

Computational Cameras and Projectors

1) Background

- i) Plenoptic Modeling (Siggraph 1995)
- ii) Light Field Rendering (Siggraph 1996)
- iii) Reflectance Fields (Siggraph 2000)

2) Epsilon Photography

a) Dynamic Range

- i) High Dynamic Range Imaging (Siggraph 2007)

b) Wider FOV

- i) Automatic panoramic image stitching using invariant features (IJCV 2007)

c) Flash-no flash fusion

- i) Digital Photography With Flash and No-Flash Image Pairs (Siggraph 2004)
- ii) Flash Photography Enhancement via Intrinsic Relighting (Siggraph 2004)

d) Fusion and Segmentation Operations

- i) Interactive Digital Photomontage (Siggraph 2004)
- ii) Lazy Snapping (Siggraph 2004)
- iii) Automatic Photo Pop-Up (Siggraph 2005)
- iv) Face Swapping: Automatically Replacing Faces in Photographs (Siggraph 2008)

3) Coded Photography

a) Higher Dimensional Light Field

- i) Dual Photography (Siggraph 2005)
- ii) Fourier Slice Photography (Siggraph 2005)
- iii) Coded aperture and Optical Heterodyning : A mask-based approach for Digital Refocusing and Light Field Acquisition by Conventional Cameras (Siggraph 2007)
- iv) Programmable aperture photography: multiplexed light field acquisition (Siggraph 2008)

b) Boundaries and Regions

- i) Non-photorealistic Camera: Depth Edge Detection and Stylized Rendering using Multi-Flash Imaging (Siggraph 2004)
- ii) Image and Depth from a Conventional Camera with a Coded Aperture (Siggraph 2007)

c) Deblurring

- i) Coded Exposure Photography: Motion Deblurring via Fluttered Shutter (Siggraph 2006)
- ii) Motion Invariant Photography (Siggraph 2008)
- iii) High quality motion deblurring from a single image (Siggraph 2008)

d) Global vs Direct Illumination

- i) Removing Photography Artifacts Using Gradient Projection and Flash-Exposure Sampling (Siggraph 2005)
- ii) Fast Separation of Direct and Global Components of a Scene Using High Frequency Illumination (Siggraph 2006)

- iii) Glare Aware Photography: 4D Ray Sampling for Reducing Glare Effects of Camera Lenses (Siggraph 2008)
- iv) Light Field Transfer: Global Illumination Between Real and Synthetic Objects (Siggraph 2008)

4) Novel Cameras

- i) Why I want a gradient camera? (CVPR 2005)
- ii) Programmable Imaging: Towards a Flexible Camera (IJCV 2006)
- iii) Multiview Radial Catadioptric Imaging for Scene Capture (Siggraph 2006)
- iv) Non-Single Viewpoint Catadioptric Cameras: Geometry and Analysis (IJCV 2006)
- v) Lensless Imaging with a Controllable Aperture (CVPR 2006)
- vi) Multispectral Imaging Using Multiplexed Illumination (ICCV 2007)
- vii) Scene Collages and Flexible Camera Arrays (EGSR 2007)
- viii) Flexible Depth of Field Photography (ECCV 2008)
- ix) Cata-Fisheye Camera for Panoramic Imaging (WACV 2008)

5) Essence Photography

a) Exploiting online collections

- i) Photo-tourism (Siggraph 2006)
- ii) Scene Completion Using Millions of Photographs (Siggraph 2007)

b) Multi-Perspective Images

- i) Photographing long scenes with multi-viewpoint panoramas (Siggraph 2006)
- ii) Multi-perspective Projection and Collineation (ICCV 2005)

6) Video

- i) Keyframe-based Tracking for Rotoscoping and Animation (Siggraph 2004)
- ii) Flow-based video synthesis and editing (Siggraph 2004)
- iii) Panoramic Video Textures (Siggraph 2005)
- iv) Interactive Video CutOut (Siggraph 2005)
- v) Video Object Cut and Paste (Siggraph 2005)
- vi) Unwrap Mosaics (Siggraph 2008)

7) Projector-Camera Systems

- i) iLamps: Geometrically Aware and Self-Configuring Projectors (Siggraph 2003)
- ii) RFIG Lamps: Interacting with Self-describing World via Photosensing Wireless Tags and Projectors (Siggraph 2004)
- iii) Projection Defocus Analysis for Scene Capture and Image Display (Siggraph 2006)
- iv) Active Refocusing of Images and Videos (Siggraph 2007)
- v) Multi-user interaction using handheld projectors (UIST 2007)
- vi) Towards 6D Displays (Siggraph 2008)