- Let n be the number of samples used, $\mathcal{R}_n$ be the region used with n samples, V_n be the volume of $\mathcal{R}_n$, k_n be the number of samples falling in $\mathcal{R}_n$, and $p_n(\mathbf{x}) = \frac{k_n/n}{V_n}$ be the estimate for $p(\mathbf{x})$.
- If $p_n(\mathbf{x})$ is to converge to $p(\mathbf{x})$, three conditions are required:

$$\lim_{n\to\infty} V_n = 0$$

$$\lim_{n\to\infty} k_n = \infty$$

$$\lim_{n\to\infty} \frac{k_n}{n} = 0.$$