Computational Methods of Feature Selection (Chapman Hall/CRC Data Mining and Knowledge Discovery Series)

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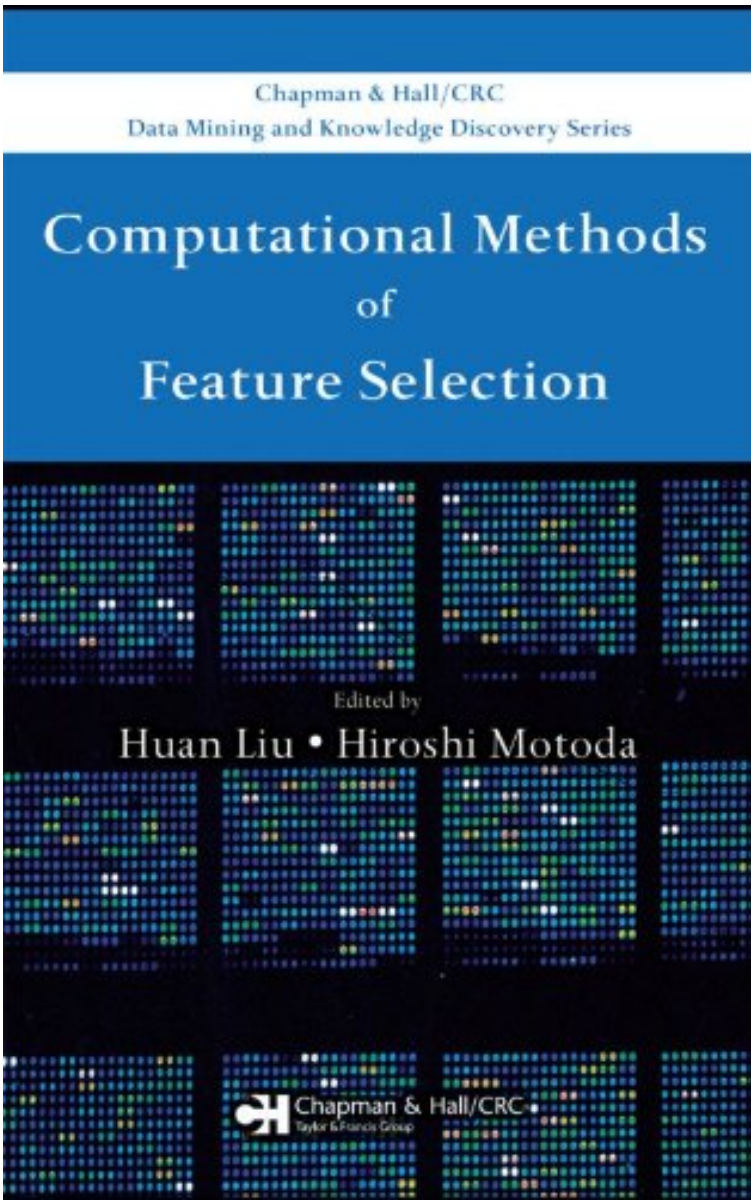

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From Chapman and Hall/CRC : Computational Methods of Feature Selection (Chapman Hall/CRC Data Mining and Knowledge Discovery Series) before purchasing it in order to gage whether or not it would be worth my time, and all praised Computational Methods of Feature Selection (Chapman Hall/CRC Data Mining and Knowledge Discovery Series):

4 of 30 people found the following review helpful. Table of Contents:By G. FormanTable of ContentsPREFACEINTRODUCTION AND BACKGROUNDLESS IS MOREHuan Liu and Hiroshi MotodaBackground and BasicsSupervised, Unsupervised, and Semi-Supervised Feature SelectionKey Contributions and Organization of the BookLooking AheadUNSUPERVISED FEATURE SELECTIONJennifer G. DyIntroductionClusteringFeature SelectionFeature Selection for Unlabeled DataLocal ApproachesSummaryRANDOMIZED FEATURE SELECTIONDavid J. StracuzziIntroductionTypes of RandomizationsRandomized Complexity ClassesApplying Randomization to Feature SelectionThe Role of HeuristicsExamples of Randomized Selection AlgorithmsIssues in RandomizationSummaryCAUSAL FEATURE SELECTIONIsabelle Guyon, Constantin Aliferis, and Andreacute; ElisseeffIntroductionClassical "Non-Causal" Feature SelectionThe Concept of CausalityFeature Relevance in Bayesian NetworksCausal Discovery AlgorithmsExamples of ApplicationsSummary, Conclusions, and Open ProblemsEXTENDING FEATURE SELECTIONACTIVE LEARNING OF FEATURE RELEVANCEEmanuele Olivetti, Sriharsha Veeramachaneni, and Paolo AvesaniIntroductionActive Sampling for Feature Relevance EstimationDerivation of the Sampling Benefit FunctionImplementation of the Active Sampling AlgorithmExperimentsConclusions and Future WorkA STUDY OF FEATURE EXTRACTION TECHNIQUES BASED ON DECISION BORDER ESTIMATEClaudia Diamantini and Domenico PotenaIntroductionFeature Extraction Based on Decision BoundaryGeneralities about Labeled Vector QuantizersFeature Extraction Based on Vector QuantizersExperimentsConclusionsENSEMBLE-BASED VARIABLE SELECTION USING INDEPENDENT PROBESEugene Tuv, Alexander Borisov, and Kari TorkkolaIntroductionTree Ensemble Methods in Feature RankingThe Algorithm: Ensemble-Based Ranking against Independent ProbesExperimentsDiscussionEFFICIENT INCREMENTAL-RANKED FEATURE SELECTION IN MASSIVE DATARoberto Ruiz, Jesuacute;s S. Aguilar-Ruiz, and Joseacute; C. RiquelmeIntroductionRelated WorkPreliminary ConceptsIncremental Performance over RankingExperimental ResultsConclusionsWEIGHTING AND LOCAL METHODSNON-MYOPIC FEATURE QUALITY EVALUATION WITH (R)RELIEFFIgor Kononenko and Marko Robnik Scaron;ikonjaIntroductionFrom Impurity to ReliefReliefF for Classification and RReliefF for RegressionExtensionsInterpretationImplementation IssuesApplicationsConclusionWEIGHTING METHOD FOR FEATURE SELECTION IN K-MEANSJoshua Zhexue Huang, Jun Xu, Michael Ng, and Yunming YeIntroductionFeature Weighting in k-MeansW-k-Means Clustering AlgorithmFeature SelectionSubspace Clustering with k-MeansText ClusteringRelated WorkDiscussionsLOCAL FEATURE SELECTION FOR CLASSIFICATIONCarlotta Domeniconi and Dimitrios GunopulosIntroductionThe Curse of DimensionalityAdaptive Metric TechniquesLarge Margin nearest Neighbor ClassifiersExperimental ComparisonsConclusionsFEATURE WEIGHTING THROUGH LOCAL LEARNINGYijun SunIntroductionMathematical Interpretation of ReliefIterative Relief AlgorithmExtension to Multiclass ProblemsOnline LearningComputational ComplexityExperimentsConclusionTEXT CLASSIFICATION AND CLUSTERINGFEATURE SELECTION FOR TEXT CLASSIFICATIONGeorge FormanIntroductionText Feature GeneratorsFeature Filtering for ClassificationPractical and Scalable ComputationA Case StudyConclusion and Future WorkA BAYESIAN FEATURE SELECTION SCORE BASED ON NAIuml;VE BAYES MODELSSusana Eyheramendy and David MadiganIntroductionFeature Selection ScoresClassification AlgorithmsExperimental Settings and ResultsConclusionPAIRWISE CONSTRAINTS-GUIDED DIMENSIONALITY REDUCTIONWei Tang and Shi ZhongIntroductionPairwise Constraints-Guided Feature ProjectionPairwise Constraints-Guided Co-clusteringExperimental StudiesConclusion and Future WorkAGGRESSIVE FEATURE SELECTION BY FEATURE RANKINGMasoud Makrehchi and Mohamed S. KamelIntroductionFeature Selection by Feature RankingProposed Approach to Reducing Term RedundancyExperimental ResultsSummaryFEATURE SELECTION IN BIOINFORMATICSFEATURE SELECTION FOR GENOMIC DATA ANALYSISLei YuIntroductionRedundancy-Based Feature SelectionEmpirical StudySummaryA FEATURE GENERATION ALGORITHM WITH APPLICATIONS TO BIOLOGICAL SEQUENCE CLASSIFICATIONRezarta Islamaj Dogan, Lise Getoor, and W. John WilburIntroductionSplice-Site PredictionFeature Generation AlgorithmExperiments and DiscussionConclusionsAN ENSEMBLE METHOD FOR IDENTIFYING ROBUST FEATURES FOR BIOMARKER DISCOVERYDiana Chan, Susan M. Bridges, and Shane C. BurgessIntroductionBiomarker Discovery from Proteome ProfilesChallenges of Biomarker IdentificationEnsemble Method for Feature SelectionFeature Selection EnsembleResults and DiscussionConclusionMODEL BUILDING AND FEATURE SELECTION WITH GENOMIC DATAHui Zou and Trevor HastieIntroductionRidge Regression, Lasso, and BridgeDrawbacks of the LassoThe Elastic NetThe Elastic-Net Penalized SVMSparse Eigen-GenesSummaryINDEX

Due to increasing demands for dimensionality reduction, research on feature selection has deeply and widely expanded into many fields, including computational statistics, pattern recognition, machine learning, data mining, and knowledge discovery. Highlighting current research issues, Computational Methods of Feature Selection introduces the basic concepts and principles, state-of-the-art algorithms, and novel applications of this tool. The book begins by exploring unsupervised, randomized, and causal feature selection. It then reports on some recent results of

empowering feature selection, including active feature selection, decision-border estimate, the use of ensembles with independent probes, and incremental feature selection. This is followed by discussions of weighting and local methods, such as the ReliefF family, k-means clustering, local feature relevance, and a new interpretation of Relief. The book subsequently covers text classification, a new feature selection score, and both constraint-guided and aggressive feature selection. The final section examines applications of feature selection in bioinformatics, including feature construction as well as redundancy-, ensemble-, and penalty-based feature selection. Through a clear, concise, and coherent presentation of topics, this volume systematically covers the key concepts, underlying principles, and inventive applications of feature selection, illustrating how this powerful tool can efficiently harness massive, high-dimensional data and turn it into valuable, reliable information.

This book is a really comprehensive review of the modern techniques designed for feature selection in very large datasets. Dozens of algorithms and their comparisons in experiments with synthetic and real data are presented, which can be very helpful to researchers and students working with large data stores.?Stan Lipovetsky, Technometrics, November 2010 Overall, we enjoyed reading this book. It presents state-of-the-art guidance and tutorials on methodologies and algorithms in computational methods in feature selection. Enhanced by the editors insights, and based on previous work by these leading experts in the field, the book forms another milestone of relevant research and development in feature selection.?Longbing Cao and David Taniar, IEEE Intelligent Informatics Bulletin, 2008, Vol. 99, No. 99About the AuthorArizona State University, Tempe, AZ AFOSR/AOARD, Tokyo, Japan