Support Vector Machines (Information Science And Statistics)

Synopsis

Every mathematical discipline goes through three periods of development: the naive, the formal, and the critical. David Hilbert The goal of this book is to explain the principles that made support vector machines (SVMs) a successful modeling and prediction tool for a variety of applications. We try to achieve this by presenting the basic ideas of SVMs together with the latest developments and current research questions in a uni?ed style. In a nutshell, we identify at least three reasons for the success of SVMs: their ability to learn well with only a very small number of free parameters, their robustness against several types of model violations and outliers, and last but not least their computational e?ciency compared with several other methods. Although there are several roots and precursors of SVMs, these methods gained particular momentum during the last 15 years since Vapnik (1995, 1998) published his well-known textbooks on statistical learning theory with aspecialemphasisonsupportvectormachines. Sincethen,the?eldofmachine learninghaswitnessedintenseactivityinthestudyofSVMs,whichhasspread moreandmoretootherdisciplinessuchasstatisticsandmathematics. Thusit seems fair to say that several communities are currently working on support vector machines and on related kernel-based methods. Although there are many interactions between these communities, we think that there is still roomforadditionalfruitfulinteractionandwouldbegladifthistextbookwere found helpful in stimulating further research. Many of the results presented in this book have previously been scattered in the journal literature or are still under review. As a consequence, these results have been accessible only to a relativelysmallnumberofspecialists,sometimesprobablyonlytopeoplefrom one community but not the others.

Book Information

Series: Information Science and Statistics

Hardcover: 601 pages

Publisher: Springer; 2008 edition (August 12, 2008)

Language: English

ISBN-10: 0387772413

ISBN-13: 978-0387772417

Product Dimensions: 6.4 x 1.3 x 9.3 inches

Shipping Weight: 2.2 pounds (View shipping rates and policies)

Average Customer Review: 4.7 out of 5 starsÂ Â See all reviewsÂ (3 customer reviews)

Best Sellers Rank: #915,207 in Books (See Top 100 in Books) #162 inÂ Books > Computers &

Technology > Computer Science > AI & Machine Learning > Computer Vision & Pattern Recognition #280 inÂ Books > Textbooks > Computer Science > Artificial Intelligence #504 inÂ Books > Computers & Technology > Databases & Big Data > Data Mining

Customer Reviews

Steinwart's book is a mathematically rigorous introduction to the theoretical aspects of SVMs. The math involved is heavy (measure theoretic probability theory, functional analysis, topology, etc) and I would not recommend it as a practical guide to SVMs. People doing research in kernel methods will find it to be a fantastic reference. Proofs in the book are very lucid and avoid common mathematical textbook proof cop-outs ("Proof is left to the reader", "proof is simple when X is viewed as a Continuous Brownian Bridge"). The book contains a 100+ page appendix containing very flushed mathematical background, which is a handy reference in itself.

This books goes deeper in statistical learning within the context of support vector machines. It is positioned as tutorial and may give more theoretical and implementation details on SVMs for those who have already some background. Nice book for those wishing to see internals (loss functions, feature spaces etc) of SVMs! For me it seems complementary to the book from Hastie "The Elements of Statistical Learning". May be not easy to read but packed with useful information!

This book delves into the mathematical theory of Support Vector Machines. It is also great reference for general theorems concerning RKHSs which are covered in detail in Chapter 4 of the book. It is a frequently used reference that I keep on my desk.

Systems, and Bifurcations of Vector Fields (Applied Mathematical Sciences) Vector Biology, Ecology and Control Art Nouveau Vector Motifs (Dover Electronic Clip Art) Modern Methods in Topological Vector Spaces (Dover Books on Mathematics) Vector Mechanics for Engineers: Statics, 11th Edition Threat Vector Tom Clancy - Locked On & Threat Vector 2-in-1 Collection Threat Vector (Jack Ryan Novels) Mighty Monster Machines (Blaze and the Monster Machines) (Little Golden Book)