Model: data $\{x_i\}_{i=1}^n$ is sampled from a manifold $\mathcal{M}$ of dimension k, embedded in $\mathbb{R}^D$, with $k \ll D$. We receive $\tilde{X}_n := \{x_i + \eta_i\}_{i=1}^n$, where $\eta_i \sim_{\text{i.i.d}} N$ is D-dimensional noise (e.g. Gaussian). *Objective: estimate k and appropriate local scale.*