

1. Record Nr.	UNISA996466544803316
Autore	Bernardi Enrico <1838-1900, >
Titolo	Counting statistics for dependent random events : with a focus on finance / / Enrico Bernardi and Silvia Romagnoli
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-64250-X
Descrizione fisica	1 online resource (213 pages) : illustrations
Disciplina	519.535
Soggetti	Dependence (Statistics) Copulas (Mathematical statistics) Finance - Mathematical models Dependència (Estadística) Finances Models matemàtics Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- List of Common Symbols, Notations, and Acronyms -- Contents -- Part I The Main Ingredients -- 1 Clustering -- 1.1 Preliminary on Clustering -- 1.2 The Similarity Measure for Static Data -- 1.3 The Similarity Measure for Time Series -- 1.3.1 Model-Free Approaches -- 1.3.2 Model-Based Approaches -- 1.4 Hierarchical Algorithm -- 1.5 Partitioning Algorithm -- 1.5.1 k-Means Clustering -- 1.6 Neural Network Models -- 1.6.1 Clustering Algorithms -- 1.6.2 Kohonen Self-Organizing Maps -- 1.7 Search-Based Approaches -- 1.7.1 Evolutionary Approaches for Clustering -- 1.7.2 Simulated Annealing Approach -- 1.8 A Clustering Exercise on the European Banking System -- References -- 2 Copula Function and C-Volume -- 2.1 Copula Functions -- 2.1.1 Frechet-Hoeffding Bounds of a n-Dimensional Copula and Association Measures -- 2.2 Families of Copulas -- 2.2.1 Elliptical Copulas -- Gaussian Copulas -- Student's t Copula -- 2.2.2 Archimedean Copulas -- 2.2.3 Extreme-Value Copulas -- 2.3 Pure Hierarchical Copulas -- 2.4 Hierarchical Grouping Copulas

-- 2.4.1 Clusterized Homogeneous and Clusterized Hierarchical Copulas -- 2.4.2 Hierarchical Kendall Copulas -- 2.5 Volume of an n-Dimensional Copula -- 2.5.1 Clusterized Hierarchical Copulas: CHY-Volume -- 2.6 Example: Homogeneous CHY-Volume Versus CR Algorithm -- 2.6.1 Scalability of the Homogeneous CHY-Based Algorithm -- References -- 3 Combinatorics and Random Matrices: A Brief Review -- 3.1 Combinatorial Distribution of a Random Event -- 3.1.1 Permutations: Ordered Selection -- 3.1.2 Combinations: Unordered Selection -- 3.1.3 The Hardy-Ramanujan Asymptotic Partition Formula -- 3.1.4 The Combinatorial Problem in CHY-Volume Computation -- 3.1.5 Testing Compatibility with the Groups -- 3.2 Random Matrices -- 3.2.1 Gaussian Ensembles -- 3.2.2 An Illustrative Example of a Two-by-Two Random Matrix.

3.2.3 Singular Values of Rectangular Matrices -- 3.2.4 Marchenko-Pastur Distribution -- 3.2.5 The Distorted Combinatorial Distributions -- References -- Part II Mixing the Ingredients: A Recipe for a New Aggregation Algorithm -- 4 Counting a Random Event: Traditional Approach and New Perspectives -- 4.1 Counting Variables: Fundamentals in Literature -- 4.1.1 Generalized Poisson Distribution -- 4.1.2 Compound Poisson Distribution -- 4.2 Counting Process: Fundamentals in Literature -- 4.2.1 Counting Processes in Credit Risk Models: The Intensity-Based Approach -- 4.3 A New Combinatorial Approach for Counting -- 4.3.1 A Counting Variable Linked to a Clusterized Homogeneous Dependence Structure -- 4.3.2 Clusterized Homogeneous Copulas: CHC-Volume -- 4.3.3 Preparing the CHC-Computation -- 4.3.4 CHC and CHY Computation -- 4.3.5 The Volume of a Clusterized Copula: CHC and CHY -- 4.3.6 Pdf of a Counting Variable Linked to a CHC: A Formal Approach -- 4.3.7 The Boxes' Definition for the CHC-Volume Computation -- 4.3.8 The Dynamic Version of the Combinatorial-Approach -- References -- 5 A New Copula-Based Approach for Counting: The Distorted and the Limiting Case -- 5.1 The Distorted Copula-Based Approach: Fatal Event -- 5.1.1 From a Not Distorted to a Distorted Structure: A Probabilistic Discussion -- 5.1.2 Distorted Copula-Based Distribution of a Fatal Counting Variable -- 5.2 The Distorted Copula-Based Approach: Not Fatal Event -- 5.2.1 The Distorted Copula-Based Distribution of a Not Fatal Counting Variable -- 5.2.2 A Pseudo-Spectral Analysis of the Arrival Matrices -- 5.3 High-Dimensional Problems: The Pure Limiting Models -- 5.4 High-Dimensional Problems: The Limiting Clusterized Copulas -- 5.4.1 Hierarchical Limiting Model: A Credit Risk Application -- The Within Classes Computing Step -- The Between Classes Aggregation Step -- Case 1 -- Case 2 -- Case 3.

5.4.2 Hierarchical Hybrid Copulas: A Credit Risk Application -- 5.4.3 Check for the Groups' Cardinality: The HYC Model -- References -- 6 Real Data Empirical Applications -- 6.1 HYC-Based Model for a Worldwide Sovereign Debt Large Portfolio -- 6.2 Risk Evaluation Based on HYC Model: A Credit-Exposed European Investment Portfolio Analysis -- 6.2.1 Copula-Based Loss Distribution -- 6.2.2 Calibration of the Dependencies -- 6.2.3 HYC Model: Portfolio Application -- 6.2.4 HYC-VaR versus CM-VaR: an Empirical In-Sample Experiment -- Hypothesis -- CM Model -- HYC Model -- 6.3 Structural and Marginal Distortion in a Credit-Exposed Portfolio: a DHC Application -- 6.4 A Bayesian Analysis of the DHC Model -- 6.4.1 Multivariate Dependence Calibration -- 6.4.2 The Loss Function: Index Versus Replicating Portfolio -- 6.4.3 A Bayesian Analysis on the Residuals -- References -- References.

