

Recent Result for 3D Free view generation for in IVY Lab (2015)



Prof. Yong Man Ro

Binocular Symmetric Multi-view Synthesis for Autostereoscopic Display



(a) Crack removal in virtual view at virtual viewpoint

(b) Ghost effect removal in virtual view at virtual viewpoint

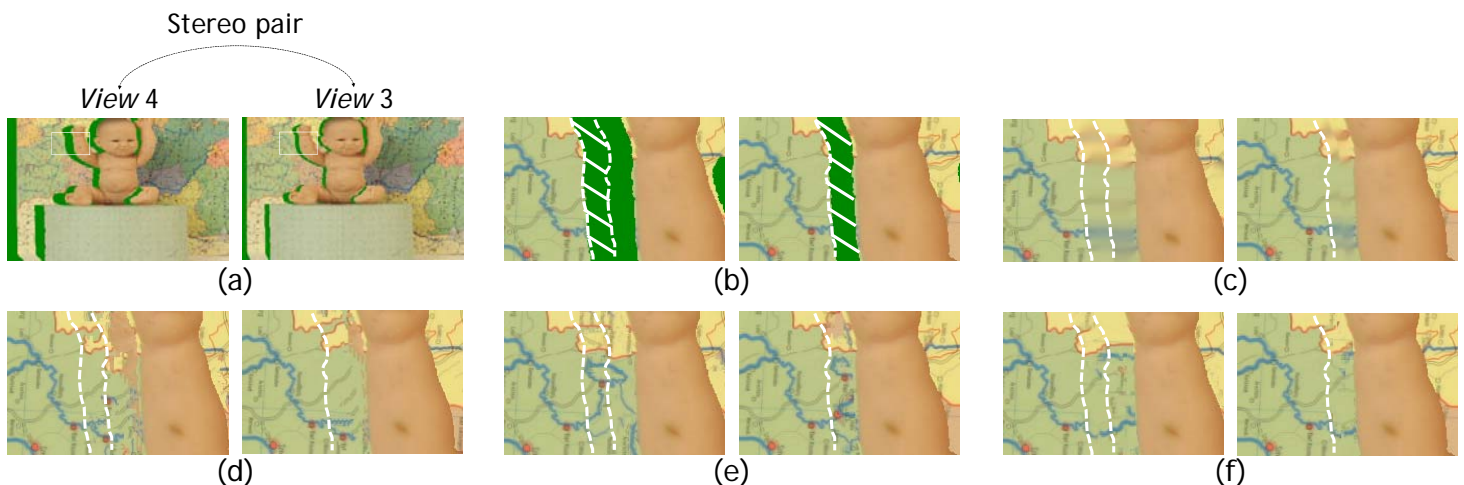
3D warping distortion removal in virtual views for view synthesis. The green area indicates the hole region (Ω).



Target virtual view (e.g., View n)

Adjacent virtual view (e.g., View $n-1$)

Illustration of the proposed Markov random field (MRF) cost function for multi-view stereo image synthesis with binocular symmetry in global optimization.



Multi-view synthesis results for "Baby1". (a) Color images with hole regions. (b) Magnified parts of (a). (c) Bertalmio's method. (d) Criminisi's method. (e) Criminisi's method + depth constraint. (f) Proposed method.

