Report Meeting Week 8

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Computing New Positives

- OpenCv code to generate slightly altered positives
- Apply filters to positive images
- Code to extract on the fly or precompute new positives

Optical Flow

- Review:
  - Compute optical flow between keyframe and following frame
  - X-component → R
  - Y-component → G
  - Magnitude → B
  - Compute Sift features


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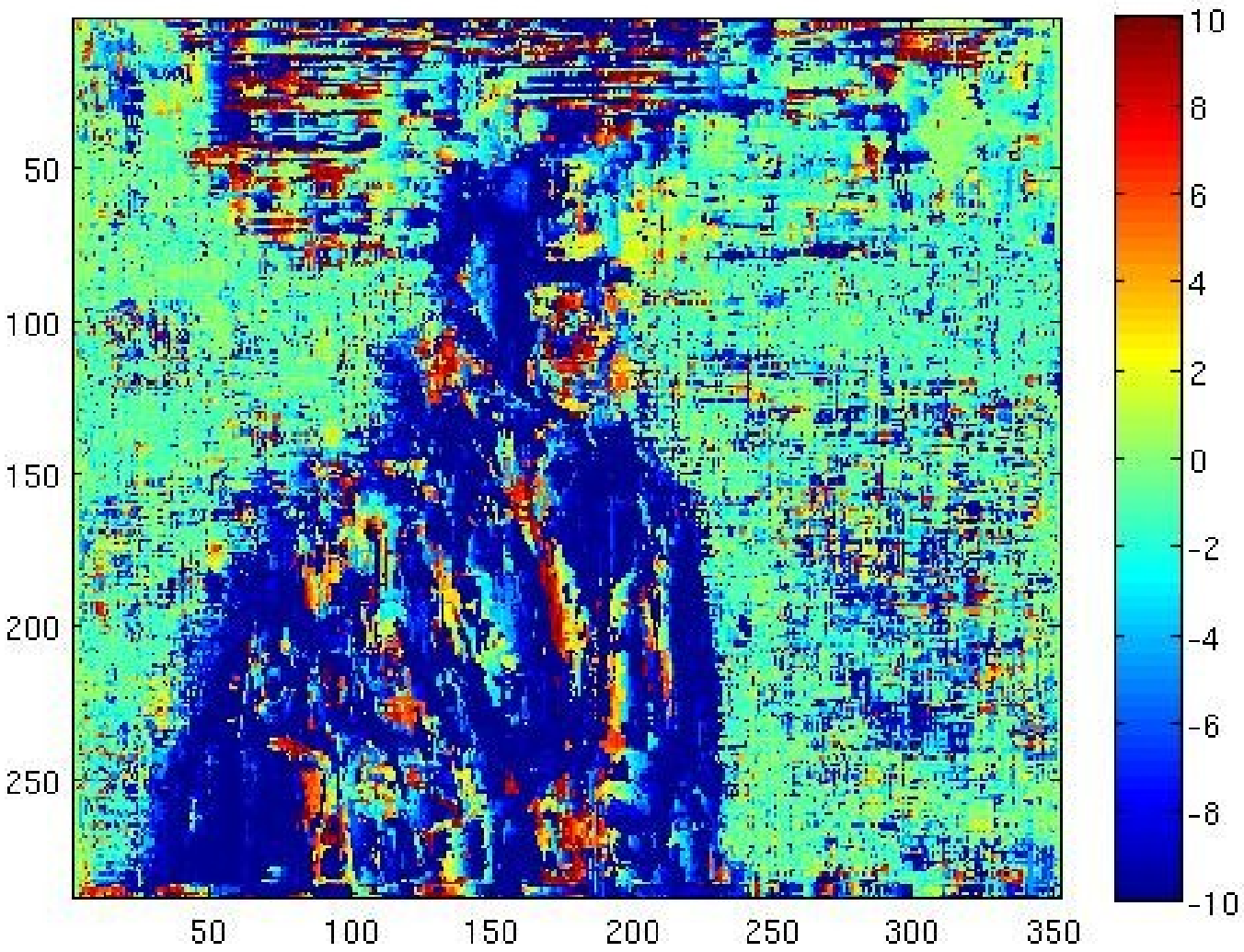
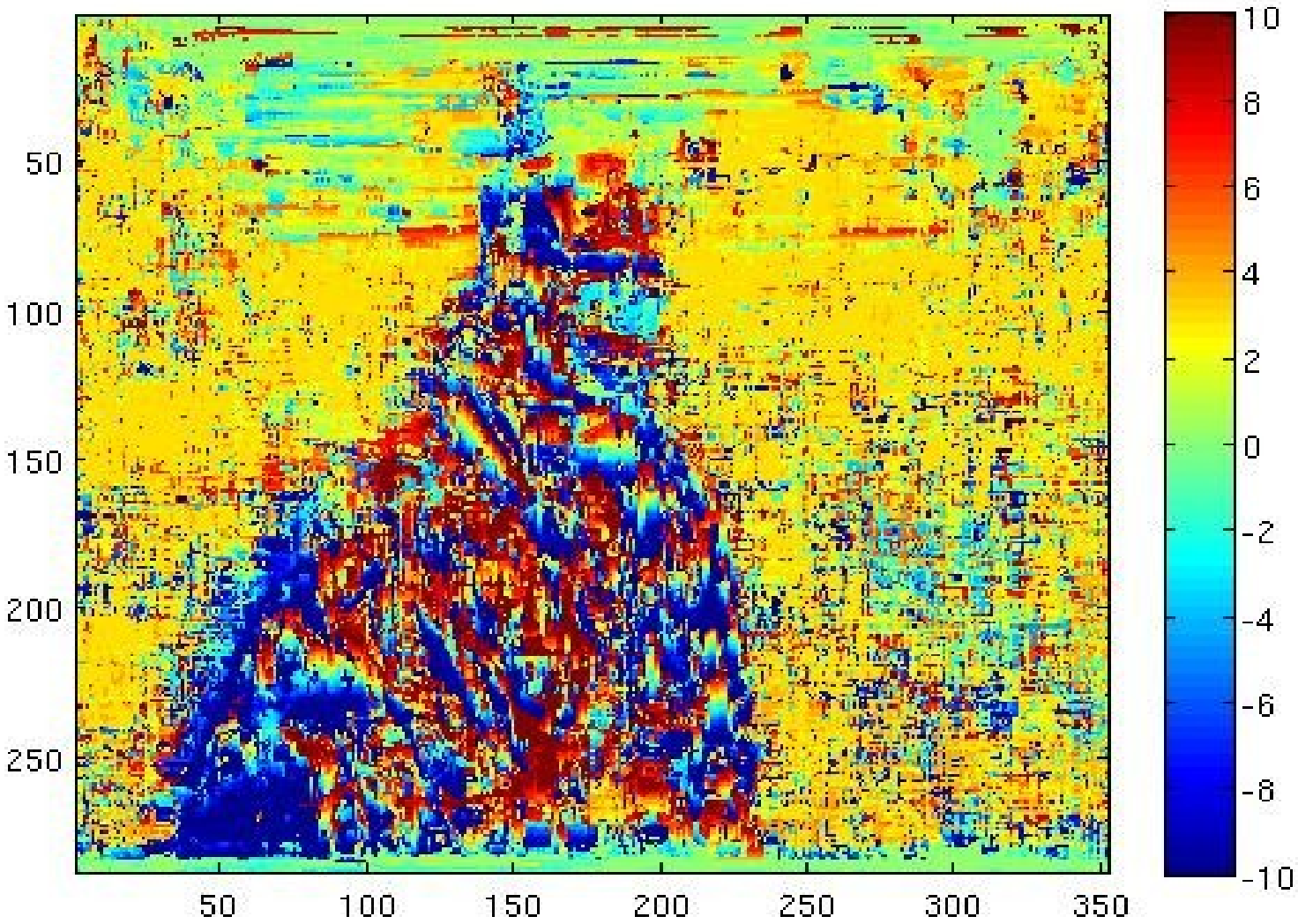
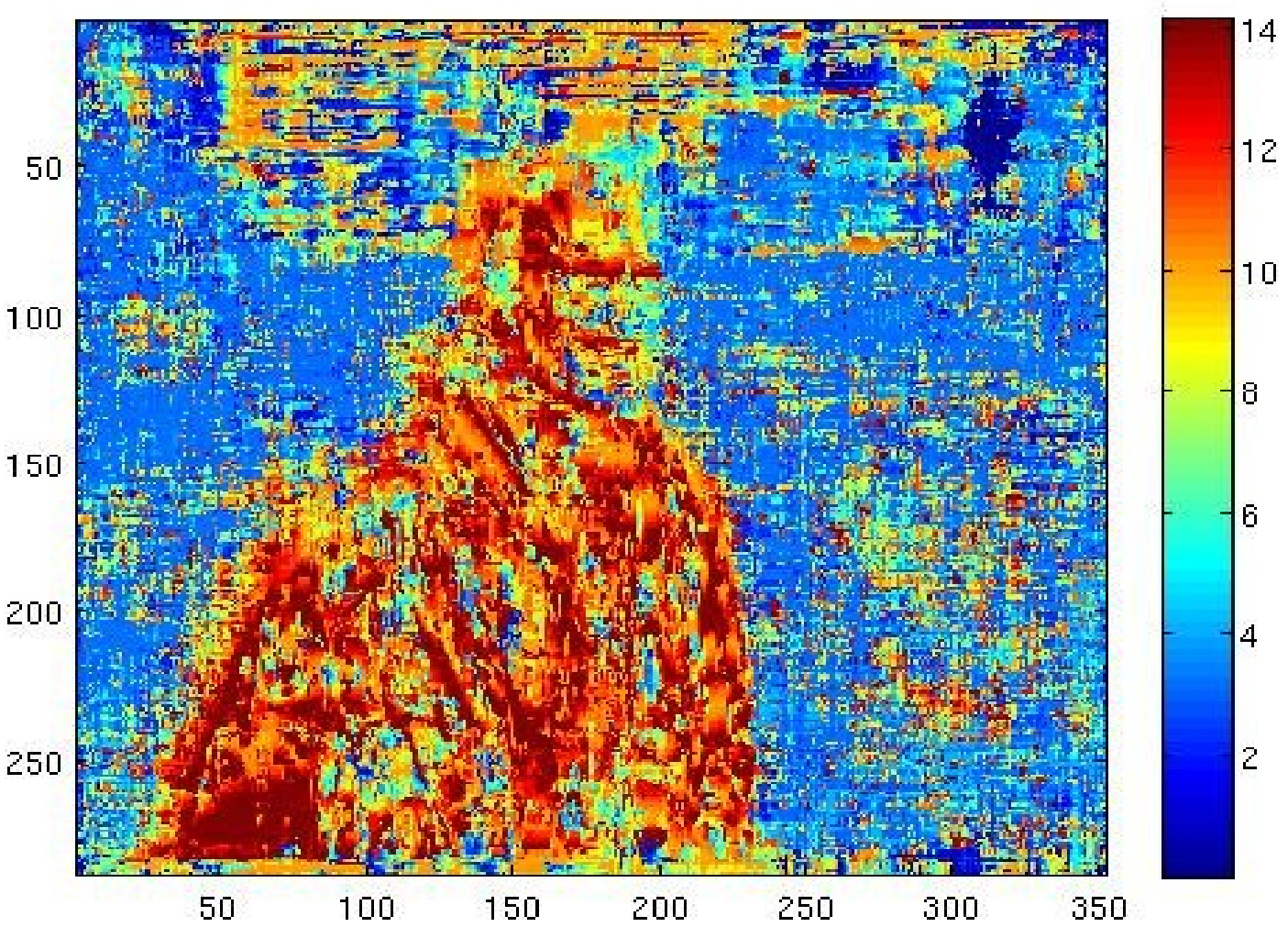
X-Component



