Cross-Entropy

1   Why

2   Cross-entropy

Consider two distributions on the same finite set. The **cross-entropy** of the first distribution **relative** to the second distribution is the expectation of the negative logarithm of the first distribution under the second distribution.

2.1   Notation

Let R denote the set of real numbers. Let A be a finite set. Let $p : A \to R$ and $q : A \to R$ be distributions. The cross-entropy of p relative to q is

$$-\sum_{a \in A} q(a) \log(p(a)).$$