

Projection Pursuit for Gene Expression Visualization

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Exploring and visualizing high dimensional data

Why

Many powerful automatic techniques for analyzing such data.

Visualization is an essential part of the analysis.

Many techniques for reducing the dimensionality of data for visualization purposes:

With some limitations

Dealing with the “curse of dimensionality” in bioinformatics.

Novel techniques to explore two-dimensional views of high dimensional gene expression data sets.

Classification algorithms more efficient.

Exploring and visualizing high dimensional data

Why and How....

Why

Visualization plays an important role in:
the discovery of structures, features, patterns,
the generation of hypotheses, diagnoses, and decision making,
enabling human exploration and communication of the data,

Linear projections for visualization:
change that can be applied to any point in gene-space

Classification algorithm step will be optimized:
resulting two-dimensional view of the data rather than the original high-dimensional data

How

Novel techniques of visualization:
Target Projection Pursuit
Projection Pursuit

Novel techniques of optimization:
Swarm Intelligence

The problem is then how to 'steer' your way through higher dimensional space to find useful views.
This is the problem that TPP and EPP solves...

