$$\diamondplus$$

Cross Entropy

1 Why

2 Definition

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

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

We denote the cross entropy of p relative to q by $H(q, p)$.