### Why

### Definition

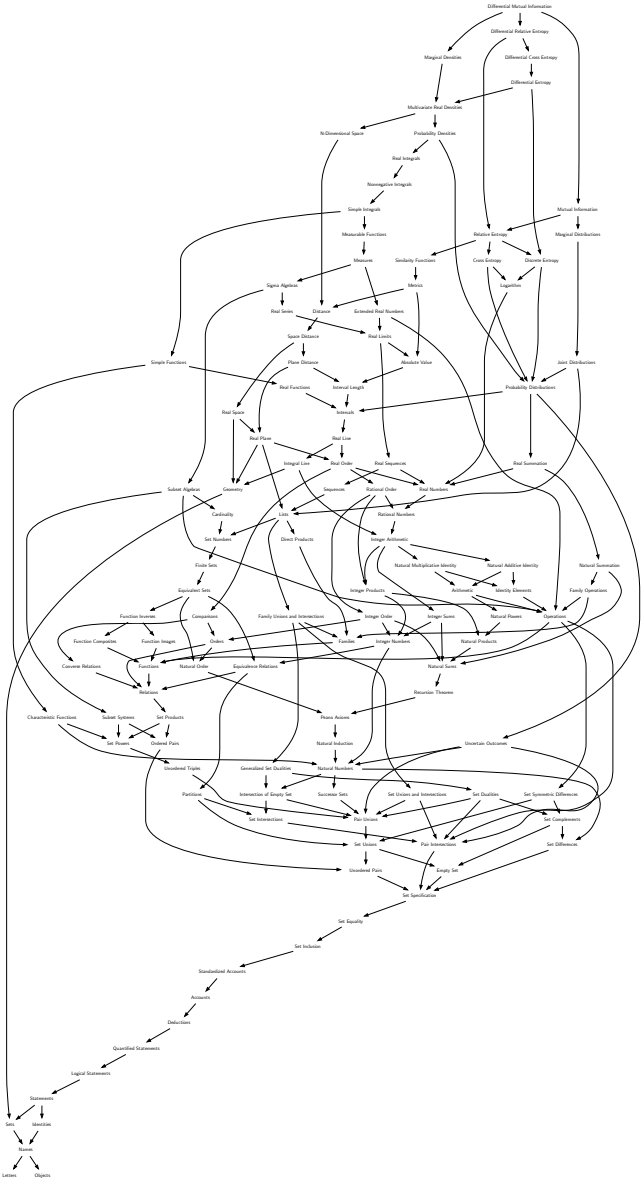
#### Notation

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.

#### Notation

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

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


Differential Mutual Information
Differential Relative Entropy
Marginal Densities
Differential Cross Entropy
Differential Entropy
Multivariate Real Densities
N-Dimensional Space
Probability Densities
Real Integrals
Nonnegative Integrals
Simple Integrals
Mutual Information
Measurable Functions
Relative Entropy
Marginal Distributions
Measures
Similarity Functions
Cross Entropy
Binomial Entropy
Sigma Algebras
Metrics
Logarithms
Real Series
Distance
Extended Real Numbers
Space Distance
Real Limits
Simple Functions
Plane Distance
Absolute Value
Joint Distributions
Real Functions
Interval Length
Probability Distributions
Real Space
Intervals
Real Plane
Real Line
Integral Line
Real Order
Real Sequences
Real Summation
Subset Algebras
Geometry
Sequences
Rational Order
Real Numbers
Cardinality
Lists
Rational Numbers
Set Numbers
Direct Products
Integer Arithmetic
Finite Sets
Natural Multiplicative Identity
Natural Additive Identity
Natural Summation
Equivalent Sets
Integer Products
Arithmetic
Identity Elements
Family Operations
Function Inverses
Comparisons
Family Unions and Intersections
Integer Order
Integer Sums
Natural Powers
Operations
Function Composition
Function Images
Orders
Finsets
Integer Numbers
Natural Products
Converse Relations
Functions
Natural Order
Equivalence Relations
Natural Sums
Relations
Recursion Theorem
Characteristic Functions
Subset Systems
Set Products
Peano Axioms
Set Powers
Ordered Pairs
Natural Induction
Uncertain Outcomes
Unordered Triples
Natural Numbers
Generalized Set Dualities
Partitions
Intersection of Empty Set
Successor Sets
Set Unions and Intersections
Set Dualities
Set Symmetric Differences
Set Intersections
Pair Unions
Set Complements
Set Unions
Pair Intersections
Set Differences
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects