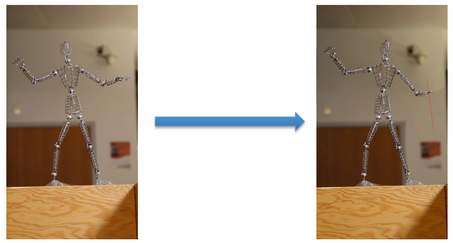
Interactive Dynamic Video from Handheld Camera

Brad Huang
Computer Science, Stanford University

Motivation & Goal

- Interactive videos from handheld camera captures



- Structural knowledge from image-space analysis

Related Work

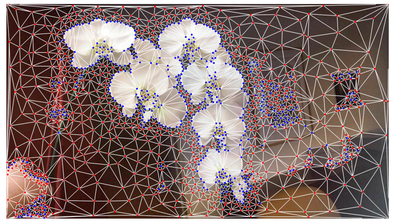
- Davis *et al.* 2015: Lagrangian vs Eulerian approach
- Helfrick *et al.* 2011: 3D vs Image-space analyses
- Elgharib *et al.* 2015: Sparse Lagrangian field + synthetic motion

References

- Davis, A., Chen, J., Durand, F. 2015. Image-space modal bases for plausible manipulation of objects in video. In *Proceedings of SIGGRAPH Asia 2015*, ACM Transactions on Graphics (TOG), New York, vol. 34, ACM.
- Helfrick, M., Niezrecki, C., Avitabile, P., Schmidt, T. 2011. 3d digital image correlation methods for full-field vibration measurement. *Mechanical Systems and Signal Processing*.
- Elgharib M. A., Hefeeda M., Durand F., Freeman W. T. 2015. Video Magnification in Presence of Large Motions**.** *IEEE Conf. on Computer Vision and Pattern Recognition* (CVPR).

Analysis Workflow

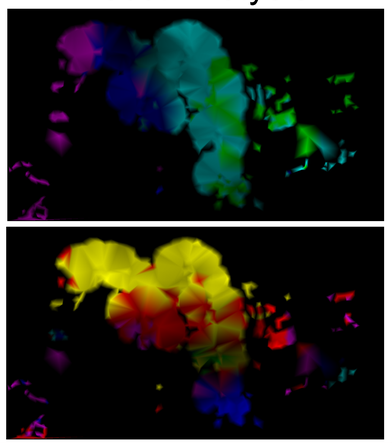
Feature Detection



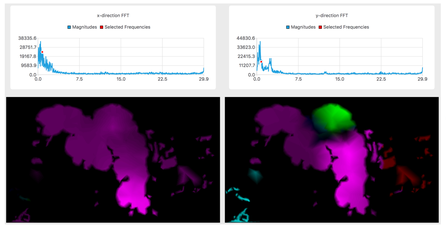
Feature Tracking



Modal Analysis

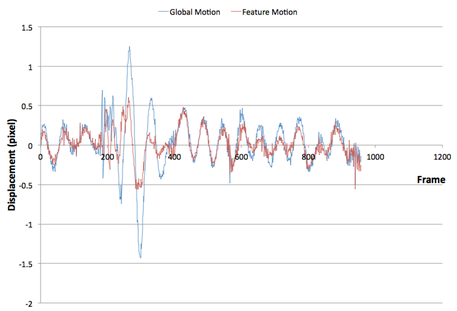


Mode Selection

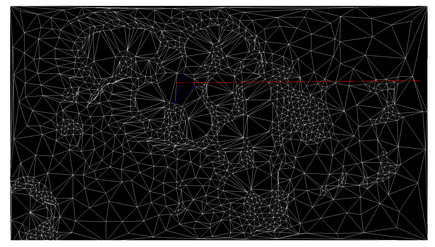


Lagrangian Field vs Eulerian Field

Tracking



Simulating Force Response



Experimental Results