Fast Temporally Consistent 3D Video Generation for 3D Video Contents

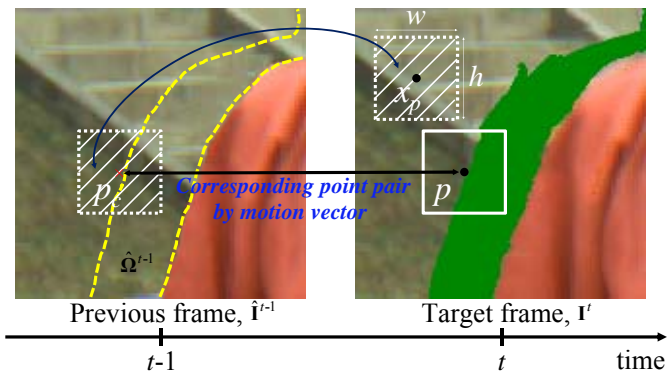
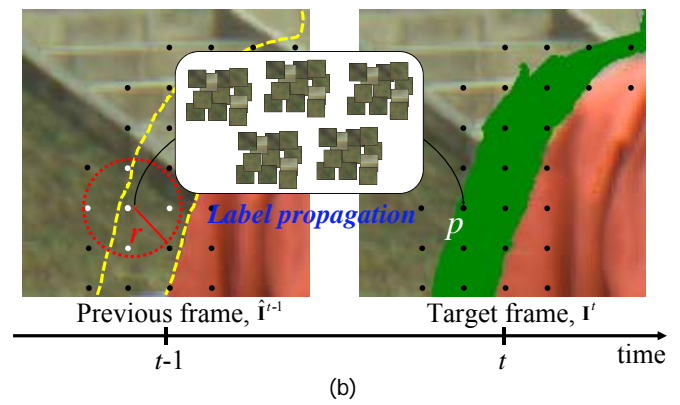
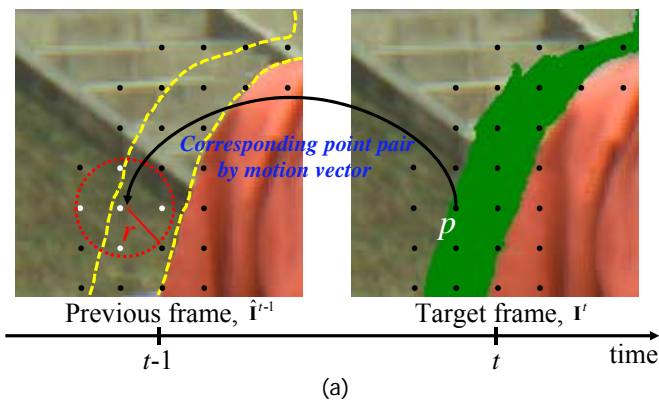
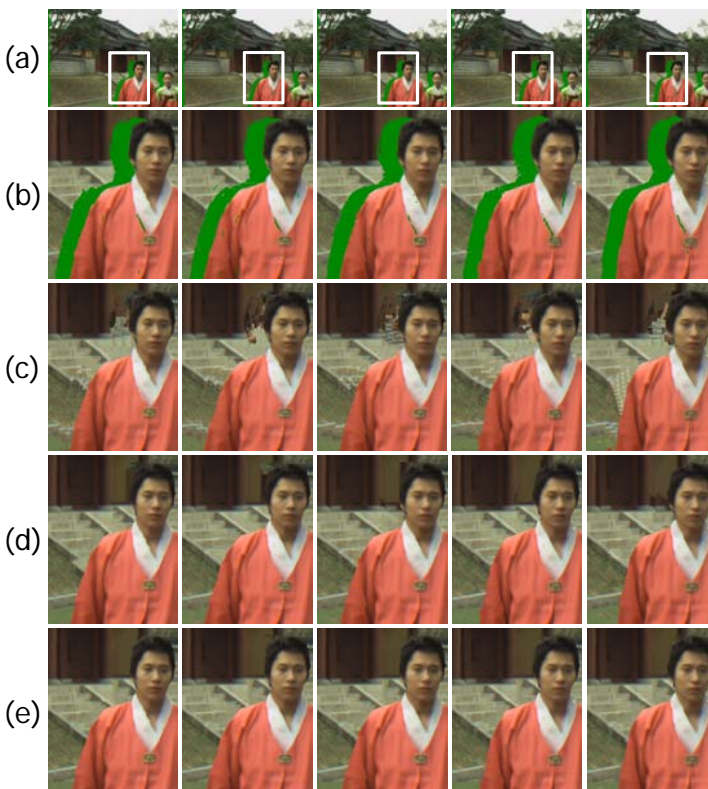


Illustration of the proposed temporally consistent 3D video generation in global optimization framework.



Proposed label propagation for reducing the computational complexity of view synthesis. (a) Finding a temporally corresponding point in the previous frame. (b) Label propagation of pruned labels in the previous frame. Note that we collect the labels stored at nodes around corresponding point of node p in (a) and they are propagated to the node p to fill the target region centered at node p .



3D video generation results for "Lovebird1" (181-185 frames).

- (a) Consecutive five frames.
- (b) Magnified parts of (a).
- (c) Local greedy based method.
- (d) Global optimization based method.
- (e) Proposed method.

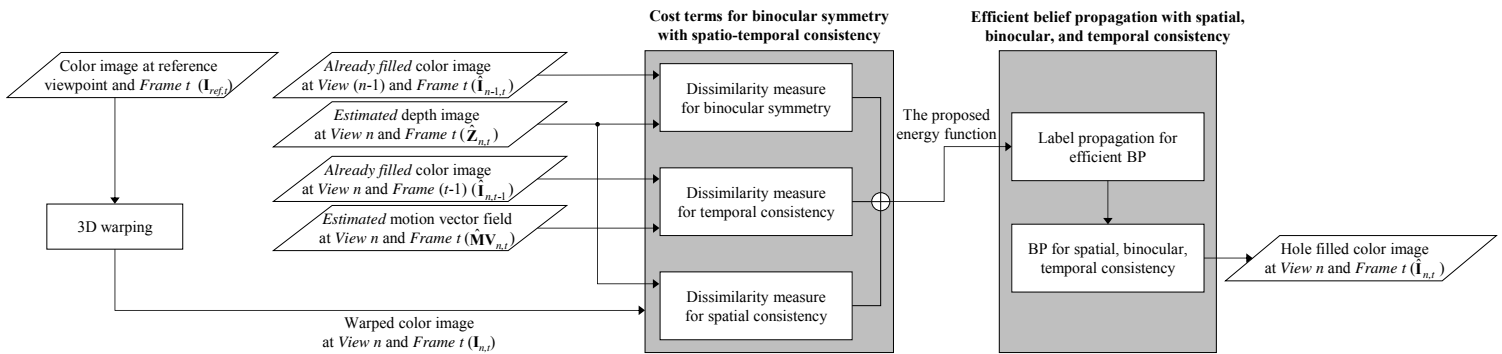
Table 1. Average flicker value over frames

Methods	Ballet	Lovebird1	Newspaper
Local greedy based method	23.69	33.08	36.21
Global optimization based method	7.11	15.07	35.71
Proposed method	1.98	2.28	4.92

Table 2. Average computational gain over frames

	Ballet	Lovebird1	Newspaper
Computational gain	x 42.24	x 48.87	x 40.37

Multi-view 3D Video Synthesis with Spatio-Temporal Consistency and Binocular Symmetry for Free-viewpoint TV



Overview of the proposed multi-view 3D video synthesis for color image at *View n* and *Frame t*.

