Why

We want a notion of entropy for continuous random variables.

Definition

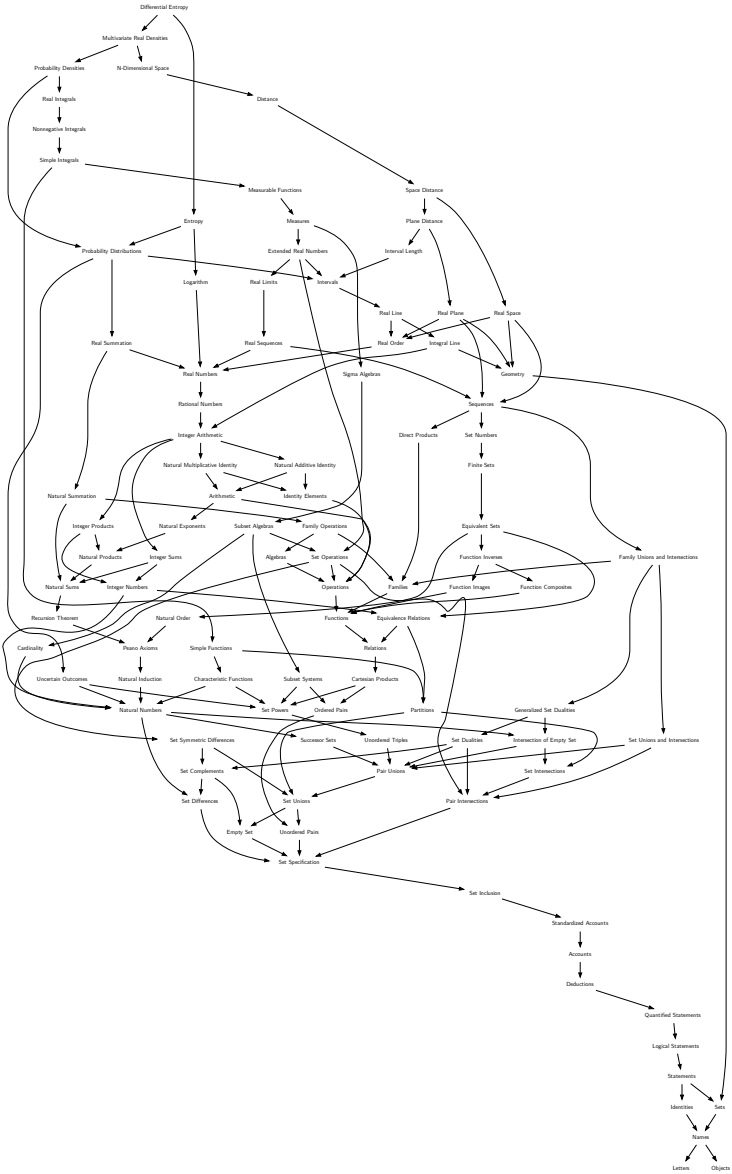
The *relative entropy* of a probability density function is the integral of the density against the negative log of the density.

Notation

Let $f : \mathbf{R}^n \to \mathbf{R}$ be a probability density function. The differential entropy of f is

$$-\int f \log f$$

We denote the differential entropy of f by $h(f)$.


Differential Entropy
Multivariate Real Densities
Probability Densities
N-Dimensional Space
Real Integrals
Distance
Nonnegative Integrals
Simple Integrals
Measurable Functions
Space Distance
Entropy
Measures
Plane Distance
Probability Distributions
Extended Real Numbers
Interval Length
Logarithm
Real Limits
Intervals
Real Line
Real Plane
Real Space
Real Summation
Real Sequences
Real Order
Integral Line
Real Numbers
Sigma Algebras
Geometry
Rational Numbers
Sequences
Integer Arithmetic
Direct Products
Set Numbers
Natural Multiplicative Identity
Natural Additive Identity
Finite Sets
Arithmetic
Identity Elements
Natural Summation
Integer Products
Natural Exponents
Subset Algebras
Family Operations
Equivalent Sets
Family Unions and Intersections
Natural Products
Integer Sums
Algebras
Set Operations
Function Inverses
Natural Sums
Integer Numbers
Operations
Families
Function Images
Function Composites
Recursion Theorem
Natural Order
Functions
Equivalence Relations
Cardinality
Peano Axioms
Simple Functions
Relations
Uncertain Outcomes
Natural Induction
Characteristic Functions
Subset Systems
Cartesian Products
Natural Numbers
Set Powers
Ordered Pairs
Partitions
Generalized Set Dualities
Set Symmetric Differences
Successor Sets
Unordered Triples
Set Dualities
Intersection of Empty Set
Set Unions and Intersections
Pair Unions
Set Intersections
Set Complements
Set Unions
Pair Intersections
Set Differences
Empty Set
Unordered Pairs
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects