with additional feeder specific software.

SKILLS & QUALIFICATIONS

Computer *Programming:*

- Object-oriented software design
- Distributed, embedded machine control
- Real-time programming (under VxWorks)
- Client-Server network applications, Socket programming
- Vision system programming (Matrox, Adept, Imaging Technologies)
- Robot programming, Network-based robot motion server
- General workcell control
- Platform independent remote user interface for machine control.
- Data manipulation
- CNC Lathe, Vertical Machining Center (G code)

Languages:

- C/C++
- Java
- V+ (Adept Robotic language)
- Familiar with: Perl, Postscript, Matlab, FORTRAN, Shell Scripting, XWindows GUI, G Code

Development Environments:

- MS Visual C++ (6.0)
- GCC/GDB (GNUtools)
- Tornado (VxWorks)

OS Experience:

- Linux
- Win NT/XP
- Solaris
- VxWorks
- QNX
- LynxOS

Networking:

- (TCP/UDP)/IP
- Ethernet
- Microsoft Windows Networking (SMB)

Packages / Applications:

- MS Office
- Matlab
- Mathematica
- MS Visual C++ (6.0)
- I-DEAS Solid Modeling
- Autocad
- Doxygen
- X Windows
- KDE

Project Management

Managed multiple projects with senior undergraduate and graduate students.

- Remote Control of an Intelledex 605T 5-Axis Robot from a Web Page.
- Neural Network for Vision Recognition on a Flexible Parts Feeder
- Characterization of Individual Part Throughput Behaviors of the Agile Feeding System
- Vision Systems for Monitoring Mechanical Wear
- A Robotic Test-bed for Studying the Flight Control Behavior of Tobacco Hornworm Moths

Mechanical Design

- 2D & 3D design of mechanical components
- Robot gripper design
- Mechanisms
- Reconfigurable automation components

EDUCATION

Case Western Reserve University — **Cleveland, Ohio**

Master of Science — Computer Science
January, 2002 — GPA: 4.0
Thesis: ‘‘An Object-Oriented Software Architecture for the Control of Flexible Parts Feeding Systems’’ (Available on web site)

Doctor of Philosophy — Mechanical Engineering
January, 1999 — GPA: 3.87
Dissertation: ‘‘Elements of Agility in Manufacturing’’ (Available on web site)

Master of Science — Mechanical Engineering
August, 1993 — GPA: 3.9
Thesis: ‘‘Testing of Vibration Damping Bindings used on Alpine Ski Equipment’’ (Available on web site)

Bachelor of Science — Mechanical Engineering
May, 1991

SELECTED PUBLICATIONS

- G.C. Causey. ‘‘An Object-Oriented Software Architecture for the Control of Flexible Parts Feeding Systems.’’ M.S. Thesis, Dept. of Electrical Engineering and Computer Science, Case Western Reserve University, Jan 2002.
- G.C. Causey. ‘‘An Object-Oriented Controller Architecture for Flexible Parts Feeding Systems.’’ CAISR Technical Report Number TR01-003, 2001.
- M.S. Branicky, G.C. Causey, and R.D. Quinn. ‘‘Modeling and throughput prediction for flexible parts feeders.’’ *Proc. IEEE Intl. Conf. on Robotics and Automation*, pp. 154-161, San Francisco, CA, April 2000.
- M.S. Branicky, G.C. Causey, and R.D. Quinn. ‘‘Toward a science of flexible feeding.’’ *Proc. IEEE/ASME Intl. Conf. on Advanced Intelligent Mechatronics*, pp. 380-385, Atlanta, GA, Sept. 1999.
- G.C. Causey, R.D. Quinn, and M.S. Branicky. ‘‘Testing and analysis of a flexible feeding system.’’ *Proc. IEEE Intl. Conf. on Robotics and Automation*, pp. 2564-2571, Detroit, MI, 10-15 May 1999.
- G.C. Causey. "Elements of Agility in Manufacturing". Ph.D. Dissertation, Dept. of Mechanical and Aerospace Engineering, Case Western Reserve University, January 1999.

PROFESSIONAL AFFILIATIONS & ACTIVITIES

Institute of Electrical and Electronics Engineers (IEEE)
American Society of Mechanical Engineers (ASME)
National Society of Professional Engineers (passed the EIT exam).

Co-Chair: *Flexible Parts Feeding and Fixturing: From Research to the Factory Floor*
Workshop at the 2000 IEEE International Conference on Robotics and Automation, San Francisco CA

COMMUNITY INVOLVEMENT

Treasurer — Bible Baptist Church — Bedford, Ohio