

Sean Gustafson

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Experienced software engineer with many years of experience in the design and development of commercial quality software. Highly motivated self-starter that enjoys working on cutting-edge technology in an innovative environment. Currently pursuing an academic career in Computer Science concentrating on Human-Computer Interaction. A career that provides an opportunity to work with exceptional minds and eventually pass knowledge and enthusiasm to the next generation.

“Sean is exactly the type of engineer I wish I could find for every position I fill. He is smart, he communicates very well and he delivers on what he promises. He is also a very quick learner and can step up to new challenges when called upon to do so. No one will regret using Sean for any assignment that he believes he can complete.”
Mike Claus, Director, Software Development, Advanced Medical Optics. September 6, 2006.

“Sean is one of the most capable people I have ever had the pleasure to know. He is quick, bright, competent and trustworthy. When I was unavailable, through travel or vacation, Sean was the one I left in charge of all aspects of my business. A supreme asset to anyone he chooses to work with.”
Rick Duff, President and Co-Founder, Astra Network Inc. August 30, 2004.

Skills

Software Development:

- Excellent knowledge of C, C++, C#, VB, Java, PHP, Perl, .NET, .NET Compact, XML, UML, Makefiles and shell scripting. Experienced in Windows (most, including Mobile and XP Embedded), QNX, Linux, BSD, Solaris and Irix.
- Designing user-interfaces based on established research.
- Creating low-level device drivers for complex hardware.
- Creating software for mission critical and resource-limited platforms.

Software Management:

- Managing software development projects and maintaining the build process and revision control system of a project.
- Writing technical documentation and manuals using LaTeX, DocBook, and Word.

Research:

- Designing and administering sound experiments to test novel user-interface elements.
- Deep investigation of computer science research topics and writing high-quality academic documents.

Selected Projects

Visualization of Off-Screen Targets

University of Manitoba. Graduate Student Researcher. Sept. 2006 – Present.

When a map is displayed on a PDA, it is rarely possible to be zoomed in close enough to view detailed information and view all target (for example, nearby restaurants) around a certain area. We are investigating a class of visualization techniques that indicate the presence and location of targets that are close to the displayed area, while providing a mechanism to interact directly with the off-screen targets.

My Contribution: Designed a new off-screen visualization technique called EdgeRadar to address the problem of clutter that limits the effectiveness of traditional techniques.

Publication: Sean Gustafson and Pourang P. Irani. 2007. Comparing Visualizations for Tracking Off-Screen Moving Targets. In *CHI '07 Extended Abstracts on Human Factors in Computing Systems*. pp. 2399-2404.

Tabletop Collaboration

University of Manitoba. Graduate Student Researcher. Sept. 2006 – Present.

We are developing a C#-based library for producing experimental applications that run on our prototype tabletop display. The prototype tabletop consists of a ceiling-mounted projector pointed at a large white table. Users interact with the display via styluses tracking in three dimensions by the Polhemus motion tracking system. The goal of this research is to experiment with collaboration techniques unique to the tabletop environment.

My Contribution: Contributed the Polhemus calibration code and bug fixes throughout the rest of the software.

Phacoemulsification Surgical Device

Advanced Medical Optics. Full-time Contract. Feb. 2005 – Sept. 2006.

Next-generation phacoemulsification instrument for cataract eye surgery. The instrument has four basic functions: phacoemulsification (lens pulverization with ultrasound), aspiration (removal of fluid and particles from eye), irrigation (replacement of lost eye fluid), and cauterization (sealing of incisions with electric current). The instrument consists of a large body housing all electronics and most mechanical components, a hand piece that is placed into the eye by the surgeon, and foot pedal that the surgeon uses to control various parameters. The instrument is configured via a large touchscreen panel mounted on the body.

My Contribution: Developed the low-level control software of the instrument. The software was written in C++ for the QNX Realtime OS and was responsible for coordinating the realtime execution of all hardware and for high-level communication with the GUI module (running Window XP Embedded on a separate processor). I worked directly with the electrical and mechanical Engineers as well as the user-interface software developers.

Hotel Room Internet Terminal

iCit America. Part-time Contract. 2002 – 2007.

The iCit Telecenter is a small computer terminal with a built-in phone, keyboard, and touchscreen display. It was designed for use in a hotel room, replacing the standard phone. Hotel guest may use it as a phone, read about hotel services and sponsored services, and well as (for a small fee) use the device to browse the Internet.

My Contribution: Developed the software and runtime environment for the device using the QNX Realtime Operating System. Continued to support the software by making maintenance fixes as required.

Pneumonia Kinetic Therapy System

Kinetic Concepts. Contract. 2002 – 2004.

The device is a therapeutic bed for unconscious pneumonia patients. The patient is strapped into the bed and a therapy session rotates the patient back and forth in either the supine (face up) or prone (face down) orientation. An on-board computer with touchscreen user interface controls the therapy session and records the patient's vital stats.

My Contribution: Part of a small team of developers to produce the full software system for the on-board computer. Wrote code for all parts of the systems, including a driver for the RS485-based communication bus and an XML-based user interface system.

Aircraft Navigation System for Crop Sprayers

WAG Corp. Contract. 1999 – 2000

A GPS-based map terminal built into the cockpit of small aircraft for spraying agricultural crops with chemicals. The device mapped out what areas of the field were sprayed by the pilot to reduce waste from overlapped sprays.

My Contribution: Developed the touchscreen driver, tested the instrument and fixed software defects.

Employment History

University of Manitoba (Winnipeg, MB)

Research Assistant / Teaching Assistant: Sept 2006 – Present

Develop software and administer experiments to test novel user-interface concepts. Assistant and marker for advanced third and fourth year undergraduate Human-Computer Interaction courses.

Typedef Software (Winnipeg, MB)

Owner / Consultant: Aug 2003 – Present

Consulted in areas of medical devices, QNX software, web software and network administration.

Advanced Medical Optics Inc. (Santa Ana, CA)

Contract Software Engineer: Feb 2005 – Sept 2006

Medical device software development.

ClearOption Technologies Inc. (Winnipeg, MB)

Software Developer / System Administrator: Nov 2003 – Feb 2005

Web software development and Linux/BSD/Solaris server administration.

Astra Network Inc. (Winnipeg, MB)

Senior QNX Analyst: Aug 2000 – Jun 2003

Web Software Developer / Networking Consultant: May 1998 – Aug 2000

System Administrator: Jan 1998 – Jun 2003

Phone Support: May 1996 – Jan 1998

Education

University of Manitoba (Winnipeg, MB)

Master of Science – Computer Science: Fall 2006 – Spring 2008 (expected)

Advisor: Dr. Pourang P. Irani GPA: 4.50/4.50

Bachelor of Science with Distinction – Computer Science: Fall 1998 – Spring 2004 (part-time)

Minor in Psychology. Overall GPA: 3.51/4.50; Second Half GPA: 4.08/4.50

Professional Associations

ACM, SIGCHI, IEEE, Computer Society

Interests

Human-Computer Interaction, business of software, golf, motorcycles, travel, photography, hiking, backcountry camping, fishing.

References

Excellent references are available if requested.