Advances in metric learning and dimensionality reduction

Electronic data sets which are available today increase rapidly with respect to size and dimensionality such that automated tools are necessary to help humans access the hidden information. Data visualization or, more specifically, the projection of high dimensional data sets onto the computer screen for visual inspection offers an intuitive interface to this information. In the last years, a large variety of (nonlinear) dimensionality reduction techniques has been introduced which offer great promises for intuitive data inspection. Within the talk, we will give an overview about these technologies and discuss recent applications, with a particular focus on three aspects:

(1) Application: nonlinear dimensionality reduction in single cell sequencing

(2) Discriminative dimensionality reduction and classifier visualization

(3) Metric learning and dimensionality reduction