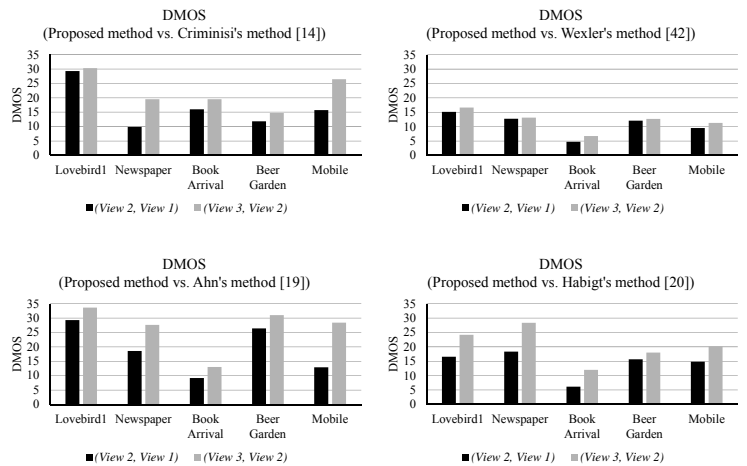
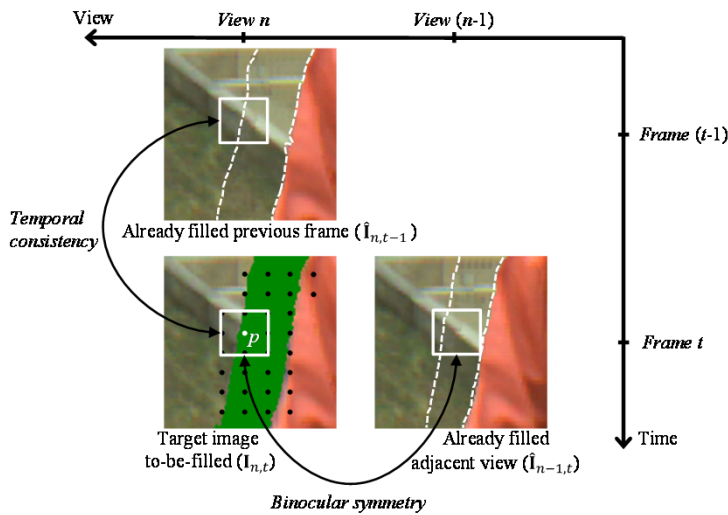
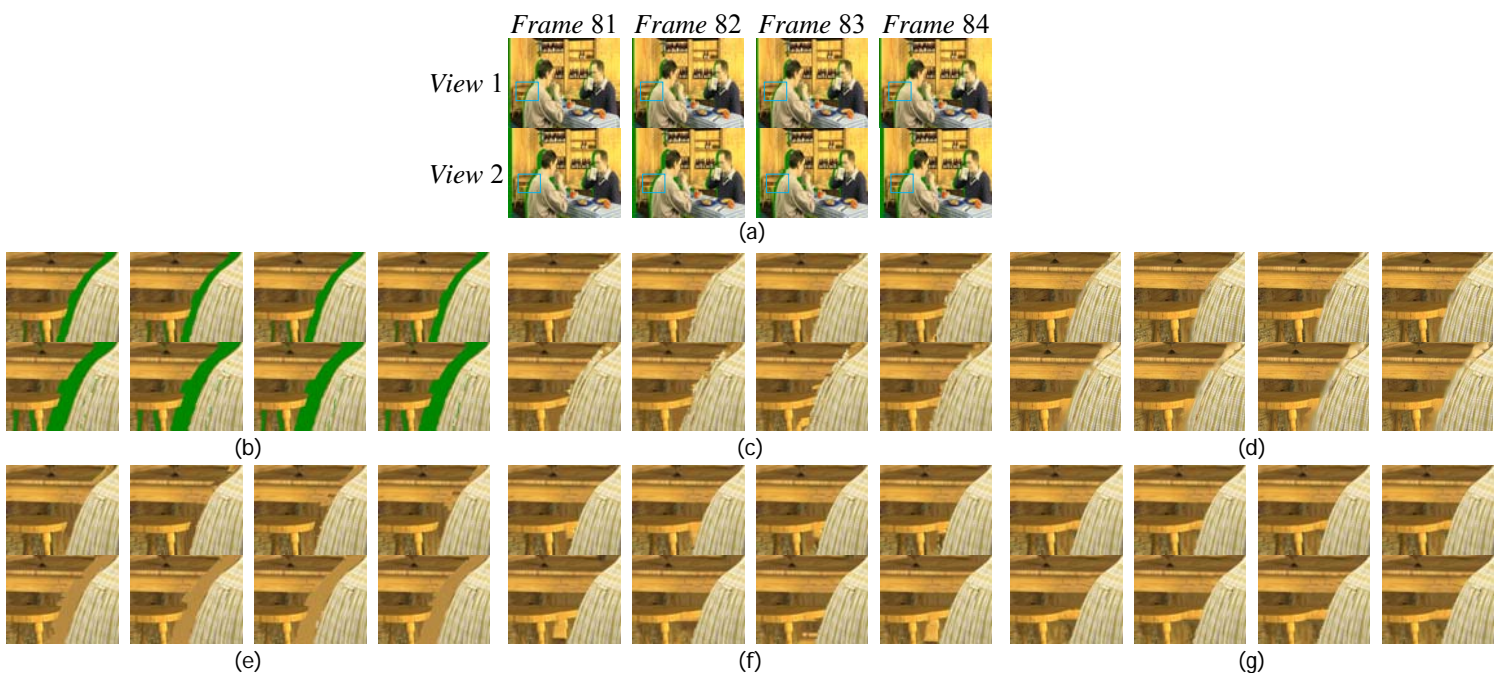


Illustration of the proposed multi-view 3D video synthesis with spatio-temporal consistency and binocular symmetry.

