IMAGE-BASED MODELING AND RENDERING

SCHEDULE AND TERM PROJECT

I-Chen Lin, Dept. of CS, National Chiao Tung University

The schedule

- **Dec. 14 ~ Dec. 18**: Find your team members.
  - 1~3 members per group
  - “With Great Power Comes Great Responsibility”
- **Dec. 28**: Project proposal presentation
  - Presentation may include the goal, main concepts, the difficulties, and survey of related work or products.
  - 8 to 16 minutes per group.
- **Dec. 31**: Quiz

- **Jan. 25, 2016** : demo and presentation at class
  - Students will vote for others’ work.
  - Emphasize on results, demo and comparison (with related work or products).
  - Upload Report (no more than 6 pages) and codes (with comments)
    - Content about your project.
    - What’s the advantage or uniqueness of your project/system?
    - What’s the contribution of each member?

Recommended references

- *Graphics and interactive techniques*
  - ACM SIGGRAPH (Intl. Conf. Computer Graphics and Interactive Techniques)
  - ACM SIGGRAPH ASIA (ACM SIGGRAPH Conference and Exhibition on Computer Graphics and Interactive Techniques in Asia)
  - ACM TOG (ACM Trans. Computer Graphics)
  - IEEE TVCG (IEEE Trans. Visualization and Computer Graphics)
  - Eurographics (Special Issue in Computer Graphics Forum)
  - Pacific Graphics (Special Issue in Computer Graphics Forum)
  - …
- *Vision techniques*
  - ICCV (Intl. Conf. Computer Vision)
  - CVPR (IEEE Conf. Computer Vision and Pattern Recognition)
  - ECCV (European Conference on Computer Vision)
  - IEEE TPAMI (IEEE Trans. Pattern Analysis and Machine Intelligence)
  - IJCV (Intl. J. Computer Vision)
  - …

Topics (classic)

- You may consider combining the classic techniques introduced in class for an interesting application.

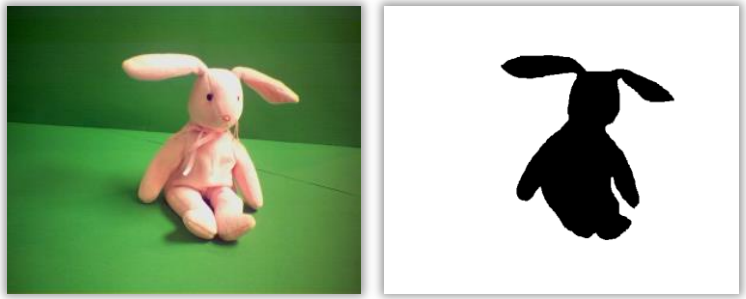
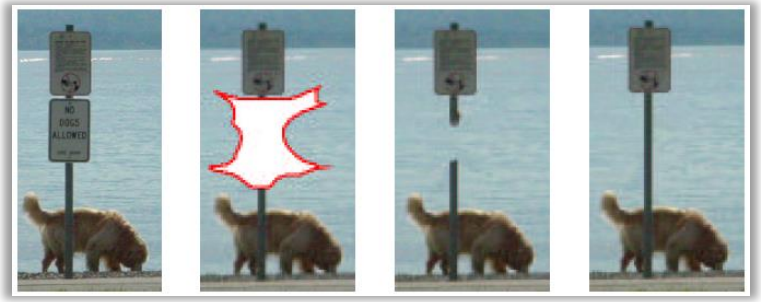


Fig. from W. Matusik, et al., "Image-based visual hulls", slides.

