Why

[1]

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.

[1] Future editions will include.


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