

Model: data  $\{x_i\}_{i=1}^n$  is sampled from a union low-dimensional planes. We observe  $\tilde{X}_n := \{x_i + \eta_i\}_{i=1}^n$ , where  $\eta_i \sim_{\text{i.i.d}} N$  is  $D$ -dimensional noise.

*Objective: estimate the planes, their dimension, and classify points.*