Visualizing Data using t-SNE
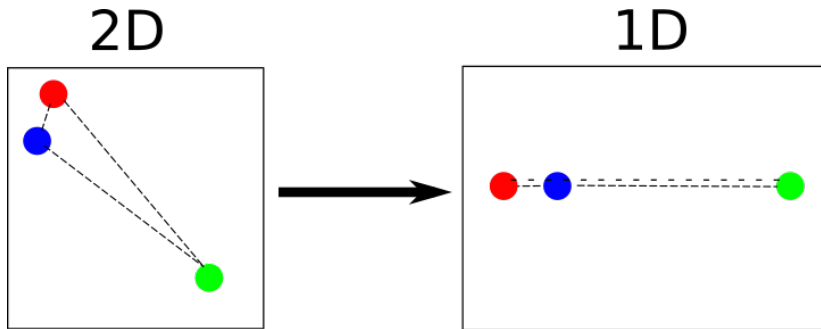
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Data Visualization and Manifold Learning
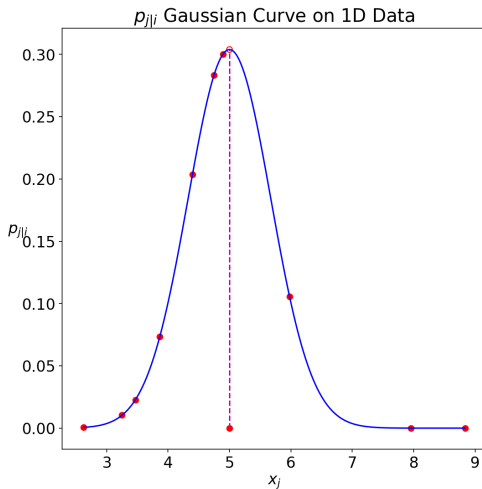
Stochastic Neighbor Embedding (SNE)

Spring Metaphor

Stochastic Neighbor Embedding (SNE)

What is $p_{j|i}$?

$p_{j|i}$ Gaussian Curve on 1D Data

Stochastic Neighbor Embedding (SNE)

Gradient Descent Optimization

Stochastic Neighbor Embedding (SNE)

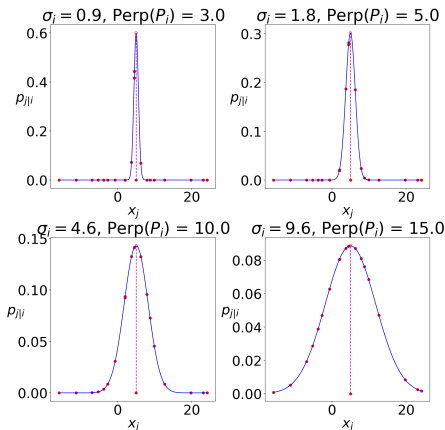| Perplexity	Smooth approximation of number of neighbors
	$Perp(P_i) = 2^{H(P_i)}$
Shannon Entropy	Information present in probability space
	$H(P_i) = -\sum_j p_{j|i} \log_2 p_{j|i}$

Problems with SNE

- Computational inefficiency
- Overcrowding