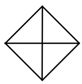
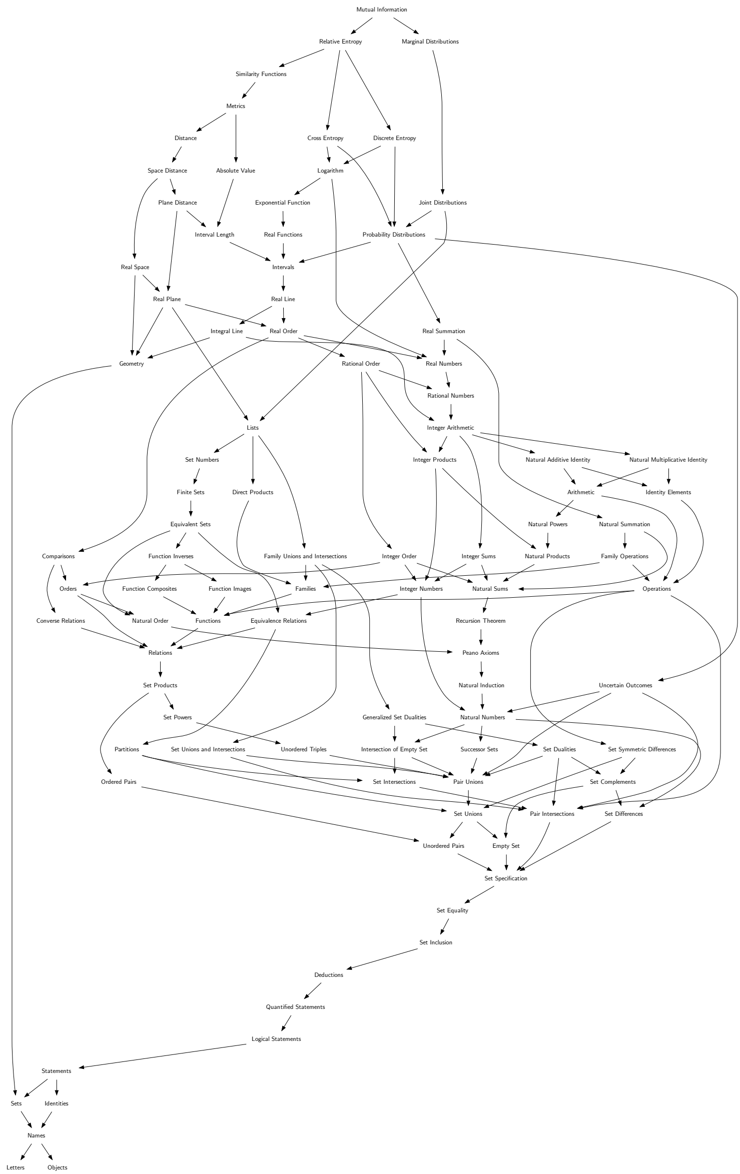


Definition

The mutual information of a joint distribution over two random variables is the entropy of the product of the marginal distributions relative to the joint distribution.

Notation

Let A and B be two non-empty sets. Let $p_{12} : A \times B \to \mathbf{R}$ be a distribution with marginal distributions $p_1 : A \to \mathbf{R}$ and $p_2 : B \to \mathbf{R}$. The mutual information of p is $d(p, p_1 p_2)$ where d denotes the relative entropy.


Mutual Information
Relative Entropy
Marginal Distributions
Similarity Functions
Metrics
Distance
Cross Entropy
Discrete Entropy
Space Distance
Absolute Value
Logarithm
Plane Distance
Exponential Function
Joint Distributions
Interval Length
Real Functions
Probability Distributions
Real Space
Intervals
Real Plane
Real Line
Integral Line
Real Order
Real Summation
Geometry
Rational Order
Real Numbers
Rational Numbers
Lists
Integer Arithmetic
Set Numbers
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Finite Sets
Direct Products
Arithmetic
Identity Elements
Equivalent Sets
Natural Powers
Natural Summation
Comparisons
Function Inverses
Family Unions and Intersections
Integer Order
Integer Sums
Natural Products
Family Operations
Orders
Function Composites
Function Images
Families
Integer Numbers
Natural Sums
Operations
Converse Relations
Natural Order
Functions
Equivalence Relations
Recursion Theorem
Relations
Peano Axioms
Set Products
Natural Induction
Uncertain Outcomes
Set Powers
Generalized Set Dualities
Natural Numbers
Partitions
Set Unions and Intersections
Unordered Triples
Intersection of Empty Set
Successor Sets
Set Dualities
Set Symmetric Differences
Ordered Pairs
Set Intersections
Pair Unions
Set Complements
Set Unions
Pair Intersections
Set Differences
Unordered Pairs
Empty Set
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects