Why

There is a natural probability measure on a measurable space to associate with a dataset from the base set of that space.

Definition

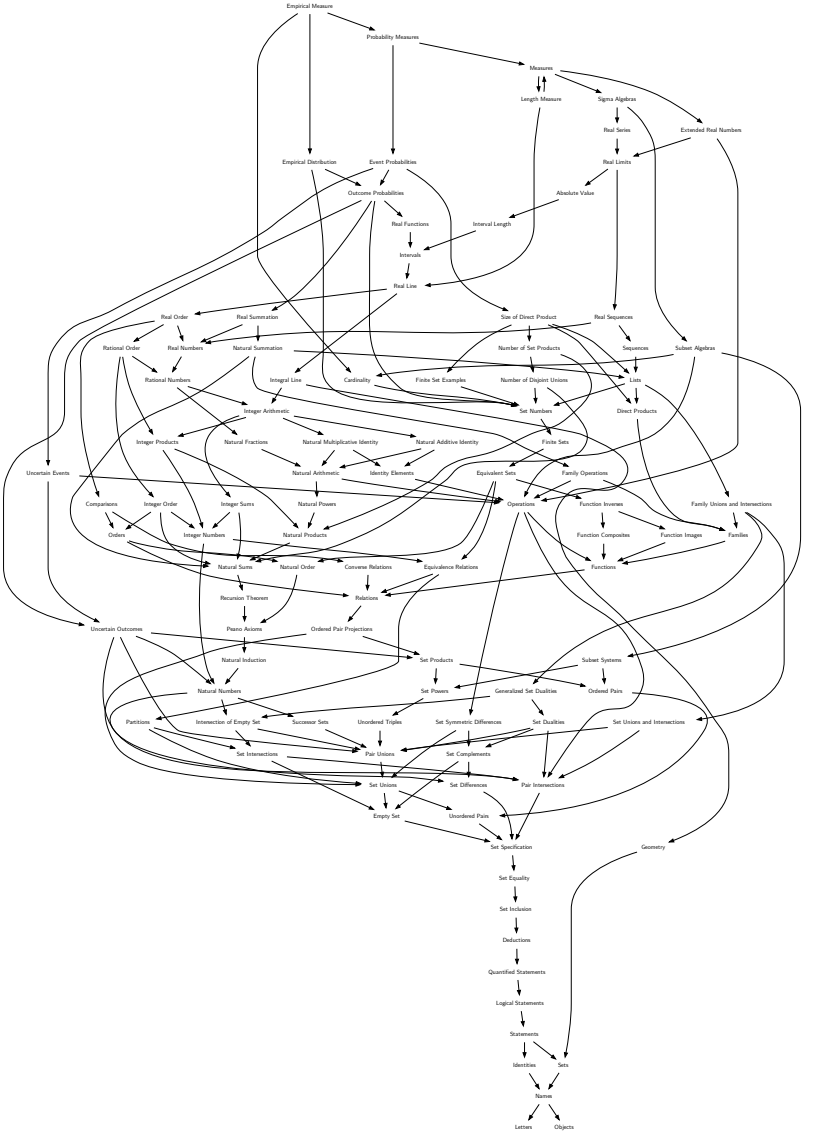
The *empirical measure* for a dataset in some measurable space is the measure which associates to each event the proportion of the records which are elements of that event.

Notation

Let $(a^1, \ldots, a^n)$ be a dataset in a measurable space $(A, \mathcal{A})$. Let $P : \mathcal{P}(A) \to [0, 1]$ be the probability measure that assigns to each set $B \subset A$ the number

$$P(B) = \frac{1}{n} \left| \{k \in \{1, \ldots, n\} \mid a^k \in B\} \right| .$$

Then P is the empirical measure.


Empirical Measure
Probability Measures
Measures
Length Measure
Sigma Algebras
Real Series
Extended Real Numbers
Real Limits
Absolute Value
Empirical Distribution
Event Probabilities
Outcome Probabilities
Real Functions
Interval Length
Intervals
Real Line
Real Order
Real Summation
Size of Direct Product
Real Sequences
Rational Order
Real Numbers
Natural Summation
Number of Set Products
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Finite Set Examples
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Natural Multiplicative Identity
Natural Additive Identity
Finite Sets
Uncertain Events
Natural Arithmetic
Identity Elements
Equivalent Sets
Family Operations
Comparisons
Integer Order
Integer Sums
Natural Powers
Operations
Function Inverses
Family Unions and Intersections
Orders
Integer Numbers
Natural Products
Function Composites
Function Images
Families
Natural Sums
Natural Order
Converse Relations
Equivalence Relations
Functions
Recursion Theorem
Relations
Uncertain Outcomes
Peano Axioms
Ordered Pair Projections
Natural Induction
Set Products
Subset Systems
Natural Numbers
Set Powers
Generalized Set Dualities
Ordered Pairs
Partitions
Intersection of Empty Set
Successor Sets
Unordered Triples
Set Symmetric Differences
Set Dualities
Set Unions and Intersections
Set Intersections
Pair Unions
Set Complements
Set Unions
Set Differences
Pair Intersections
Empty Set
Unordered Pairs
Set Specification
Geometry
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects