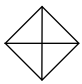


Why

We want to estimate a random vector $x : \Omega \to \mathsf{R}^d$ from a random vector $y : \Omega \to \mathsf{R}^n$.

Definition

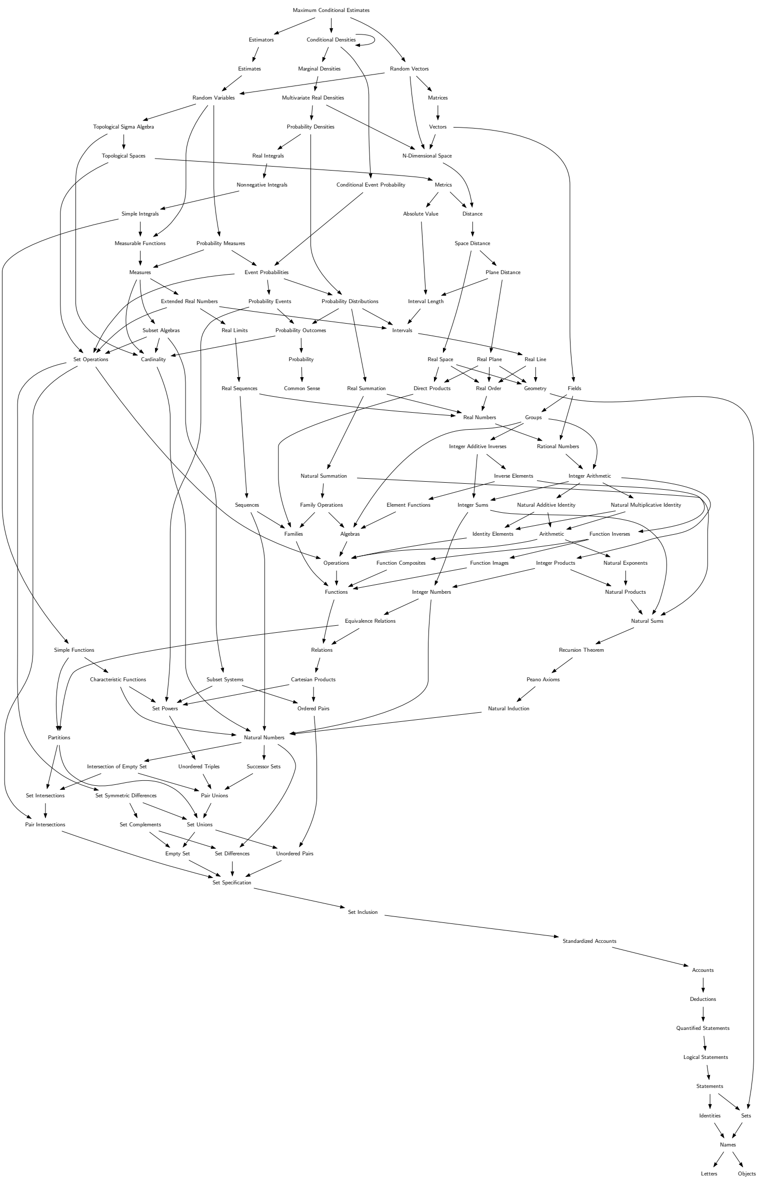
Denote by $g : \mathsf{R}^d \times \mathsf{R}^n \to \mathsf{R}$ the joint density for (x, y).[1] Denote the conditional density for x given y by $g_{x|y} \mathsf{R}^d \times \mathsf{R}^n \to \mathsf{R}$ A *maximum conditional estimate* for $x : \Omega \to \mathsf{R}^n$ given that y has taken the value $\gamma \in \mathsf{R}^n$ is a maximizer $\xi \in \mathsf{R}^d$ of $g_{x|y}(\xi, \gamma)$. It is also called the *maximum a posteriori estimate* or *MAP estimate.*

Also maximizes joint

Notice that since $g(\xi, \gamma) = g_y(\gamma) g_{x|y}(\xi, \gamma)$, the MAP estimate also maximizes the joint pdf.

Proposition 1. *The MAP estimate maximizes the joint pdf.*[2]

[1] Future editions will comment on the existence of such a density.
[2] Future editions will include an account.


Maximum Conditional Estimates
Estimators
Conditional Densities
Estimates
Marginal Densities
Random Vectors
Random Variables
Multivariate Real Densities
Matrices
Topological Sigma Algebra
Probability Densities
Vectors
Topological Spaces
Real Integrals
N-Dimensional Space
Nonnegative Integrals
Conditional Event Probability
Metrics
Simple Integrals
Absolute Value
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Measurable Functions
Probability Measures
Space Distance
Measures
Event Probabilities
Plane Distance
Extended Real Numbers
Probability Events
Probability Distributions
Interval Length
Subset Algebras
Real Limits
Probability Outcomes
Intervals
Set Operations
Cardinality
Probability
Real Space
Real Plane
Real Line
Real Sequences
Common Sense
Real Summation
Direct Products
Real Order
Geometry
Fields
Real Numbers
Groups
Integer Additive Inverses
Rational Numbers
Natural Summation
Inverse Elements
Integer Arithmetic
Sequences
Family Operations
Element Functions
Integer Sums
Natural Additive Identity
Natural Multiplicative Identity
Families
Algebras
Identity Elements
Arithmetic
Function Inverses
Operations
Function Composites
Function Images
Integer Products
Natural Exponents
Functions
Integer Numbers
Natural Products
Equivalence Relations
Natural Sums
Simple Functions
Relations
Recursion Theorem
Characteristic Functions
Subset Systems
Cartesian Products
Peano Axioms
Set Powers
Ordered Pairs
Natural Induction
Partitions
Natural Numbers
Intersection of Empty Set
Unordered Triples
Successor Sets
Set Intersections
Set Symmetric Differences
Pair Unions
Pair Intersections
Set Complements
Set Unions
Empty Set
Set Differences
Unordered Pairs
Set Specification
Set Inclusion
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Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects