Why

1

1   Definition

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

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[1]Future editions will include.

Surprise Datamodels

Density Maximum Likelihood

Density Selection — Multivariate Real Densities

Probability Densities — N-Dimensional Space

Real Integrals — Distance

Nonnegative Integrals

Simple Integrals

Measurable Functions

Measures

Extended Real Numbers — Real Limits — Space Distance

Maximum Likelihood — Absolute Value — Plane Distance

Optimizers — Distribution Selection — Simple Functions — Interval Length

Total Orders — Probability Distributions — Real Functions — Intervals

Datasets — Real Line — Real Space — Real Plane

Real Summation — Real Sequences — Real Order — Integral Line

Sigma Algebras — Real Numbers — Sequences — Geometry

Partial Orders — Rational Numbers — Set Numbers

Integer Arithmetic — Finite Sets

Natural Additive Identity — Natural Multiplicative Identity — Direct Products

Subset Algebras — Natural Summation — Identity Elements — Arithmetic — Equivalent Sets

Set Operations — Family Operations — Natural Powers — Integer Products — Function Inverses — Family Unions and Intersections

Algebras — Natural Products — Integer Sums

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

Recursion Theorem — Functions — Equivalence Relations — Natural Order

Cardinality — Relations — Peano Axioms

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

Ordered Pairs — Set Powers — Natural Numbers — Generalized Set Dualities

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

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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