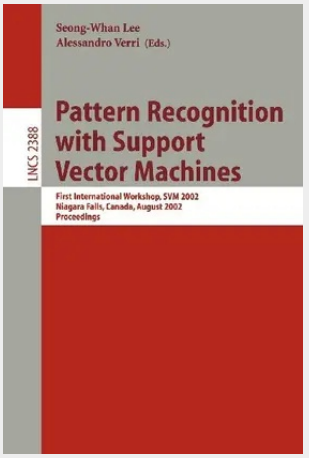
Lee / Verri

Pattern Recognition with Support Vector Machines

First International Workshop, SVM 2002, Niagara Falls, Canada, August 10, 2002. Proceedings



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With their introduction in 1995, Support Vector Machines (SVMs) marked the beginningofanewerainthelearningfromexamplesparadigm.Rootedinthe Statistical Learning Theory developed by Vladimir Vapnik at AT&T, SVMs quickly gained attention from the pattern recognition community due to a n- beroftheoreticalandcomputationalmerits.Theseinclude,forexample,the simple geometrical interpretation of the margin, uniqueness of the solution, s- tistical robustness of the loss function, modularity of the kernel function, and over?t control through the choice of a single regularization parameter. Like all really good and far reaching ideas, SVMs raised a number of - terestingproblemsforboththeoreticiansandpractitioners.Newapproachesto Statistical Learning Theory are under development and new and more e?cient methods for computing SVM with a large number of examples are being studied. Being interested in the development of trainable systems ourselves, we decided to organize an international workshop as a satellite event of the 16th Inter- tional Conference on Pattern Recognition emphasizing the practical impact and relevance of SVMs for pattern recognition. By March 2002, a total of 57 full papers had been submitted from 21 co- tries.Toensurethehighqualityofworkshopandproceedings,theprogramc- mitteeselectedandaccepted30ofthemafterathoroughreviewprocess.Ofthese papers16werepresentedin4oralsessionsand14inapostersession.Thepapers span a variety of topics in pattern recognition with SVMs from computational theoriestotheirimplementations.Inadditiontotheseexcellentpresentations, there were two invited papers by Sayan Mukherjee, MIT and Yoshua Bengio, University of Montreal.

Invited Papers.- Predicting Signal Peptides with Support Vector Machines.- Scaling Large Learning Problems with Hard Parallel Mixtures.- Computational Issues.- On the Generalization of Kernel Machines.- Kernel Whitening for One-Class Classification.- A Fast SVM Training Algorithm.- Support Vector Machines with Embedded Reject Option.- Object Recognition.- Image Kernels.- Combining Color and Shape Information for Appearance-Based Object Recognition Using Ultrametric Spin Glass-Markov Random Fields.- Maintenance Training of Electric Power Facilities Using Object Recognition by SVM.- Kerneltron: Support Vector 'Machine' in Silicon.- Pattern Recognition.- Advances in Component-Based Face Detection.- Support Vector Learning for Gender Classification Using Audio and Visual Cues: A Comparison.- Analysis of Nonstationary Time Series Using Support Vector Machines.- Recognition of Consonant-Vowel (CV) Units of Speech in a Broadcast News Corpus Using Support Vector Machines.- Applications.- Anomaly Detection Enhanced Classification in Computer Intrusion Detection.- Sparse Correlation Kernel Analysis and Evolutionary Algorithm-Based Modeling of the Sensory Activity within the Rat's Barrel Cortex.- Applications of Support Vector Machines for Pattern Recognition: A Survey.- Typhoon Analysis and Data Mining with Kernel Methods.- Poster Papers.- Support Vector Features and the Role of Dimensionality in Face Authentication.- Face Detection Based on Cost-Sensitive Support Vector Machines.- Real-Time Pedestrian Detection Using Support Vector Machines.- Forward Decoding Kernel Machines: A Hybrid HMM/SVM Approach to Sequence Recognition.- Color Texture-Based Object Detection: An Application to License Plate Localization.- Support Vector Machines in Relational Databases.- Multi-ClassSVM Classifier Based on Pairwise Coupling.- Face Recognition Using Component-Based SVM Classification and Morphable Models.- A New Cache Replacement Algorithm in SMO.- Optimization of the SVM Kernels Using an Empirical Error Minimization Scheme.- Face Detection Based on Support Vector Machines.- Detecting Windows in City Scenes.- Support Vector Machine Ensemble with Bagging.- A Comparative Study of Polynomial Kernel SVM Applied to Appearance-Based Object Recognition.

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