Why

Often there are several good parameters for a predictor.[1]

Definition

A *regularizer* is a nonegative function. Regularizes are sometimes called *penalties*.

For example, least squares predictor with a l_2 regularization is called *ridge regression*.

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[1]Future editions will include a more complete form of this sheet.

Regularizers

Least Squares Linear Regression

Norms · Linear Prediction

Matrix Transpose · Input Designs · Real Function Approximation · Matrix Inverses

Regression · Consistent Inductors · Loss Functions · Approximation · Vector Space Bases · Matrix-Matrix Products

Induction · Similarity Functions · Span · Linear Transformation · Linearly Dependent Vector · Matrix-Vector Products

Metrics · Functionals · Real Function Space · Subspaces · Transformations · Matrices · Linear Combinations

Absolute Value · Vectors

Datasets · N-Dimensional Space

Real Functions · Distance

Space Distance

Plane Distance

Interval Length

Intervals

Real Line · Real Plane · Real Space

Integral Line · Real Order · Sequences · Real Optimizers

Geometry · Direct Products · Real Numbers · Fields · Optimizers

Rational Numbers · Set Numbers · Groups · Total Orders

Integer Arithmetic · Finite Sets · Integer Additive Inverses · Partial Orders

Natural Additive Identity · Natural Multiplicative Identity · Integer Sums · Inverse Elements

Arithmetic · Identity Elements · Element Functions · Equivalent Sets

Family Unions and Intersections · Natural Exponents · Integer Products · Algebra · Function Inverses

Families · Natural Products · Integer Numbers · Operations · Function Image · Function Composites

Natural Sums · Equivalence Relations · Functions

Recursion Theorem · Natural Order

Peano Axioms · Relations

Natural Induction · Cartesian Products

Generalized Set Dualities · Natural Numbers · Set Powers

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

Set Complement · Pair Unions · Set Intersections · Ordered Pairs

Set Differences · Pair Intersections · Set Unions

Empty Set · Unordered Pairs

Set Specifications

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets · Identities

Names

Letters · Objects