Why

We provide a principle for density selection based on maximizing the probability of the dataset.

Definition

Let $(x^1, \ldots, x^n)$ be a dataset in $\mathbf{R}^d$.

The *principle of maximum likelihood* says to solve:

$$
\begin{aligned}
\textbf{find} \quad & f \text{ a density} \\
\textbf{to maximize} \quad & \prod_{k=1}^{n} f(x^k)
\end{aligned}
$$

We call a solution of the above problem a *maximum likelihood density*. We call the objective of the above problem *density likelihood*.

Density Maximum Likelihood

Multivariate Real Densities

Density Selection

N-Dimensional Space

Probability Densities

Space

Real Integrals

Nonnegative Integrals

Simple Integrals

Measurable Functions

Simple Functions

Measures

Maximum Likelihood

Partitions

Characteristic Functions

Extended Real Numbers

Distribution Selection

Optimizers

Real Functions

Real Limits

Probability Distributions

Datasets

Total Orders

Intervals

Real Summation

Real Sequences

Probability Outcomes

Real Numbers

Subset Algebras

Natural Summation

Sequences

Probability

Common Sense

Cardinality

Rational Numbers

Set Operations

Family Operations

Direct Products

Integer Numbers

Natural Sums

Algebras

Natural Families

Natural Order

Injective Functions

Zero

Subset Systems

Operations

Families

Function Composites

Partial Orders

Equation Solutions

Set Symmetric Differences

Power Set

Natural Numbers

Functions

Set Unions

Set Intersections

Relations

Set Complements

Ordered Pairs

Equations

Empty Set

Unordered Pairs

Set Specification

Set Inclusion

Set Equality

Sentences

Identity

Sets

Objects