Why

[1]

Definition

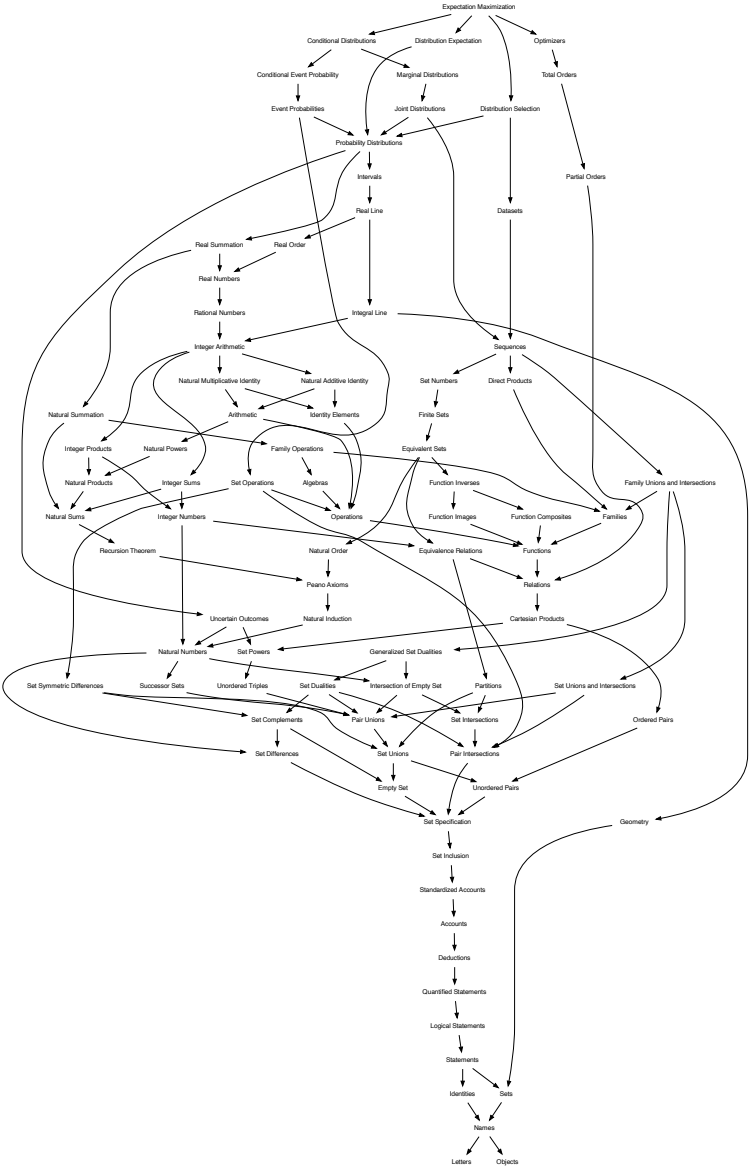
Let Z and X be non-empty finite sets. We want to model a distribution $p^\theta : Z \times X \to \mathbf{R}$. We parameterize a family of distributions by a parameter θ. We have a dataset $(x^1, \ldots, x^n)$. Given a parameter θ^0, we want to solve

$$\begin{aligned} \textbf{find} \quad & \theta \\ \textbf{to maximize} \quad & \sum_{k=1}^{n} \mathbf{E}_{p^{\theta^0}_{z|x}(z,x^k)} \left[\log p^\theta(z,x)\right] \end{aligned}$$

Binary Gaussian Mixture Example

The

[1] Future editions will include.


Expectation Maximization
Conditional Distributions
Distribution Expectation
Optimizers
Conditional Event Probability
Marginal Distributions
Total Orders
Event Probabilities
Joint Distributions
Distribution Selection
Probability Distributions
Intervals
Partial Orders
Real Line
Datasets
Real Summation
Real Order
Real Numbers
Rational Numbers
Integral Line
Integer Arithmetic
Sequences
Natural Multiplicative Identity
Natural Additive Identity
Set Numbers
Direct Products
Natural Summation
Arithmetic
Identity Elements
Finite Sets
Integer Products
Natural Powers
Family Operations
Equivalent Sets
Natural Products
Integer Sums
Set Operations
Algebras
Function Inverses
Family Unions and Intersections
Natural Sums
Integer Numbers
Operations
Function Images
Function Composites
Families
Recursion Theorem
Natural Order
Equivalence Relations
Functions
Peano Axioms
Relations
Uncertain Outcomes
Natural Induction
Cartesian Products
Natural Numbers
Set Powers
Generalized Set Dualities
Set Symmetric Differences
Successor Sets
Unordered Triples
Set Dualities
Intersection of Empty Set
Partitions
Set Unions and Intersections
Set Complements
Pair Unions
Set Intersections
Ordered Pairs
Set Differences
Set Unions
Pair Intersections
Empty Set
Unordered Pairs
Set Specification
Geometry
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects