James Carlson

Software Architect | UX Designer | Artist

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Education

Ph.D. in Computer Science, University of Colorado, Boulder, CO — 2009

Bachelor of Arts, Hampshire College, Amherst, MA — 1997

Proficiencies

Programming: C++, C#, Java, Common Lisp, SQL, JavaScript, HTML, PHP, OpenGL, Objective C

Development: Eclipse, Visual Studio, Xcode, Unity, Agile (Scrum, using Rally), Mercurial, SVN, CVS

Experience

Software Architect, TerraSpark Geosciences/CGG

2006 - Present — Westminster, CO

- Developed a high-performance, thread-safe streaming volume format that can be used for efficient processing and visualization of seismic data volumes that are larger than the amount of physical RAM installed on the user's workstation.
- Created Surface Wrapping, a 3D image segmentation technology that combines a unique mesh deformation algorithm with an easily-learned graphical interface.
- Designed and implemented numerous key features of Insight Earth, a platform 3D seismic interpretation.
- Spearheaded team efforts to improve the architectural foundations of Insight Earth to reduce development overhead, improve stability and usability, and position the software for future integration with a back-end database.

Research Assistant, BP Center for Visualization

2002 - 2005 — Boulder, CO

- Created a system for rapidly prototyping wireless input devices for use in an immersive visualization environment.
- Developed several novel well path planning tools for the Immersive Drilling Planner application.

Senior Software Engineer, Knowledge Technologies International

2000 - 2001 — Lexington, MA

- Led the design and initial development of a graphical interface for the knowledge-based engineering system ICAD, which previously required extensive end-user proficiency in Lisp.

Senior Consultant, Oracle Corporation

1998 - 2000 — Burlington, MA

- Created the architectural design and led the development of the original Cummins PowerSpec truck engine configuration tool (https://cumminsengines.com/powerspec).

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Research Interests

Human-computer interaction, artificial intelligence, software architecture, ubiquitous computing, programming languages

Personal Interests

Graphic design, sculpture, public speaking, choral singing (member of the Colorado Symphony Chorus)

Career Objectives

My professional goal is to collaboratively design and build innovative software products that make people's lives more productive and enjoyable. I prefer to be engaged in all stages of development, from determining the initial project scope, to defining and constructing the low-level infrastructure, to polishing the details of the user interface.

Patents

Dorn, G., Hammon, W., Carlson, J. 2013 "Extraction of depositional systems," US patent 8,504,300 (Surface Wrapping technique for 3D volume segmentation.)

Dorn, G., Hammon, W., Carlson, J. 2011 "Extraction of depositional systems," US patent 8,065,088 (Identification and extraction of hydrocarbon deposits in the stratal domain.)

Dorn, G., Hammon, W., Carlson, J. 2011 "Extraction of depositional systems," US patent 8,010,294 (Stratal domain transformation of seismic volume data.)

Selected Publications

J. Carlson, "Surface Wrapping: A Deformable Mesh Approach to Semi-Automatic 3D Volume Segmentation," dissertation, University of Colorado at Boulder, anticipated December 2009.

B. Shucker, J. Rose, A. Sheth, J. Carlson, S. Bhatti, H. Dai, J. Deng, and R. Han, Book chapter 6 on "Embedded Operating Systems for Wireless Microsensor Nodes," in Handbook of Sensor Networks: Algorithms and Architectures, Wiley, 2005, editor Ivan Stojmenovic, pp. 173-197.

S. Bhatti, J. Carlson, H. Dai, J. Deng, J. Rose, A. Sheth, B. Shucker, C. Gruenwald, A. Torgerson, R. Han, "MANTIS OS: An Embedded Multithreaded Operating System for Wireless Micro Sensor Platforms,"   ACM/ Kluwer Mobile Networks & Applications (MONET), Special Issue on Wireless Sensor Networks, vol. 10, no. 4, August 2005, guest co-editors P. Ramanathan, R. Govindan and K. Sivalingam, pp. 563-579.

J. Carlson, R. Han, S. Lao, C. Narayan,   S. Sanghani, "Rapid Prototyping Of Mobile Input Devices Using Wireless Sensor Nodes," 5th IEEE Workshop On Mobile Computing Systems and Applications (WMCSA) 2003, pp. 21-29.