Chapter 2 Probability Distributions

2.5 Nonparametric Methods

- Limitations of parametric model: (pp. 120) For instance, the process that generates the data is multimodal, then this aspect of the distribution can never be captured by a Gaussian, which is necessarily unimodal.

2.5.1 Kernel density estimators

- two contradictory assumptions of (2.246, $p(\mathbf{x} = \frac{K}{NV})$), namely that the region $\mathcal{R}$ be sufficiently small that the density is approximately constant over the region and yet sufficiently large in relation to the value of that density that the number K of points falling inside the region is sufficent for the binomial distribution to be sharply peaked.
- (2.246) fix K and determine V from the data gives rise to K- nearest-neighbour, fix V determine K from the data gives rise to the kernel methods.

2.5.2 Nearest-neighbour methods

- (pp. 125) derivation of KNN classifier using Bayes rule and KNN density estimator.