Contents

Invited Papers

Learning with Intelligent Teacher: Similarity Control and Knowledge Transfer .......................................... 3
  Vladimir Vapnik and Rauf Izmailov

Statistical Inference Problems and Their Rigorous Solutions ................................................................. 33
  Vladimir Vapnik and Rauf Izmailov

Statistical Learning and its Applications

Feature Mapping Through Maximization of the Atomic Interclass Distances ........................................... 75
  Savvas Karatsiolis and Christos N. Schizas

Adaptive Design of Experiments for Sobol Indices Estimation Based on Quadratic Metamodel .................. 86
  Evgeny Burnaev and Ivan Panin

GoldenEye++: A Closer Look into the Black Box ......................................................................................... 96
  Andreas Henelius, Kai Puolamäki, Isak Karlsson, Jing Zhao, Lars Asker, Henrik Boström, and Panagiotis Papapetrou

Gaussian Process Regression for Structured Data Sets ............................................................................... 106
  Mikhail Belyaev, Evgeny Burnaev, and Yermek Kapushev

Adaptive Design of Experiments Based on Gaussian Processes .............................................................. 116
  Evgeny Burnaev and Maxim Panov

Forests of Randomized Shapelet Trees ....................................................................................................... 126
  Isak Karlsson, Panagotis Papapetrou, and Henrik Boström

Aggregation of Adaptive Forecasting Algorithms Under Asymmetric Loss Function ................................ 137
  Alexey Romanenko

Visualization and Analysis of Multiple Time Series by Beanplot PCA ................................................... 147
  Carlo Drago, Carlo Natale Lauro, and Germana Scepi

Recursive SVM Based on TEDA .................................................................................................................. 156
  Dmitry Kangin and Plamen Angelov
RDE with Forgetting: An Approximate Solution for Large Values of $k$ with an Application to Fault Detection Problems .............................................. 169
Clauber Gomes Bezerra, Bruno Sielly Jales Costa, Luiz Affonso Guedes, and Plamen Parvanov Angelov

Sit-to-Stand Movement Recognition Using Kinect ....................................... 179
Erik Acorn, Nikos Dipsis, Tamar Pincus, and Kostas Stathis

Additive Regularization of Topic Models for Topic Selection and Sparse Factorization ............................................................. 193
Konstantin Vorontsov, Anna Potapenko, and Alexander Plavin

Social Web-Based Anxiety Index’s Predictive Information on S&P 500 Revisited ................................................................. 203
Rapheal Olaniyan, Daniel Stamate, and Doina Logofatu

Exploring the Link Between Gene Expression and Protein Binding by Integrating mRNA Microarray and ChIP-Seq Data ................. 214
Mohsina Mahmuda Ferdous, Veronica Vinciotti, Xiaohui Liu, and Paul Wilson

Evolving Smart URL Filter in a Zone-Based Policy Firewall for Detecting Algorithmically Generated Malicious Domains .................. 223
Konstantinos Demertzis and Lazaros Iliadis

Lattice-Theoretic Approach to Version Spaces in Qualitative Decision Making ................................................................. 234
Miguel Couceiro and Tamás Waldhauser

Conformal Prediction and its Applications

A Comparison of Three Implementations of Multi-Label Conformal Prediction ................................................................. 241
Huazhen Wang, Xin Liu, Ilia Nouretdinov, and Zhiyuan Luo

Modifications to p-Values of Conformal Predictors .................................. 251
Lars Carlsson, Ernst Ahlberg, Henrik Boström, Ulf Johansson, and Henrik Linusson

Cross-Conformal Prediction with Ridge Regression ................................ 260
Harris Papadopoulos

Handling Small Calibration Sets in Mondrian Inductive Conformal Regressors ................................................................. 271
Ulf Johansson, Ernst Ahlberg, Henrik Boström, Lars Carlsson, Henrik Linusson, and Cecilia Sönströd
Conformal Anomaly Detection of Trajectories with a Multi-class Hierarchy .......................... 281
James Smith, Ilia Nouretdinov, Rachel Craddock, Charles Offer, and Alexander Gammerman

Model Selection Using Efficiency of Conformal Predictors ......................... 291
Ritvik Jaiswal and Vineeth N. Balasubramanian

Confidence Sets for Classification ........................................ 301
Christophe Denis and Mohamed Hebiri

Conformal Clustering and Its Application to Botnet Traffic ............................. 313
Giovanni Cherubin, Ilia Nouretdinov, Alexander Gammerman, Roberto Jordaney, Zhi Wang, Davide Papini, and Lorenzo Cavallaro

Interpretation of Conformal Prediction Classification Models .......................... 323
Ernst Ahlberg, Ola Spjuth, Catrin Hasselgren, and Lars Carlsson

New Frontiers in Data Analysis for Nuclear Fusion
Confinement Regime Identification Using Artificial Intelligence Methods ... 337
G.A. Rattá and Jesús Vega

How to Handle Error Bars in Symbolic Regression for Data Mining in Scientific Applications ...................................................... 347
A. Murari, E. Peluso, M. Gelfusa, M. Lungaroni, and P. Gaudio

Applying Forecasting to Fusion Databases ...................................... 356
Gonzalo Farias, Sebastián Dormido-Canto, Jesús Vega, and Norman Díaz

Computationally Efficient Five-Class Image Classifier Based on Venn Predictors ................................................................. 366
Jesús Vega, Sebastián Dormido-Canto, F. Martínez, I. Pastor, and M.C. Rodríguez

SOM and Feature Weights Based Method for Dimensionality Reduction in Large Gauss Linear Models ................................................. 376
Fernando Pavón, Jesús Vega, and Sebastián Dormido Canto

Geometric Data Analysis
Assigning Objects to Classes of a Euclidean Ascending Hierarchical Clustering ................................................................. 389
Brigitte Le Roux and Frédéric Cassor

The Structure of Argument: Semantic Mapping of US Supreme Court Cases ................................................................. 397
Fionn Murtagh and Mohsen Farid