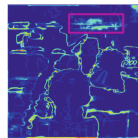
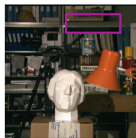
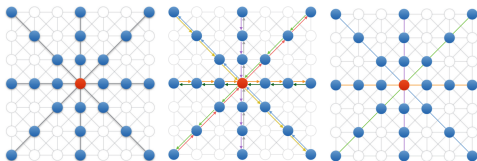


Semi-Global Matching: A Principled Derivation in Terms of Message Passing

A. Drory, C. Haubold, S. Avidan, and F. A. Hamprecht (GCPR 2014)



- ▶ First principled explanation of SGM
 - ▶ trivial to implement, extremely fast, and high ranking on benchmarks
 - ▶ still a successful heuristic with no theoretical characterization
- ▶ Its exact relation to belief propagation and tree-reweighted message passing
 - ▶ SGM's 8 direction scan-lines is an approximation to the optimal labelling of the entire graph.
 - ▶ SGM amounts to the first iteration of TRW-T on a MRF with pairwise energies that have been scaled by a constant and known factor.
- ▶ Outcome: an uncertainty measure for the MAP labeling of an MRF
- ▶ Qualitative results on Middlebury Benchmark