

Video based Non-photo realistic Rendering

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Goal

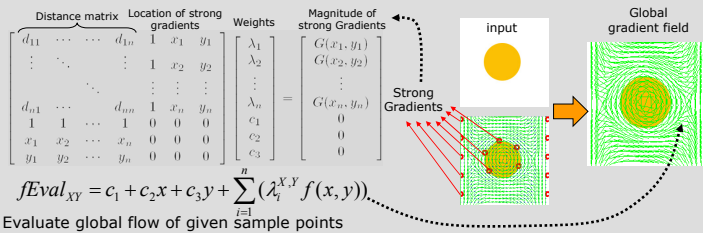
-To make a non-photorealistic rendering system generating various artistic styles such as oil painting and water-colorization from pictures and videos.



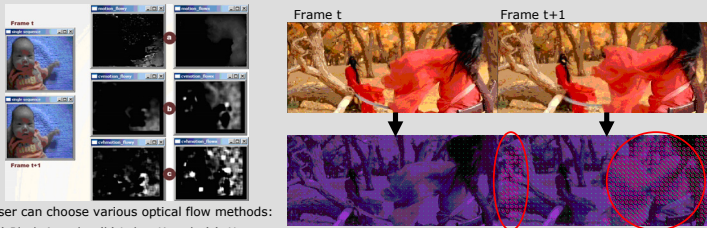
- (1) Making global gradient field using Radial Basis function.
- (2) Keeping temporal coherence based on optical flow.
- (3) Mimic the water-color simulation using morphology based filters and dispersion map from global gradient.

Our Approach

- Global gradient field from Radial Basis function



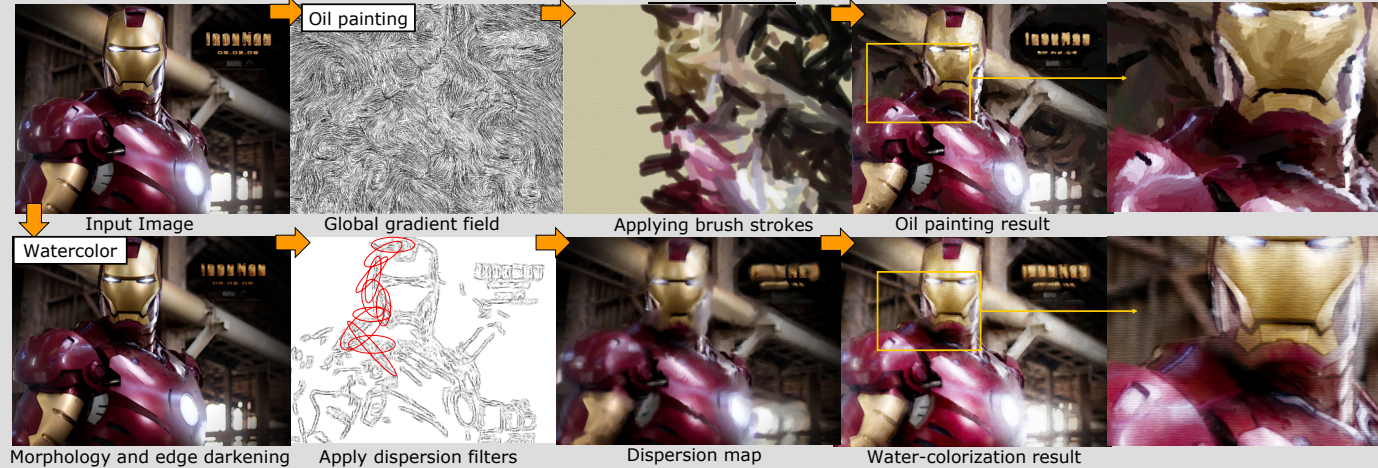
- Updating foreground from motion flow (optical flow) keeps temporal coherence between frames in video.



User can choose various optical flow methods:
 (a) Black-Anandan (b) Lukas-Kanade (c) Hornschunck

- Water-colorization performed by applying morphology, perlin noise, edge darkening, pigment dispersion and canvas texture synthesis.

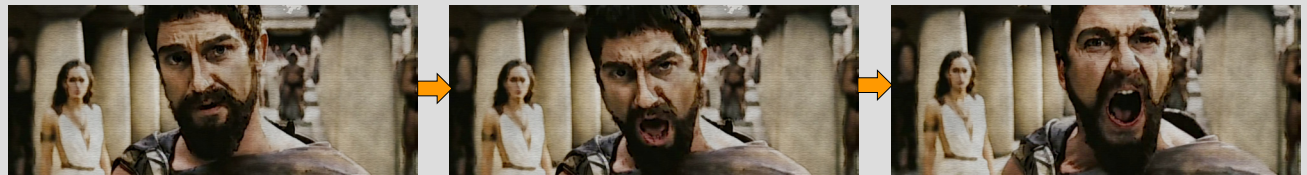
Results



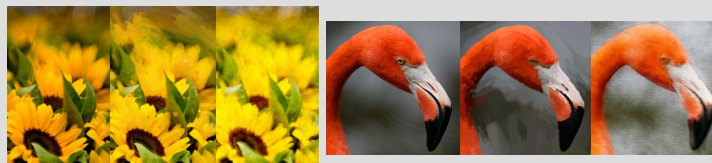
- Various brush styles can be applied in painting



- Temporal coherence between frames in video



- Other examples



Related project : James Hays and Irfan Essa "Image and video based painterly animation" (NPAR 2004)

- For more information : <http://www.cc.gatech.edu/~kihwan23> and <http://cpl.cc.gatech.edu/projects/painterlyrendering>