

Machine Learning Techniques for Multimedia

– Case Studies on Organization and Retrieval

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Cognitive Technologies Series

Hardcover, 290 pp., ISBN [978-3-540-75170-0](https://doi.org/10.1007/978-3-540-75170-0), Euro 74.95, US\$ 109.00

Overview

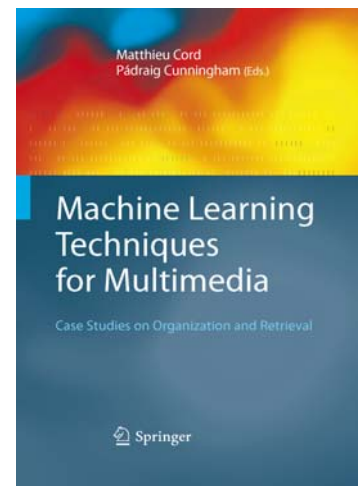
Processing multimedia content has emerged as a key area for the application of machine learning techniques, where the objectives are to provide insight into the domain from which the data is drawn, and to organize that data and improve the performance of the processes manipulating it. Applying machine learning techniques to multimedia content involves special considerations – the data is typically of very high dimension, and the normal distinction between supervised and unsupervised techniques does not always apply.

This book provides a comprehensive coverage of the most important machine learning techniques used and their application in this domain. Arising from the EU MUSCLE network, a program that drew together multidisciplinary teams with expertise in machine learning, pattern recognition, artificial intelligence, and image, video, text and crossmedia processing, the book first introduces the machine learning principles and techniques that are applied in multimedia data processing and analysis. The second part focuses on multimedia data processing applications, with chapters examining specific machine learning issues in domains such as image retrieval, biometrics, semantic labelling, mobile devices, and mining in text and music.

This book will be suitable for practitioners, researchers and students engaged with machine learning in multimedia applications.

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Part I: Introduction to Learning Principles for Multimedia Data – Introduction to Bayesian Methods and Decision Theory; Supervised Learning; Unsupervised Learning and Clustering; Dimension Reduction. **Part II: Multimedia Applications** – Online Content-Based Image Retrieval Using Active Learning; Conservative Learning for Learning Object Detectors; Machine Learning Techniques for Face Analysis; Mental Search in Image Databases; Combining Textual and Visual Information for Semantic Labeling of Images and Videos; Classification and Clustering of Music for Novel Music Access Applications; Machine Learning for Semistructured Multimedia Documents; Index



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