Learning Natural Elastic Nets for Deformable Griding on Microarray Images

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This work approaches deformable griding on microarray images based on adaptive knots of natural elastic nets. Under assumption that locations of pixels within distributed spots on a microarray image are sampled from Gaussian mixtures, spot irregularity is extended to recruit factors of local perturbations and global photography rotations. Following the maximal fitting and minimal wiring principle, this talk presents a mathematical framework for automatic spot identification and applies the annealed expectation maximization(AEM) method to seek global minima of the objective function. Numerical simulations show the AEM method is reliable and effective for faithful spot identification and significantly improves the traditional EM and SOM methods for optimal deformable griding.

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