

Solutions to Point Set Matching using Optimal Inference in Bayesian Networks

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Abstract

In this presentation we consider how to solve point set and feature matching by optimal inference methods developed within Bayesian Networks. In particular, we show how when we formulate the matching problem in terms of allocating vertex labels to sets of cliques in the underlying Markov Random Field for the reference graph, then by computing the associated Junction Tree for such cliques, we can use the Junction Tree Algorithm to derive optimal assignments. We show how this model accommodates various types of invariant point set matchings including affine and projective invariants. Applications to a number of problems in Computer Vision and Photogrammetry are discussed.