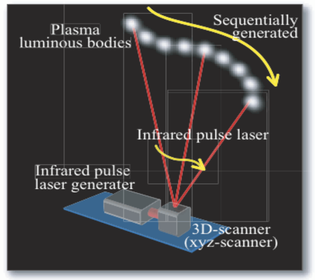
MSR CORE-7 Research

Optimizing Point Cloud Geometry for 3D Aerial Display

Issei Fujishiro (Info. & Comp. Sci. Dept., Keio University)
fuji@ics.keio.ac.jp http://www.fj.ics.keio.ac.jp/

Laser-Plasma Scanning 3D Aerial Display

- Invented in 2006 by Burton, Inc., AIST, and Keio Univ.
- Allows us to plot a unicursal series of illuminants freely in the air
- Problem: *Sparse* and *linear* appearance of illuminant cloud
- Hardware limitation: 5,000 illuminants/sec.

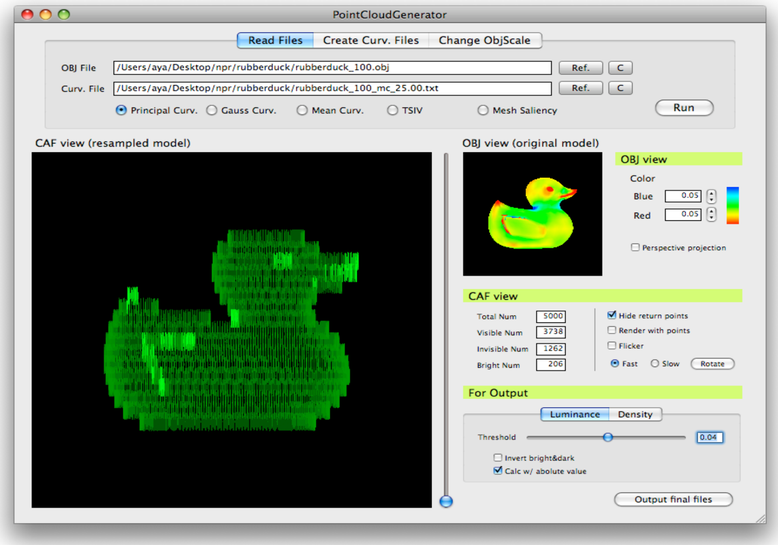


SRV-5000
Presented at SIGGPRAGH 2011/ET

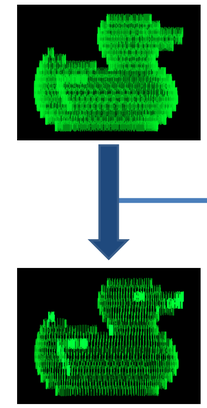
Resource-Aware Rendering (RAR)

- Intended to convey geometric features of objects effectively even with a limited number of illuminants
- Through adaptive control of the brightness and density of plotted illuminants in accordance with existing surface descriptors
- cf. time-critical or budget-oriented computing

Point Cloud Generator



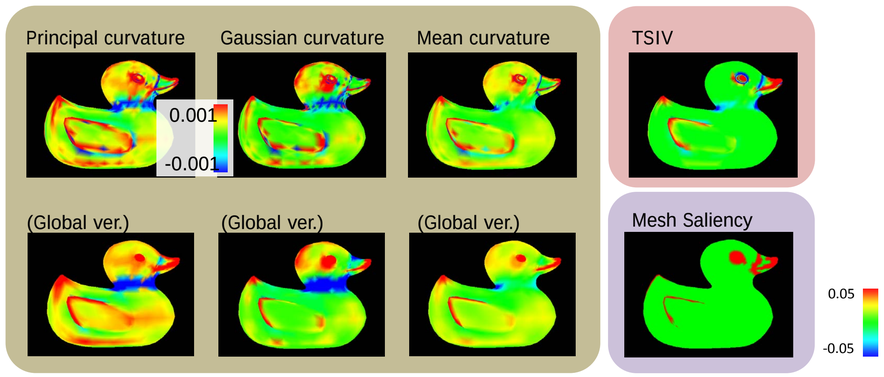
Uniform sequence of illuminants

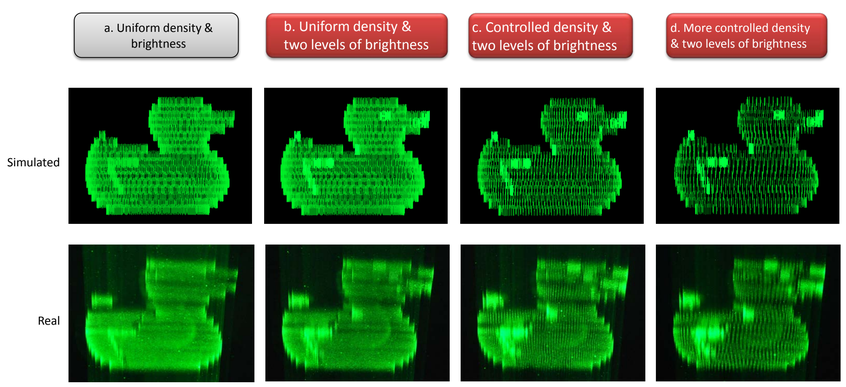


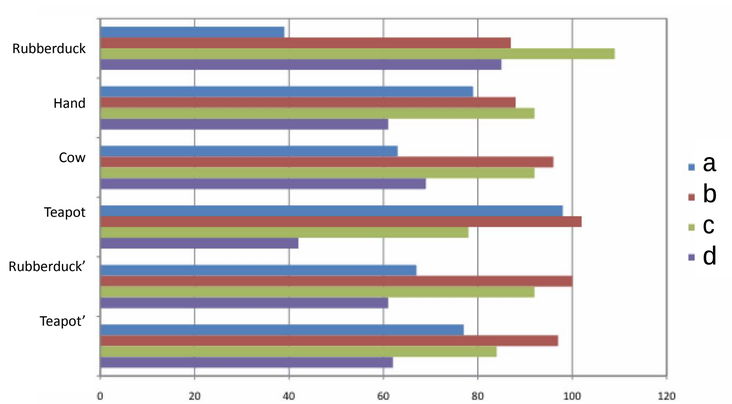
Surface descriptor

Adaptive sequence of illuminants

Experiment and Evaluation







Future Work

- Enhanced control of point density and brightness
- Development of RAR library for 3D display devices
- Empirical evaluation through public display applications