



# Differential Mutual Information

## 1 Why

## 2 Definition

### 2.1 Notation

The differential mutual information between  $i$  and  $j$ th components of a multivariate density is the differential relative entropy of the  $i, j$ th marginal density with the product of the  $i$ th and  $j$ th marginal densities.

### 2.2 Notation

Let  $f : \mathbf{R}^d \rightarrow \mathbf{R}$ . Let  $d$  denote the differential relative entropy. The mutual information between  $i$  and  $j$  for  $i, j = 1, \dots, d$  and  $i \neq j$  is

$$d(f_{ij}, f_i f_j)$$