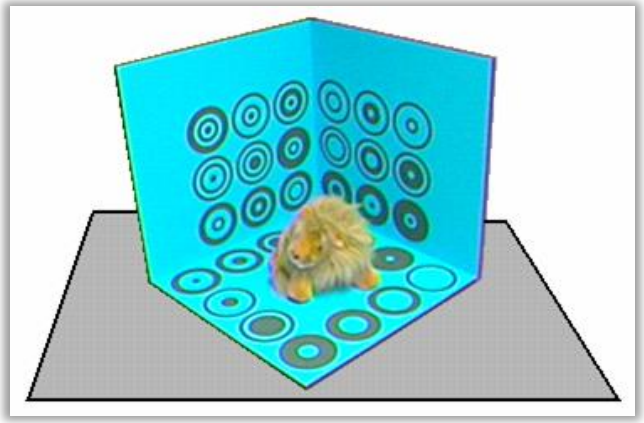
From Y.-Y. Chuang et al. "Bayesian Matting" slides.



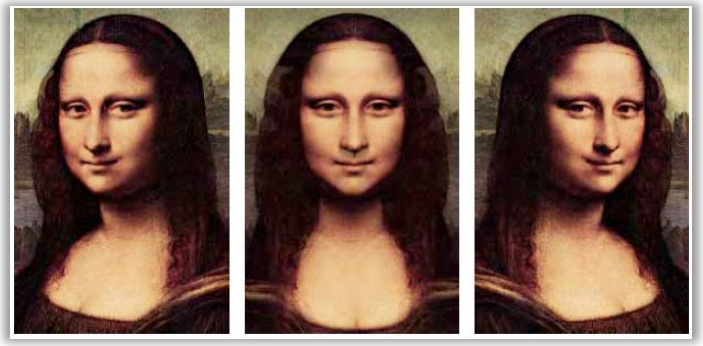
Criminisi and Toyama, "Object Removal by Exemplar-Based Inpainting", CVPR'03

Topics (classic)

P.Debevec et al. “Modeling and Rendering Architecture from Photographs”, SIGGRAPH’96



Gortler et al., “Lumigraph”, SIGGRAPH’96



S. Seitz et al., “View Morphing”

E. A. Khan, et al., 'Image-based Material Editing', Proc. SIGGRAPH’06.

Topics (Recent)

- C.-K. Liang, Ravi Ramamoorthi, “A Light Transport Framework for Lenslet Light Field Cameras”, ACM TOG 2014.
- J. Kopf, et al., “First-person Hyper-lapse Videos”, ACM TOG (Proc. SIGGRAPH’14).
- G. Ye, et al., “Intrinsic Video and Applications”, ACM TOG (Proc. SIGGRAPH’14)
- J. Liao, et al., “Automating image morphing using structural similarity on a halfway domain”, ACM TOG 2014.
- J.-B. Huang, et al., “Image Completion using Planar Structure Guidance”, ACM TOG (Proc. SIGGRAPH’14)
- F. Zhong et al., “Slippage-free Background Replacement for Hand-held Video”, ACM TOG (Proc. SIGGRAPH Asia’14).

Topics (Recent)

- Kim et al., “Scene reconstruction from high spatio-angular resolution light fields”, ACM TOG (Proc. SIGGRAPH) 2013.
- K He et al., “Rectangling Panoramic Images via Warping”, ACM TOG (Proc. SIGGRAPH’13).
- M. Arikan et al., “O-Snap: Optimization-Based Snapping for Modeling Architecture”, ACM TOG (Proc. SIGGRAPH’13).
- K. Venkataraman et al., “PiCam: An Ultra-Thin High Performance Monolithic Camera Array”, ACM TOG (Proc. SIGGRAPH Asia’13).
- J. Kopf et al., “Image-Based Rendering in the Gradient Domain”, ACM TOG (Proc. SIGGRAPH Asia’13).
- A. Colburn et al., “Image-Based Remodeling”, IEEE TVCG 2013.
- A. Davis et al., “Unstructured Light Fields”, Computer Graphics Form (Proc. Eurographics’12).

Topics (Recent)

- Karsch et al., Automatic Scene Inference for 3D Object Compositing, ACM Trans. Graphics, vol.33, no.3, article 32, 2014.
- Zheng et al., “Interactive Images: Cuboid Proxies for Smart Image Manipulation”, ACM TOG (also in SIGGRAPH), 31(4):99, 2012.