Subjective assessment results: Measured DMOS of visual comfort for the proposed method vs. conventional methods



Multi-view 3D video synthesis results for "Beer Garden". (a) Virtual video at *View 1-2* and *Frame 81-84*. (b) Magnified parts of (a). (c) Results of Criminisi's method. (d) Results of Wexler's method. (e) Results of Ahn's method. (f) Results of Habigt's method. (g) Results of the proposed method.

3D Geometric Transformation based View Synthesis for Wide Angle View

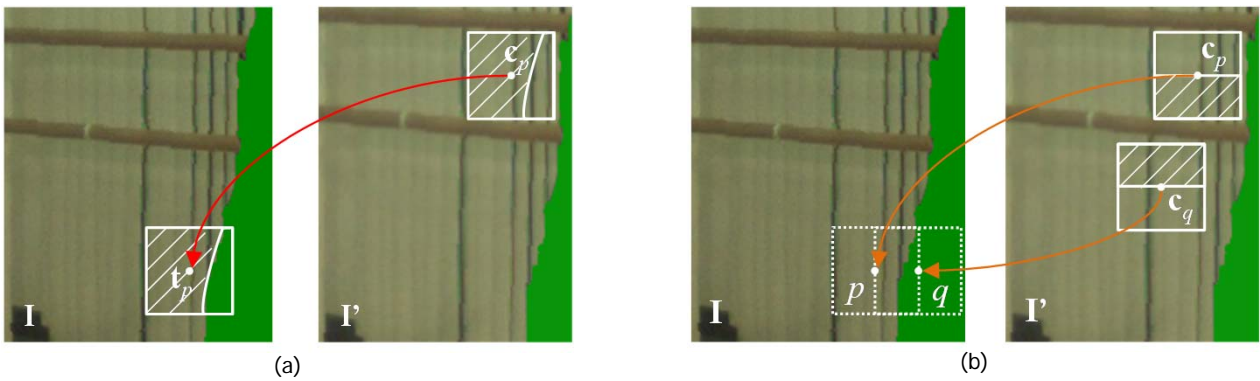