Y-Component



Magnitude

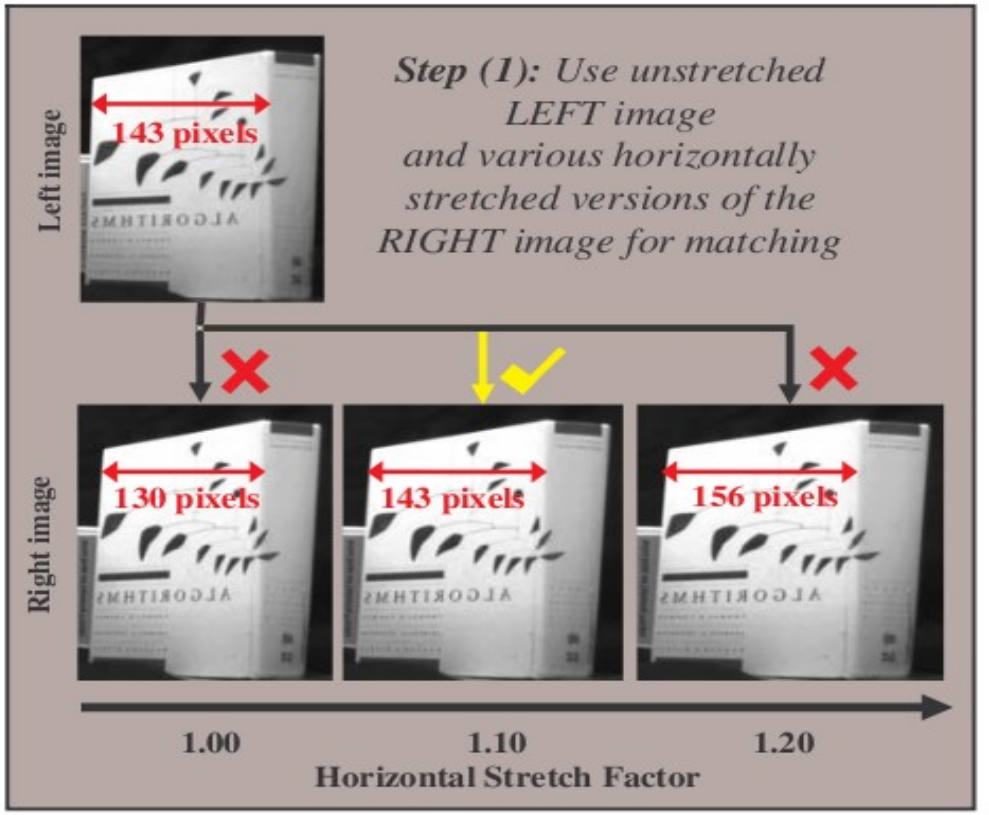


Considerations

- Compute Optic Flow between how many slides?
- How best to normalize between 0 and 255?
- Different algorithms
  - Have tried Horn-Schunck, Lukas Kanade (w/ and w/o pryamids) and Brox

The Algorithm

- Gabor filters for local pixel information
  - Phase difference close to zero indicates a possible match
- Incorporate neighborhood information through connected components approach
- Also sample different 'slants'



A roadmap to the integration of early visual modules, A. S. Ogale and Y. Aloimonos, International Journal of Computer Vision: vol. 72, no. 1, 9-25, Apr 2007.

Today/This Weekend/Next Week

- Run optical flow code on all the keyframes
- Compute SIFT features
- Explore best way to incorporate new features into our system
  - Investigate ideas presented in "Let the Kernel Figure it Out: Principled Learning of Pre-processing for Kernel Classifiers"