

Lecture 08 — SIFT
Computer Science 4968 and 6270
September 28, 2009

Based on the summary questions and issues you sent me about Lowe's SIFT paper, here is an ordered outline of the issues we will discuss in class:

Detection

- Overall summary
- Stability? Repeatability?
- Octaves in scale space; associated values of σ
- Laplacian vs. DoG; utility of the DoG approximation
- Sampling in spatial and frequency domains
- Computation of the subpixel peak strength
- Eliminating edge responses
- Does upsampling introduce errors?
- Relating scale-space peak locations back to image locations

Description

- Overall summary
- Orientation computation
- How is stability achieved? Changes in lighting?
- What is affine invariance, and why do affine transformations seem to have so little effect?

Matching

- Need an overview of a k-d tree
- Not enough details on the BBF algorithm

Utility

- Efficiency?
- Hough transformation
- Clusters of at least three matches