

PatchMatch: A Randomized Correspondence Algorithm for Structural Image Editing

(a) Original (b) Inpainting (c) Retarget (d) Reshuffle

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Editing with Patch-Based Synthesis

Retargeting [Avidan '07] Hole filling [Sun '05]

Reshuffling [Simakov '08], [Cho '08]

Need for User Interaction

Retargeting [Avidan '07] Hole filling [Sun '05]

Reshuffling [Simakov '08], [Cho '08]

User Interaction

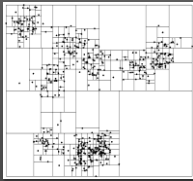
Roadmap

Motivation PatchMatch Algorithm Interactive Editing

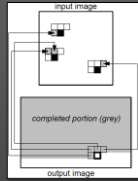
Problem

Finding nearest neighbor patches is slow

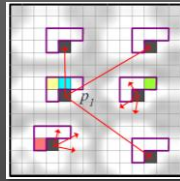
Related Work



kd-tree with PCA
[Hertzmann '01]

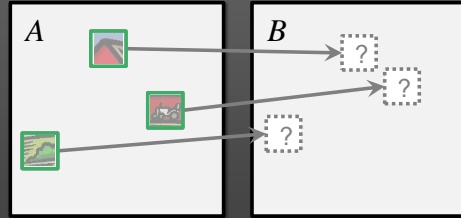


Propagation
[Ashikhmin '01]

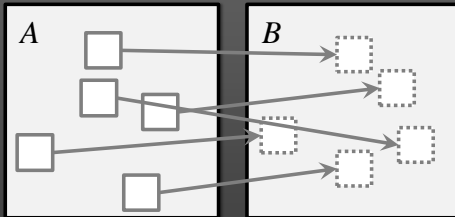


k-coherence
[Tong '02]

