Sparse and Locally Constant Gaussian Graphical Models

M3

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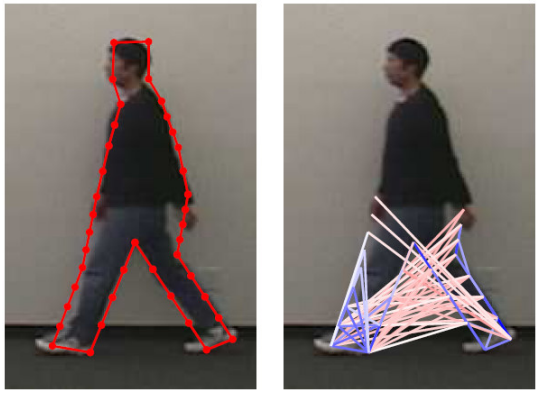
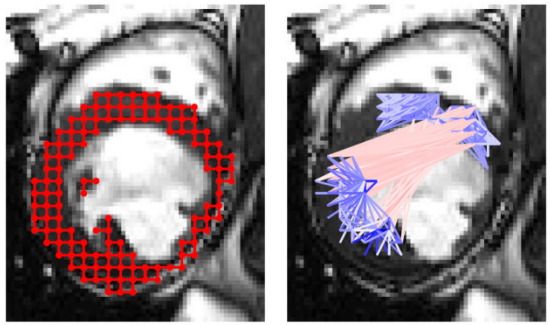
Motivation: learning GGMs on spatial datasets, e.g.: silhouettes, motion trajectories, 2D and 3D images, with spatial coherence of the dependence/independence relationships (local constancy)



walking sequence



cardiac MRI

brain fMRI

Results: an ℓ_1-norm penalty for local constancy in a strictly convex maximum likelihood estimation, and an efficient algorithm that decomposes the original optimization problem into a sequence of non-smooth piecewise quadratic problems with closed form solutions