

# IMAGE-BASED MODELING AND RENDERING

## SCHEDULE AND TERM PROJECT

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# The schedule

- **Dec. 18 ~ Dec. 23:** Find your team members.
  - 1~3 members per group
  - “With Great Power Comes Great Responsibility”
- **Dec. 30:** Project proposal presentation
  - Presentation may include the goal, main concepts, the difficulties, and survey of related work or products.
- **Jan. 20, 2015 :** 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.

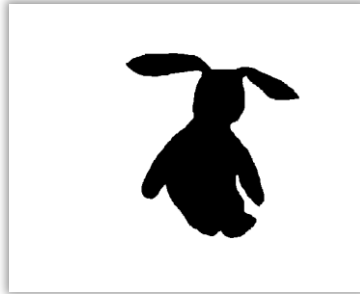
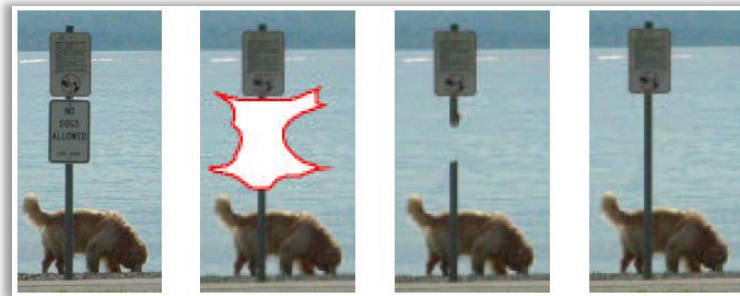


Fig. from W. Matusik, et al., "Image-based visual hulls", slides.



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

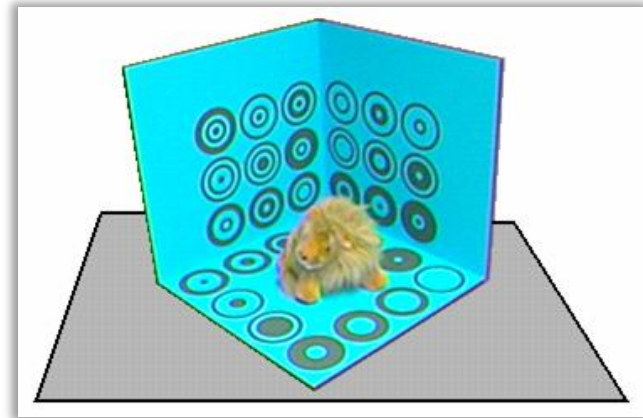


Criminisi and Toyama, "Object Removal by Exemplar-Based Inpainting", CVPR'03

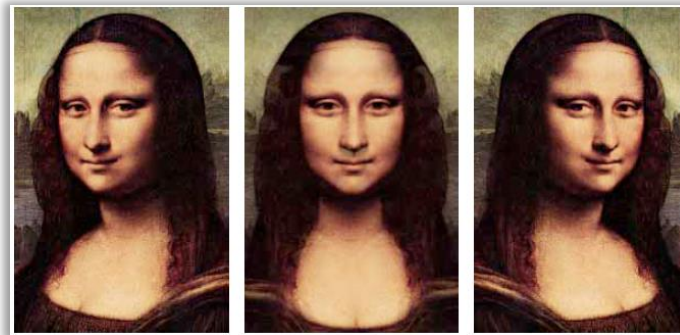
# Topics (classic)



P.Debevec et al. "Modeling and Rendering Architecture from Photographs", SIGGRAPH'96



Gortler et al., "Lumigraph", SIGGRAPH'96



S. Seitz et al., "View Morphing"

# 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).