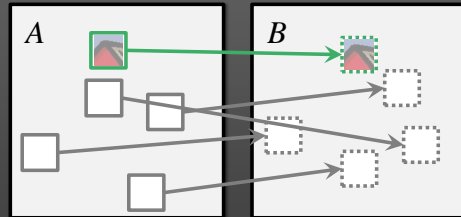
PatchMatch



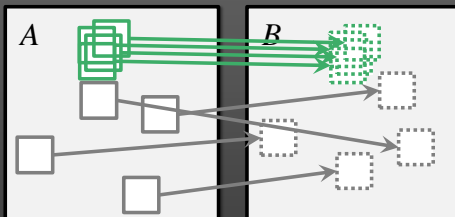
PatchMatch



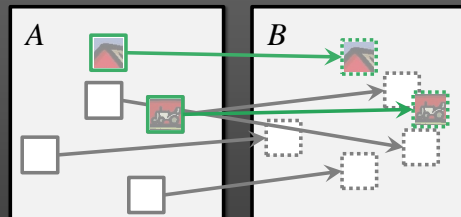
PatchMatch



PatchMatch

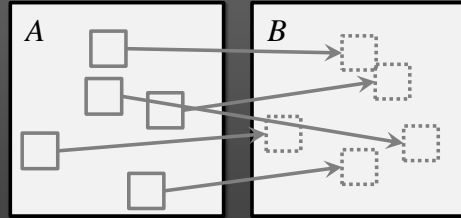


PatchMatch

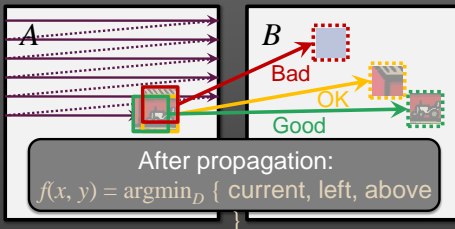


Algorithmic Details

Random Initialization

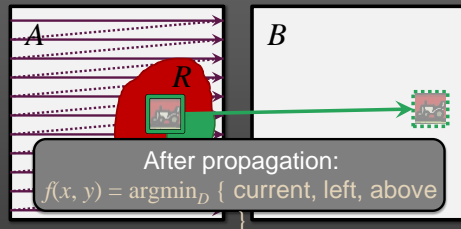


Propagation

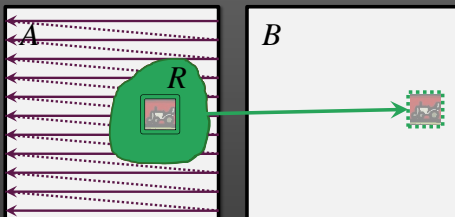


[Ashikhmin '01]

