Why

[1]

1   Definition

An *unsupervised data model* is a function $\ell : \mathbf{R}^d \to \mathbf{R}$ where $\ell(x)$ is the *suprise* of the vector x.[2]

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[1]Future editions will include.

[2]Future editions will expand.

Surprise Datamodels

Maximum Likelihood Density Selection

Density Selection — Multivariate Real Densities

Probability Densities — N-Dimensional Space

Real Integrals — Distance

Nonnegative Integrals

Simple Integrals

Measurable Functions

Measures

Sigma Algebras — Extended Real Numbers

Real Limits — Space Distance — Maximum Likelihood

Simple Functions — Absolute Value — Plane Distance — Distribution Selection

Real Functions — Interval Length — Probability Distributions

Intervals — Datasets

Real Line — Real Space — Real Plane

Integral Line — Real Sequences — Real Order — Real Summation

Real Numbers — Geometry — Sequences

Rational Numbers — Direct Products — Set Numbers

Integer Arithmetic — Finite Sets — Optimizers

Natural Multiplicative Identity — Natural Additive Identity — Total Orders

Identity Elements — Arithmetic — Natural Summation

Natural Powers — Image Products — Family Operations — Equivalent Sets — Orders

Subset Algebras — Integer Sums — Natural Products — Algebras — Family Unions and Intersections — Function Inverses — Natural Order

Set Operations — Operations — Integer Numbers — Natural Sums — Families — Function Composites — Function Images

Recursion Theorem — Equivalence Relations — Functions

Cardinality — Peano Axioms — Relations

Characteristic Functions — Natural Induction — Uncertain Outcomes — Subset Systems — Set Products

Set Symmetric Differences — Natural Numbers — Set Power — Ordered Pairs — Generalized Set Dualities — Partitions

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

Set Complements — Pair Unions — Set Intersections

Set Differences — Set Unions — Pair Intersections

Empty Set — Unordered Pairs

Set Specification

Set Inclusion — Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities — Sets

Names

Letters — Objects

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