The probabilistic decision tree is tested in view of the size of the databases and the difficulties is that it implies for processing them. Here proposed an algorithm Advance Probabilistic Binary Decision Tree (APBDT) using SVM for solving large class problem and it performs better when increase the size of the database. APBDT-SVM combines Binary Decision Tree (BDT) and Probabilistic SVM is an effective way for solving multiclass problem. Probabilistic SVM uses standard SVM's output and sigmoid function to map the SVM output into probabilities. Using APBDT-SVM classification accuracy can be improved and training-testing time can be reduced.

References

- V. N. Vapnik; the nature of statistical learning theory; Springer, Newyork, 1995.
- C. W. Hsu., C. J. Lin; "A comparison methods for multiclass support vector
- G. Madzarov, D. Gjorgjevikj and I. Chorbev; A multi-class SVM classifier utilizing binary decision tree; An international journal of computing and informatics, Informatica; vol. 33 number 2; ISSN0350-5596, Slovenia; pg:233-241, 2009.
- S. A. Mulay, P. R. Devale, G. V. Garje; Intrusion detection system using support vector machine and decision tree; International journal of computer application; vol. 3, Number 3, pg. 0975-8887; June 2010.
- A. Rocha, S. Goldenstein; Multiclass from binary: Expanding one-vs.-all, one vs. one and ECOC-based approaches; IEEE transaction on neural networks and learning system; vol. X, number Y; Aug. 2013.
- B. Sidaoui, K. Sadouni; Efficient approach one-vs.-all binary tree for multiclass SVM; Springer link; Transactions on engineering technologies; vol. 275, pg. 203-214; 2014.
- D. A. Cohen, E. A. Fernandez; SVMTOCP: A Binary tree based SVM approach through optimal multiclass binarization; Springer link; progress in pattern recognition, image analysis, computer vision and application; vol. 7441, pg. 472-478; 2012.
- G. Madzarov, D. Gjorgjevikj; Evaluation of distance measures for multi-class classification in binary SVM decision tree; Springer link; Artificial intelligence and soft computing lectures notes in computer science; vol. 6113, pg. 437-444; 2010.
- J. S. Uribe, N. Mechbal, M. Rebillat, K. Bouamama, M. Pengov; Probabilistic Decision Tree using SVM for multiclass classification; Conference on control and fault-tolerant system. IEEE; pg. 619 to 624; Oct 9-11, France 2013.

Index Terms

Computer Science
Algorithms
Keywords

SVM  Probabilistic SVM  Binary decision tree  separability measures