

Petr Šereda

Contact:

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Professional Interests

Software engineering, computer graphics, image analysis, data visualization, GPU, SW optimizations

Experience

Nov 2010 – present: **Independent software consultant**

- Oct 2012: **Barco**
 - Developed an application that can control computer monitors via serial port.
 - Technologies used: C++, QT, Linux
- Nov 2010 – July 2012: **Nobel Biocare / Medicim**
 - Designed, implemented and integrated a cross-platform volume rendering engine to be used for the planning of dental reconstruction.
 - Cooperated with the local team in removing various visualization bottlenecks.
 - Achieved a fast, high quality visualization that supports advanced features, such as blending with opaque and transparent scene geometry, clipping, segmented data, picking, silhouettes, adaptive quality, smoothing and high quality filtering.
 - Technologies used: C++, OpenGL, GLSL, Coin3D, QT, Win7, OS X, SVN, Mercurial

Sep 2007 – Oct 2010: **Software consultant at AltenPTS**

- Dec 2007 – Oct 2010: **ASML**
 - Investigated, implemented and tested new software functionality for the next generation of lithography machines.
 - Successfully finished a number of challenging projects.
 - Quickly adapted to the specialized and complex environment, managed large software.
 - Technologies used: C, Solaris, WinXP, scripting, ClearCase, ClearQuest
- Oct – Nov 2007: **Shell**
 - Optimized a SW library that stores/retrieves large 3D seismic data using R-trees. Discovered and removed an algorithmic bottleneck, which resulted in a speed-up of approx. 40x.

Dec 2002 – May 2007: **PhD research at Philips Medical Systems / Technical University of Eindhoven**

- Conducted research in the field of 3D volume visualization, focused on facilitating the definition of transfer functions.
 - Invented a novel transfer function domain that enables an easier and better visualization of boundaries between materials (objects in the image) than can be offered by currently used methods.
 - Showed that an advanced image analysis and the application of various clustering techniques can facilitate user interaction.
 - Developed a new framework that allows the modification of transfer function for different locations in the image.
 - Wrote research papers and reviewed submissions to various journals and conferences.
- Supervised students (individuals and groups) working on various visualization projects, taught Java programming courses.
- Technologies used: C++, VTK, OpenGL, VolumePro, Windows, Mathematica

Education

PhD Image Analysis and Interpretation, Technical University Eindhoven, Netherlands, graduated 2007

MSc Computer Science, specialization Computer Graphics, University of West Bohemia (ZČU), Plzeň, Czech Republic, graduated 2002

Advanced School for Computing & Imaging, 2003 – 2006

Erasmus student, University of Bath, UK, Jan – Aug 2001

Professional Skills

- Algorithms of computer graphics, computational geometry
- Various image filters and enhancements, multi-scale approaches
- Clustering techniques, segmentation, computer vision, classifiers, computer-aided diagnosis (CAD)
- Experience with medical workstations
- OpenGL, GPU programming (GLSL), VTK, Coin3D (Open Inventor), VolumePro
- C++, C, Java, Pascal, assembler x86, object oriented design, scripting
- QT, Win 32 API, MFC
- Windows, OS X, Linux/Unix
- Visual Studio, QT creator, Mathematica, Matlab
- SVN, Mercurial, ClearCase, ClearQuest

Personal Skills

- Fluent in English and Czech (native), capable of basic communication in German, Dutch and French
- Good in personal communication, problem solving, brainstorming
- Capable of making social connections
- Innovative thinking, looking for alternative solutions
- Good team player, motivate others, always willing to help
- Able to plan projects
- Fast learner, enthusiastic, can quickly adapt new technologies

Selected publications

- P. Šereda, A. Vilanova, I. W. O. Serlie, and F. A. Gerritsen, "Visualization of Boundaries in Volumetric Datasets Using LH Histograms," IEEE Transactions on Visualization and Computer Graphics, vol. 12, no. 2, pp. 208-218, 2006.
- P. Šereda, A. Vilanova, and F. A. Gerritsen, "Automating Transfer Function Design for Volume Rendering Using Hierarchical Clustering of Material Boundaries," Proceedings IEEE/EuroGraphics Symposium on Visualization (EuroVis), pp. 243-250, 2006.
- P. Šereda, A. Vilanova, and F. A. Gerritsen, "Mirrored LH Histograms for the Visualization of Material Boundaries," Proceedings Visualization Modeling and Vision (VMV), pp. 237-244, 2006

Personal Interests

- Sports, traveling, exploring foreign places
- Science and new exciting technologies beyond my professional interests