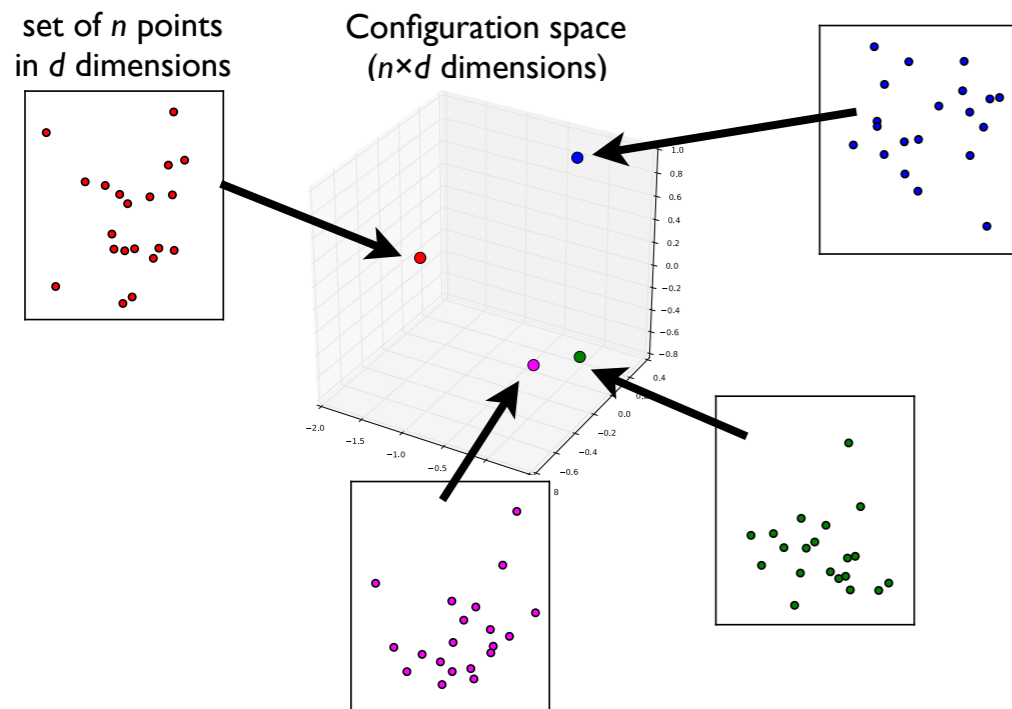


A State-Space Model on Interactive Dimensionality Reduction

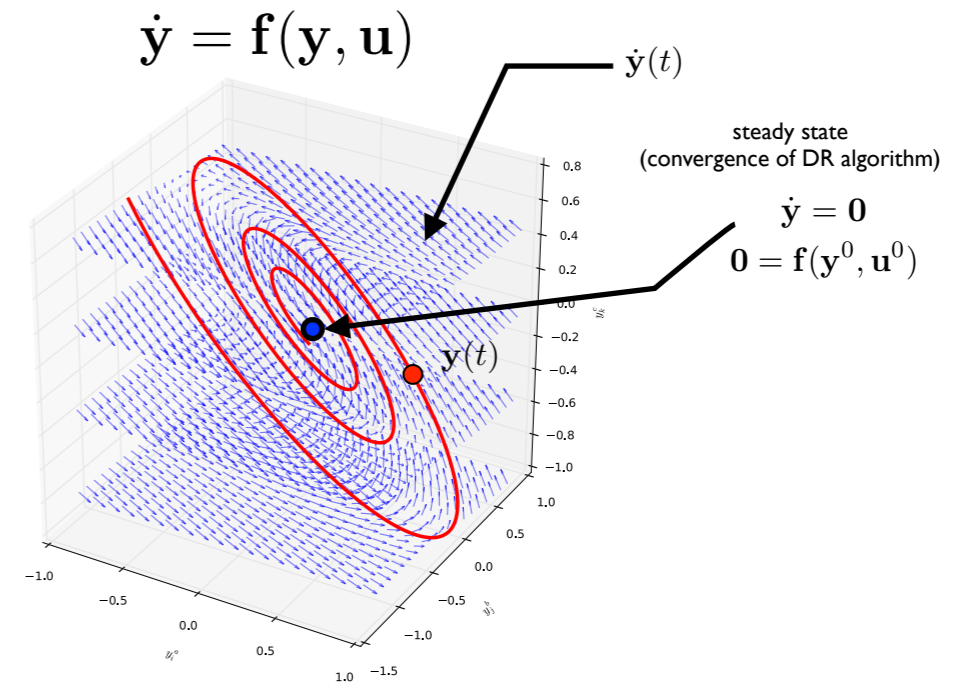
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Idea: consider the *configuration space* of pointsets



Pose DR in terms of state-space dynamics in the configuration space



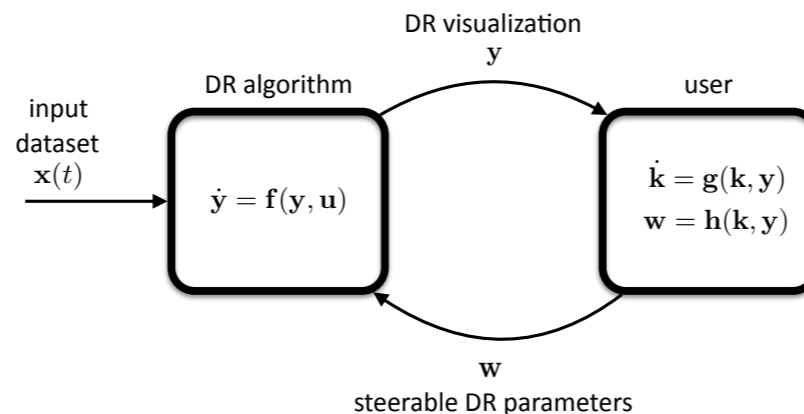
Theoretical framework

Description of DR dynamics

Three examples of iDR

- DR tracking of time-varying input data
- introducing class knowledge
- interactive steering of DR parameters

Conceptual model for user interaction in iDR



Further work

Eigenmode analysis of DR dynamics

Local (linear) model around $\{y_o, w_o, x_o\}$:

$$\dot{y} = \mathbf{A}y + \mathbf{B}u$$

local stability and dynamics \rightarrow eigenmode analysis of

$$\mathbf{A} = \left. \frac{\partial f(\mathbf{y}, \mathbf{u})}{\partial \mathbf{y}} \right|_o$$