Why

We want to summarize a dataset by a probability distribution.

Overview

We have a set of outcomes A. We have a dataset $(a^1, \ldots, a^n)$ in A. We want to define a correspondence between the dataset and probability distributions over the set of outcomes A.

We call correspondences *principles of distribution selection.*

Notice that we do not want a distribution on the record sequences. In other words, we want a distribution on A not a distribution on A^n.

Distribution Selectors

Probability Distributions • Datasets

Intervals

Real Line

Real Order • Real Summation

Rational Order • Real Numbers

Integral Line • Rational Numbers

Integer Arithmetic • Natural Summation • Lists

Integer Products • Natural Multiplicative Identity • Natural Additive Identity • Family Operations • Set Numbers • Direct Products

Arithmetic • Identity Elements • Algebras • Finite Sets

Natural Powers • Operations • Equivalent Sets • Family Unions and Intersections

Integer Sums • Natural Products • Integer Order • Comparisons • Function Inverses • Families

Integer Numbers • Natural Sums • Orders • Function Composites • Function Images

Recursion Theorem • Natural Order • Equivalence Relations • Converse Relations • Functions

Peano Axioms • Relations

Uncertain Outcomes • Natural Induction • Set Products

Natural Numbers • Set Powers • Generalized Set Dualities

Successor Sets • Unordered Triples • Intersection of Empty Set • Partitions • Set Dualities • Set Unions and Intersections

Pair Unions • Set Intersections • Ordered Pairs • Set Complements

Set Differences • Set Unions • Pair Intersections

Unordered Pairs • Empty Set

Geometry • Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets • Identities

Names

Letters • Objects