



## Differential Cross Entropy

### 1 Why

### 2 Definition

The *differential cross entropy* of a second density with respect to a first density is the integral of the second density against the negative log of the first density. Let  $R$  denote the set of real numbers. Let  $f : R^n \rightarrow R$  and  $g : R^n \rightarrow R$  be probability density functions. The differential cross entropy of  $f$  relative to  $g$

$$-\int g \log f$$

We denote the differential cross entropy of  $f$  relative to  $g$  by  $h(g, f)$ .