UAI 2010 Approximate Inference Challenge: the libDAI solver
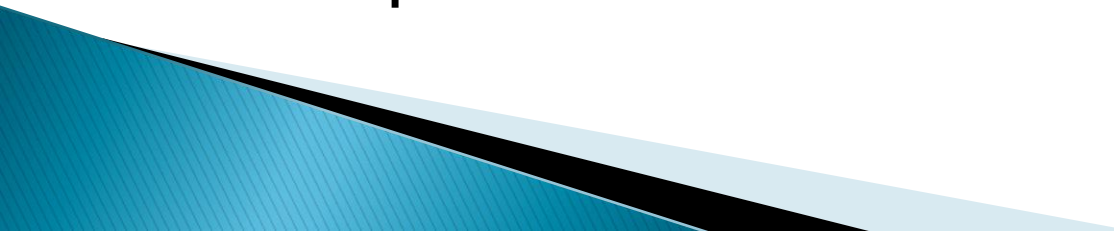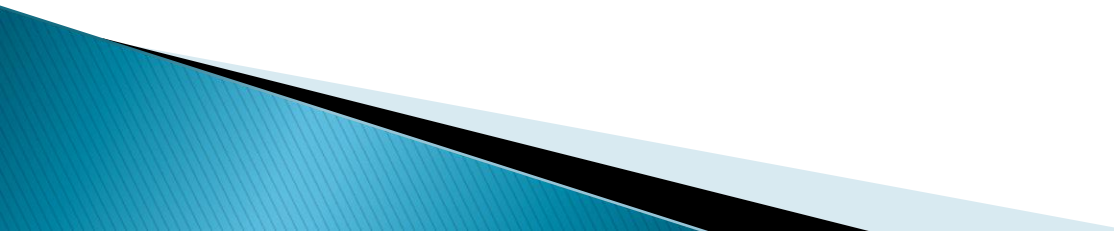
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Algorithms used

- Loopy Belief Propagation (sum-product for PR and MAR task, max-product for MPE task) for fast approximate results
- Junction Tree for exact inference
- HAK algorithm (double-loop Generalized Belief Propagation) for PR task and for grids (except MPE)
- Gibbs sampler for MAR task
- Decimation algorithm in combination with max-product for MPE task

Decimation algorithm

▶ Iterate the following loop:

1. Perform max–product algorithm
2. Clamp factor with lowest entropy to its maximum–probability state

▶ This is repeated with different damping levels for the max–product algorithm and the best solution is kept

libDAI

- All algorithms (except the decimation algorithm) are already publicly available in libDAI, an open source library for approximate inference in discrete graphical models
- The decimation algorithm will be made available, together with the full source code of the solver, in early August as part of the next libDAI release (0.2.6)
- http://www.libdai.org