SYMPOSIUM ON VOLUME GRAPHICS 2010

CALL FOR PAPERS

Volume graphics deals with the analysis, synthesis and presentation of volumetric phenomena, both static and time-varying. Specifically, it includes topics, both volumetric and point-based, related to the acquisition, reconstruction and transformation of volume data as well as feature analysis, information extraction and rendering.

Research papers are solicited that present original, unpublished results concerning all aspects of volume graphics and point-based graphics. We especially invite research contributions that report computational techniques derived from existing knowledge in numerical analysis, signal processing and statistical modeling. Furthermore, papers are solicited which demonstrate the efficacy of the methods of volume graphics or point-based graphics in enhancing practices or understanding of specific applications

The accepted papers will be published in the printed Symposium Proceedings, future digital access will be provided by the Eurographics Digital Library in cooperation with VGTC Publishing. A selected number of the best papers will be further invited to submit an extended version to the **IEEE Transactions of Visualization and Computer Graphics** (pending approval by TVCG).

Symposium Themes

The Program Committee is seeking papers on original, unpublished research work concerning all aspects of volume graphics and point-based graphics. Symposium Topics include (but are not limited to):

Representation of Volume Information

- stationary and time-varying data
- single- and multi-valued data
- multi-dimensional data
- hierarchical and multiresolution data
- interpolation schemes
- uniform vs. non-uniform, flat vs. hierarchical grids
- mesh-based, mesh-less and hybrid representations
- volume-based surface representations: rendering and modeling

Acquisition and Reconstruction of Volume Data

- uniform vs. non-uniform sampling schemes
- procedural synthesis techniques
- tomographic techniques, new imaging modalities
- interactive techniques

Modeling and Transformation of Volumetric Objects

- resampling, denoising
- interactive and procedural modeling
- warping and morphing
- compression and simplification
- multi-resolution techniques

Analysis of Volumetric Objects

- extraction of geometrical and topological features, e.g. isosurfaces, shapes, skeletons, Morse-Smale complexes
- statistical and machine learning methods
- extraction of application-specific features, e.g. flow features, anatomical structures, ROIs
- feature analysis – segmentation, correspondences and tracking of features

Volume Rendering

- local and global illumination models
- transfer functions
- feature emphasis and suppression
- non-photorealistic and illustrative techniques
- high dynamic range volume rendering
- acceleration techniques (multiresolution, specialized data structures, hardware)
- volume graphics architectures, APIs
- GPU-based techniques

Voxel-based Surface Representations

- interactive and adaptive voxelization
- rendering techniques
- modeling with voxel representations
- dynamic surfaces

Volume Graphics in Applications

- novel domain-specific techniques and evaluation of volume graphics methods, judgment of efficacy and demonstration of utility in application fields: fluid flow, structural mechanics, geophysics, environmental sciences, natural phenomena, material- and nano-sciences
- biomedical imaging: MR, CT, PET, DTI, molecular imaging, microscopy, microstructure characterization; computational anatomy
- volume rendering for computer games and SFX
- volumetric video compression
- 3D video

Point-based Graphics

- Data acquisition and surface reconstruction
- Geometric modeling using point primitives
- Sampling, approximation, and interpolation
- Transmission and compression of point-sampled geometry
- Rendering algorithms for point primitives
- Geometry processing of point models
- Topological properties of point clouds
- Hardware architectures for point primitives
- Animation and morphing of point-sampled geometry
- Hybrid representations and algorithms
- Use of point-based methods in real-world applications

Important Dates

February 18, 2010	Abstract submission deadline
February 22, 2010	Paper submission deadline
March 22, 2010	Author notification
April 5, 2010	Final paper submission deadline
May 2-3, 2010	**Symposium**
	All deadlines are at 24:00 Pacific Day Time

Symposium Co-Chairs:
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