Why

We model a real-valued output as corrupted by small random errors with a normal density. In other words, we make further distributional assumptions on the probabilistic errors linear model for the purposes of hypothesis testing and interval estimation.[1]

Definition

Let (x, A, e) be a probabilistic errors model and assume e has a normal density with mean 0 and covariance $\sigma^2 I$. In this case we call (x, A, e) a *classical linear model with normality assumption.* In this case y is normally distributed with mean Ax and variance $\sigma^2 I$.

[1] Future editions will define and need these sheets.


Normal Errors Linear Model
Probabilistic Errors Linear Model
Feature Maps
Covariance
Least Squares Linear Regressors
Random Variable Moments
Variance
Matrix Inverses
Expectation
Linear Predictors
Matrix-Matrix Products
Real Function Approximators
Input Designs
Loss Functions
Matrix Transpose
Matrix-Vector Products
Real Matrix-Matrix Products
Data Matrix
Vector Space Bases
Consistent Inductors
Predictor Performance Metrics
Regressors
Matrices
Real Matrix-Vector Products
Probabilistic Predictors
Norms
Span
Linear Transformations
Linearly Dependent Vectors
Predictors
Vectors as Matrices
Functionals
Real Function Space
Subspaces
Transformations
Linear Combinations
Real Inner Product
Real Matrices
Datasets
Random Variables
Approximators
Vectors
Real Norm
Real Linear Combinations
Linear Equations
Probability Measures
Measurable Functions
Topological Sigma Algebra
Similarity Functions
Real Vectors
Plane Inner Product
Linear Functions
Measures
Topological Spaces
Plane Norm
Space Vectors
Plane Vector Sums and Differences
N-Dimensional Space
Metrics
Sigma Algebras
Plane Vectors
Distance
Real Series
Extended Real Numbers
Real Functions
Space Distance
Arrays
Real Limits
Absolute Value
Plane Distance
Event Probabilities
Interval Length
Probability Distributions
Outcome Variables
Intervals
Real Space
Real Summation
Real Sequences
Real Line
Real Plane
Sequences
Real Optimizers
Fields
Integral Line
Real Order
Lists
Subset Algebras
Groups
Geometry
Real Numbers
Rational Order
Set Numbers
Cardinality
Set Operations
Optimizers
Integer Additive Inverses
Rational Numbers
Finite Sets
Integer Arithmetic
Inverse Elements
Natural Summation
Direct Products
Integer Sums
Natural Multiplicative Identity
Natural Additive Identity
Integer Products
Integer Order
Comparisons
Element Functions
Family Operations
Equivalent Sets
Arithmetic
Identity Elements
Integer Numbers
Orders
Algebras
Natural Equations
Function Inverses
Family Unions and Intersections
Natural Powers
Operations
Natural Order
Equations
Function Images
Function Composites
Families
Natural Products
Converse Relations
Functions
Equivalence Relations
Natural Sums
Relations
Uncertain Outcomes
Recursion Theorem
Set Products
Subset Systems
Ordered Pairs
Set Powers
Peano Axioms
Natural Induction
Unordered Triples
Natural Numbers
Generalized Set Dualities
Partitions
Intersection of Empty Set
Successor Sets
Set Unions and Intersections
Set Dualities
Set Symmetric Differences
Set Intersections
Pair Unions
Set Complements
Set Differences
Set Unions
Pair Intersections
Unordered Pairs
Empty Set
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects