

Using Augmented-Reality on Planar Surfaces for Previewing Decor Changes

Nima Soltani, Mehmet Yilmaz

Department of Electrical Engineering, Stanford University

Motivation

- Difficult for consumers to judge how paintings would fit into their living spaces, without actually mounting them
- Online painting/poster market relatively unexplored, due to this consumer reluctance
- **Solution:** Develop application to simulate painting addition to living space on Android platform

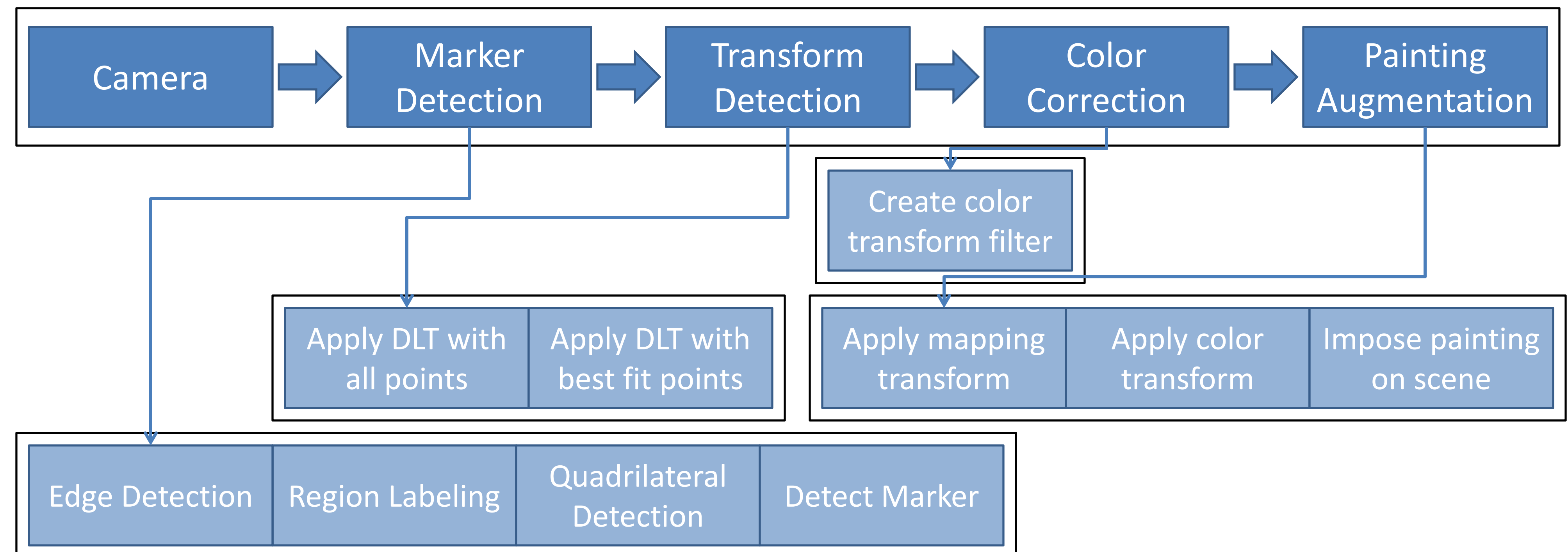
Related Work

- ARToolkit
 - Most popular AR system written in C
 - Uses binarization and template matching for marker detection
 - Detects camera pose by using marker outline
- ARTag
 - More robust yet more complex AR system.
 - Uses edge-based marker detection and DSP techniques to improve false positive detection and avoid the sensitivity against lighting.

References

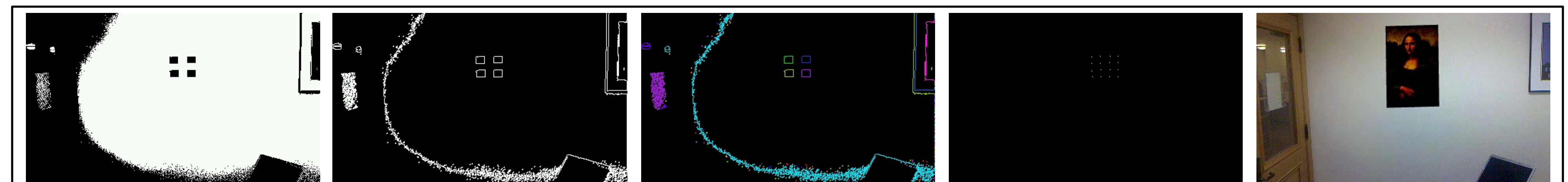
- M. Fiala, "ARTag, a fiducial marker system using digital techniques," Computer Vision and Pattern Recognition, 2005. CVPR 2005. IEEE Computer Society Conference on, vol.2, no., pp. 590- 596 vol. 2, 20-25 June 2005.
- D. Schmalstieg, and D. Wagner, "Experiences with Handheld Augmented Reality," Mixed and Augmented Reality, 2007. ISMAR 2007. 6th IEEE and ACM International Symposium on, vol., no., pp.3-18, 13-16 Nov. 2007.
- H. Kato, and M. Billinghurst, "Marker tracking and HMD calibration for a video-based augmented reality conferencing system," Augmented Reality, 1999. (IWAR '99) Proceedings. 2nd IEEE and ACM International Workshop on, vol., no., pp.85-94, 1999.

Solution Process Flow



Experimental Results

Affine



Projective

