Efficient Sparse-to-Dense Optical Flow Estimation using a Learned Basis and Layers J. Wulff, and M. J. Black (CVPR 2015)



- Representing optical flow as a weighted sum of the basis flow fields
- Given a set of sparse matches, regressing to dense optical flow using a learned set of full-frame basis flow fields
- Learning the principal components using flow computed from four Hollywood movies
- Very fast (200ms/frame), but too smooth
- Sparse layered flow, each layer is PCA-Flow (3.2s/frame)
- Evaluated on Sintel and KITTI 2012 benchmarks