

KNN Find k examples $\{\mathbf{x}^{(i)}, t^{(i)}\}$ closest to the test instance \mathbf{x} and then output majority $\arg \max_z \sum_{r=1}^k \delta(t^{(z)}, t^{(r)})$. Define $\delta(a, b) = 1$ if $a = b$, 0 otw. **Choice of k :** Rule is $k < \sqrt{n}$, small k may overfit, while large may underfit. **Curse of Dim:** In high dimensions, “most” points are approximately the same distance. **Computation Cost:** 0 (minimal) at trianing/ no learning involved. Query time find N distances in D dimension $\mathcal{O}(ND)$ and $\mathcal{O}(N \log N)$ sorting time.