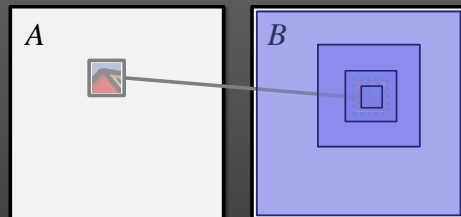
Propagation



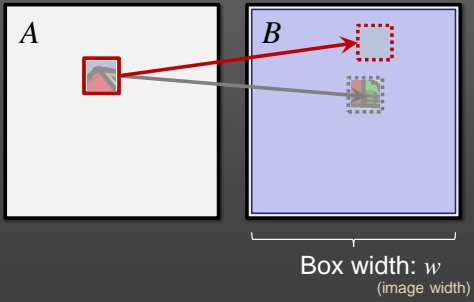
Propagation



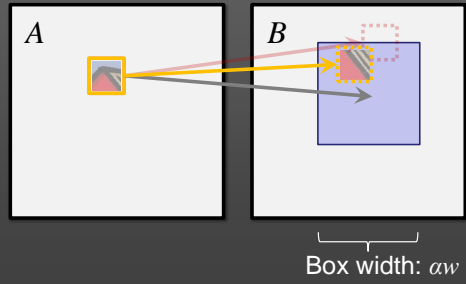
Random Search



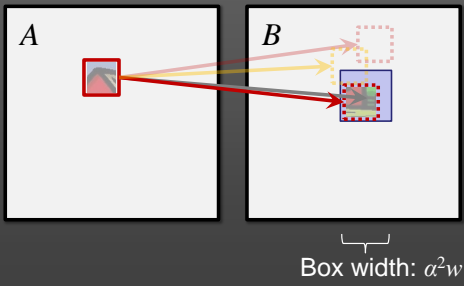
Random Search



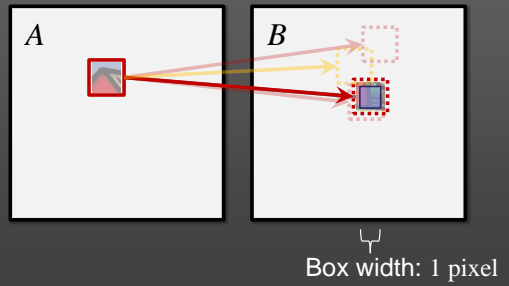
Random Search



Random Search



Random Search



Propagation and Search

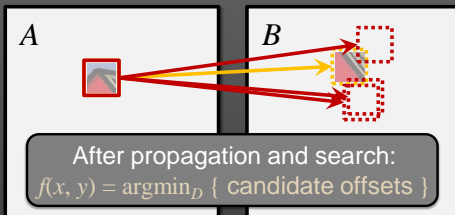


Image Completion

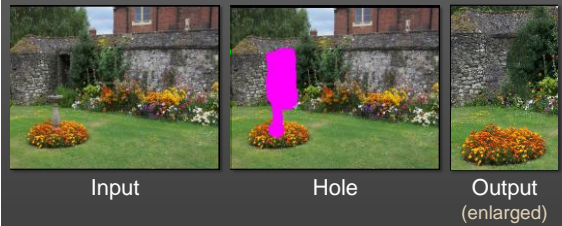


Image Completion

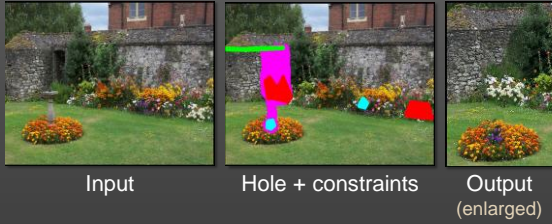
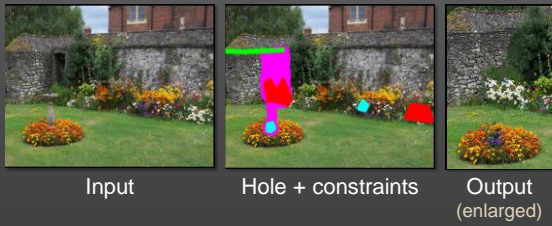


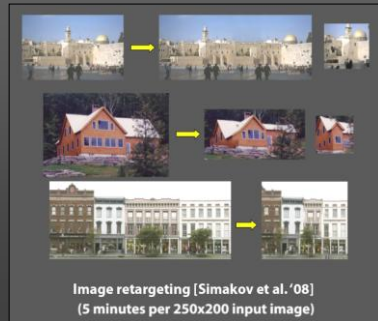
Image Completion (without constraints)



Image Completion (with constraints)



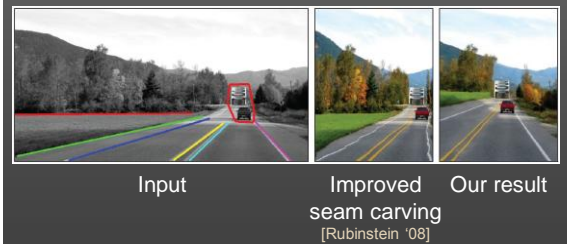
Retargeting / Reshuffling



Deformation Constraints



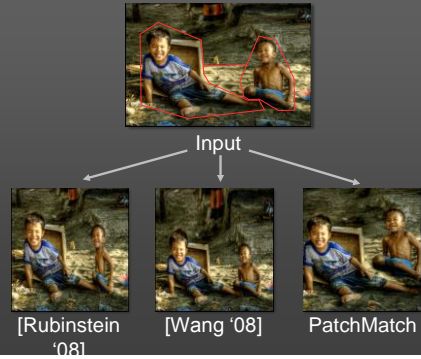
Line Constraints



Region Constraints



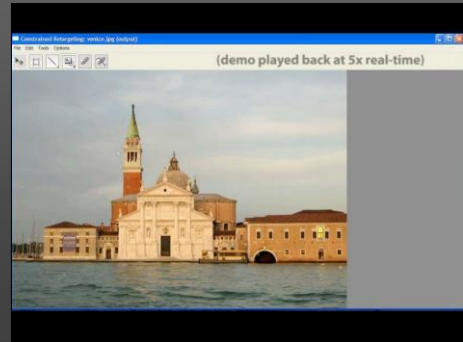
Reshuffling



Reshuffling



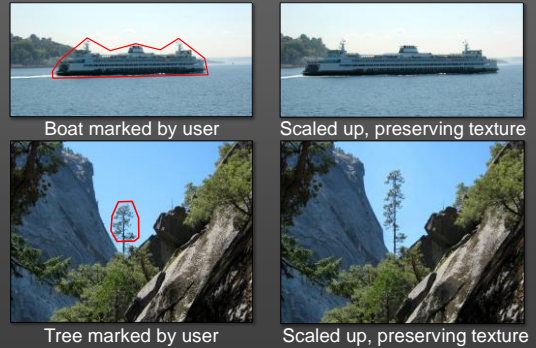
Reshuffling



Summary of Contributions



Local Scale



Acknowledgements

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