Why

We might expect similar precepts to lead to similar postcepts.

Definition

Consider a set of inputs X with a metric $d : X \times X \to \mathbf{R}$ Let $D = (x^1, y^1), \ldots, (x^n, y^n)$ a dataset in $X \times Y$ The *nearest-neighbor predictor* is the predictor $f : X \to Y$ which assigns to $x \in X$ the value ...

Notation

Let $D = ((a^1, b^1), \ldots, (a^n, b^n))$ be a dataset in $A \times B$, where A and B are non-empty sets. Let f be the nearest neighbor inductor. Then $\iota(D)(x)$ is Let n be a natural number. Let Ξ be a length n paired record sequence in $\mathcal{U} \times \mathcal{V}$; so

$$\Xi = ((u^1, v^1), \ldots, (u^n, v^n))$$

with $u^i \in \mathcal{U}$ and $v^i \in \mathcal{V}$ for $i = 1, \ldots, n$.

The nearest neighbor induction associates Ξ with the function f_Ξ such that

$$f_\Xi(u) = v^j$$

where $j < n$ is the largest integer such that

$$d(u, u^j) = \min_i \{d(u, u^i)\}.$$

Nearest Neighbor Predictors

Metrics

Distance

Space Distance

Predictors

Absolute Value

Plane Distance

Interval Length

Intervals

Real Space

Real Line

Real Plane

Integral Line

Real Order

Geometry

Real Numbers

Rational Order

Lists

Rational Numbers

Set Numbers

Direct Products

Integer Arithmetic

Natural Additive Identity

Natural Multiplicative Identity

Integer Products

Finite Sets

Identity Elements

Arithmetic

Equivalent Sets

Function Inverses

Family Unions and Intersections

Operations

Natural Powers

Integer Sums

Integer Order

Comparisons

Function Composites

Function Images

Families

Natural Products

Integer Numbers

Orders

Equivalence Relations

Converse Relations

Functions

Natural Sums

Natural Order

Recursion Theorem

Relations

Peano Axioms

Ordered Pair Projections

Natural Induction

Set Products

Natural Numbers

Set Powers

Generalized Set Dualities

Set Symmetric Differences

Partitions

Successor Sets

Intersection of Empty Set

Unordered Triples

Set Dualities

Set Unions and Intersections

Set Complements

Set Intersections

Pair Unions

Ordered Pairs

Set Differences

Set Unions

Pair Intersections

Empty Set

Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Sets

Identities

Names

Letters

Objects

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