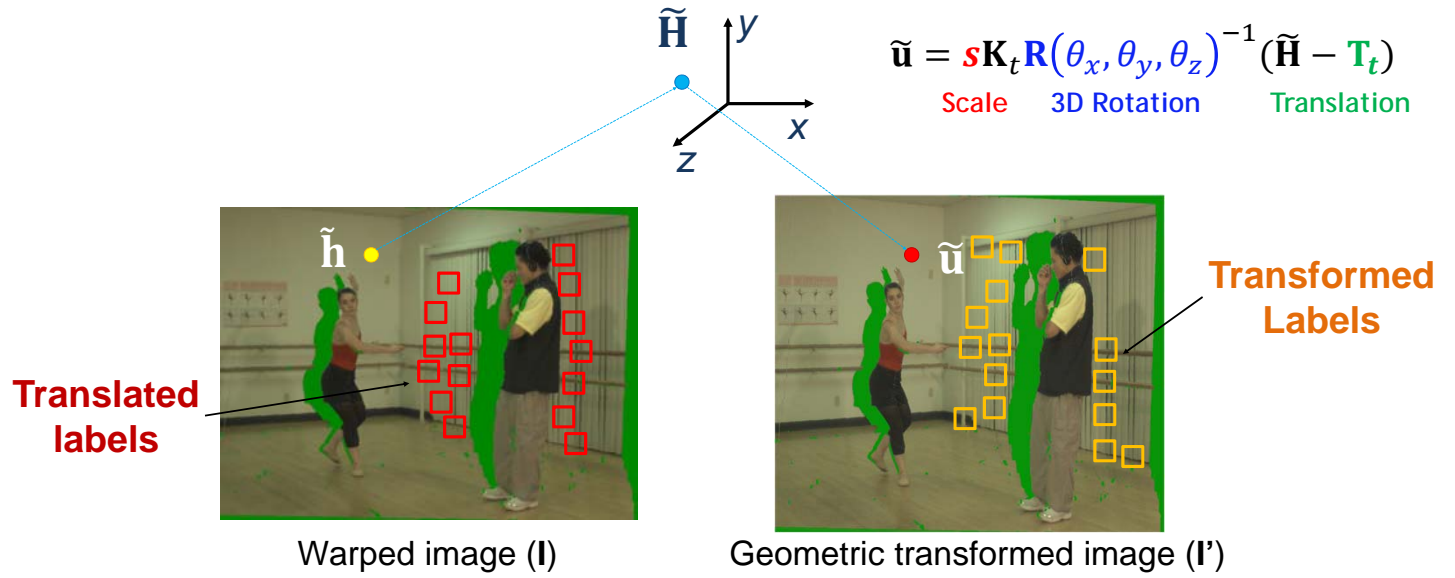
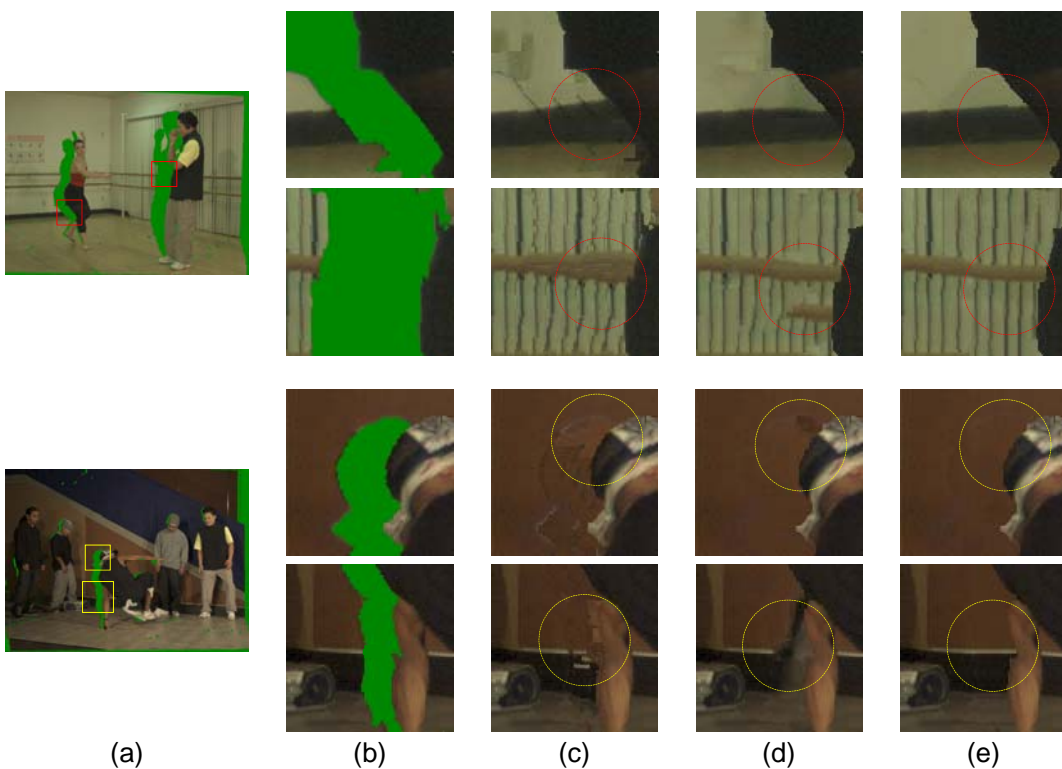


Illustration of the proposed 3D geometric transformation based view synthesis method for wide angle view. (a) The calculation of the data cost term. (b) The calculation of the smoothness cost term for structural consistency.



3D view synthesis results for "Ballet" and "Breakdancer". (a) Wide angle virtual view. (b) Magnified parts of (a). (c) Local greedy based method. (d) Global optimization based method. (e) Proposed method.