Shengzhou Luo

Profile

· 7 years' experience of visualization and analysis of static and time-varying volumetric data (e.g. CT, MRI scans, flow simulations) with emphasis on optimization of feature visibility and visual saliency
· Expertise in scientific visualization, image processing, 3D computer graphics, mathematical optimization, machine learning and perceptual evaluation of 3D visualization techniques

Experience

POSTDOCTORAL RESEARCH FELLOW | GRAPHICS VISION AND VISUALISATION GROUP (GV2), TRINITY COLLEGE DUBLIN | MAY 2016-PRESENT

· Work on the ARTIVVIS: Real-time Time Variant Visualization project (SFI 13/IA/1895)
·   Proposed intuitive transfer function editing using relative visibility distributions, which enables intuitive selection and enhancement of features of interest on volume rendered images.
·   Developed volume ray-casting renderers and visibility computation in C++, OpenGL and CUDA.
·   Developed tools for generating transfer functions that emphasize structures specified by strokes/sketches on volume rendering images using convolutional neural networks in MATLAB.
·   Maintained Git repositories, datasets, tested and deployed visualization software for demo.

RESEARCH ASSISTANT | GRAPHICS VISION AND VISUALISATION GROUP (GV2), TRINITY COLLEGE DUBLIN | NOV 2015-JAN 2016

· Worked on the INFOCARVE: Focus-and-Context Augmented Reality Visualisation project (SFI 14/TIDA/2349)
·   Developed perceptual metrics to measure visual saliency of 3D features in augmented reality.
·   Developed tools to merge volume rendering with depth images from Intel RealSense devices.

PHD RESEARCHER | GRAPHICS VISION AND VISUALISATION GROUP (GV2), TRINITY COLLEGE DUBLIN | SEP 2011-OCT 2015

· Developed visibility and visual saliency metrics for measuring 3D visualization of images from medical imaging and flow simulation.
· Developed transfer function optimization algorithms to enhance features of interest in volume data
· Developed volume visualization software in C++, Qt, OpenGL and VTK.
· Conducted perceptual experiments and statistical tests to evaluate visualization techniques.

LABORATORY DEMONSTRATOR | TRINITY COLLEGE DUBLIN | SEP 2011-APR 2015

· Advised students in software engineering projects, programming labs and tutorials for MSc and undergrad modules, e.g. Real-time Rendering, Image processing and 3D Modelling, Software Design and Implementation, Computational Mathematics, Programming Techniques

RESEARCH ASSISTANT | SHENZHEN INSTITUTES OF ADVANCED TECHNOLOGY (SIAT), CHINESE ACADEMY OF SCIENCES | SEP 2009-AUG 2011

· Worked on volume visualization and classification techniques (**4 publications**)
·   Developed GPU ray-casting volume renderers with OpenGL and GLSL, and K-means++ clustering with C++ and CUDA.
·   Proposed automated techniques to reveal boundaries by cluster analysis and peeling off view-dependent occlusions.

Shengzhou Luo   Email: luos@tcd.ie   Homepage: https://www.scss.tcd.ie/~sluo/

Education

PHD IN COMPUTER SCIENCE | 2011-2016 | TRINITY COLLEGE DUBLIN, UNIVERSITY OF DUBLIN

· Received **Trinity College Postgraduate Research Studentships** twice for 2011-2014 and 2014-2015 respectively.
· Thesis title: Transfer Function Optimization for Volume Visualization Based on Visibility and Saliency | Supervisor: Dr. John Dingliana

MSC IN COMPUTER SCIENCE | 2008-2011 | UNIVERSITY OF CHINESE ACADEMY OF SCIENCES

· GPA: 82/100
· Received 2010 President's Scholarship for Postgraduates (*Top 5%* in the school (424 students)) and Outstanding Student Award.
· Thesis title: A Study on Transfer Function and Peeling in Volume Rendering | Supervisor: Dr. Xin Ma

BSC IN SOFTWARE ENGINEERING | 2004-2008 | SOUTH CHINA UNIVERSITY OF TECHNOLOGY

· GPA: 82/100
· Received the 2007 First Class Scholarship in the School of Software Engineering (*Top 5%* in the school (354 students)) and 2007 Outstanding Student Award.
· Thesis title: Hierarchical Pathfinding Algorithms Based on the Macro-to-Micro (M2M) Model and Its Applications

Professional Skills

· Programming skills: object-oriented programming, functional programming
· Programming languages: C++, C#, Java, Python, Mathematica, MATLAB
· Libraries/Tools: OpenGL, GLSL, CUDA, VTK, Qt, WPF, ASP.NET, SQL, Visual Studio, Eclipse, Unity, Git
· Familiar with web development (ASP.NET), Android development, MySQL on Windows and Linux

Recent Publications/Posters

· Shengzhou Luo, Subhrajyoti Maji and John Dingliana, "Intuitive Transfer Function Editing Using Relative Visibility Histograms", WSCG International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision, Plzen, Czech Republic, 28 May - 1 June, 2018. (also published in the Journal of WSCG)
· Shengzhou Luo and John Dingliana, "Intuitive Transfer Function Editing Using Relative Visibility Histograms", IEEE Vis Posters, Phoenix Arizona, USA, 1 - 6 October, 2017.
· Shengzhou Luo and John Dingliana, "Transfer Function Optimization Based on a Combined Model of Visibility and Saliency", Spring Conference on Computer Graphics (SCCG), Mikulov, Czech Republic, 2017.
· Shengzhou Luo and John Dingliana, "Transfer Function Optimization Based on a Combined Model of Visibility and Saliency", EG / VGTC Conference on Visualization (EuroVis) 2016 Posters, Groningen, Netherlands, 6 - 10 June 2016. (Best Poster Award)
· Michael Doyle, Shengzhou Luo and Michael Manzke, "Fast Hardware-Accelerated Construction of Spatial Index Structures for Visualization of Time-Varying Medical Data", MedViz and Visual Computing for Biology and Medicine Conference 2016, Bergen, Norway, 2016, pp. 79 - 81. (Poster)
· Shengzhou Luo and John Dingliana, "Visibility-Weighted Saliency for Volume Visualization", Computer Graphics and Visual Computing (CGVC), London, UK, 2015.
· Shengzhou Luo and John Dingliana, "Selective Saturation and Brightness for Visualizing Time-Varying Volume Data", EuroVis 2015, Cagliari, Italy. (Poster)
· Shengzhou Luo and John Dingliana, "Transfer Function Refinement for Exploring Volume Data", Eurasia Graphics: International Conference on Computer Graphics, Animation and Gaming Technologies, Ankara, Turkey, 2014, p. 17.
· Shengzhou Luo and John Dingliana, "Information-Guided Transfer Function Refinement", Eurographics (Short Papers), Strasbourg, France, 2014, pp. 61 - 64.