SON ("Videotex information retrieval systems: The logical development and optimization of tree structures in general online interactive systems", I, p.277–84) presented video retrieval as classification done up in a menu. The video search tree, despite the data processing system, corresponds in its structure to a linear, at most a two-dimensional manual retrieval system. This can be remedied to some extent by using references and alphabetic indexes.

A.H.SCHABAS ("Videotex information systems. Complements to the tree structure", I, p.285–91) also proposed complements to inadequate videotex retrieval. She called for additional orientation aids for the user, who only receives a small quantity of data on the screen, and, at least, for the possibility of a heading search with an AND-link to limit the number of responses.

According to Pauline A.COCHRANE ("Classification as a user's tool in online public access catalogues", I, p.260–8), the narrowness of the field of vision on the screen poses problems for the users of online library catalogues. Cochrane suggests a classification based retrieval system as an alternative to systems which allow a search in a natural language with automatic clustering and relevance feedback. She favours the values of traditional library classification, particularly in the transition from the manual to the computer-aided catalogue.

Harold BORKO ("The role of classification in online retrieval systems and automated libraries", I, p.235–45) offers a completely different point of view. He provokes his classification colleagues with a vision of an automated library in which reference search on a screen is a matter of course. In this dynamic library, library classification is replaced by dynamic clustering in the reference data bank which is oriented to the users' requirements. For Borko, the classification schema corresponds to the static requirements of systematic shelving and not to the requirements of information retrieval and the logical ordering of the index store independent of the physical object "book". He demands a radical, new approach to library classification which makes determined and consistent use of the possibilities of computer processing. His argumentation, too, amounts to a plea for a more dynamic conception of classification.

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NIEMANN, Heinrich: **Klassifikation von Mustern.** (In German) (Pattern classification). Berlin–Heidelberg: Springer Verlag 1983. 340 p. ISBN 3-540-12642-2, 0-387-12642-2.

This is a book on pattern recognition and perception methods providing a thorough survey on the many facets of this topic for readers with an intermediate mathematical knowledge. It is written in a pleasant and often in an informal style and its large bibliography is a valuable guide to many specialized or practical applications or to the mathematical derivations which, as a rule, are only sketched in the text.

Pattern recognition is concerned with the mathematical and technical aspects of the automatic processing and evaluation of patterns of all kinds (texts, signals, pictures or objects described by multivariate numerical feature vectors or syntactic representations by symbols). In particular, this embraces the classification (= construction of and/or assignment to classes) of simple patterns as well as the analysis of very complex patterns (like photos, scenes, circuit diagrams etc.). Classes are formed mainly on the basis of training or learning samples (supervised or nonsupervised strategies, thus cluster analysis is invoked, too), and classification systems are assessed either by mathematical or statistical optimality criteria or by empirical simulation studies. The author partitions the subject (as well as the text) into several sections: Recording of information, preprocessing of data, feature extraction, and classification (distinguishing numerical from syntactic classification methods).

Chapter 1 gives a general introduction into the subject. Chapter 2 presents methods for preprocessing the data (numerical coding of general and specialized informations, threshold operations, reduction of noise by linear or Fourier transformations, normalization for strengthening contrasts, parallel and sequential processing of discrete patterns). Chapter 3 discusses the several methods of feature extraction (orthogonal expansions, discrete Fourier or Walsh transformations, filtering, linear approximation, problem-specific transformations, optimality criteria, extraction of symbols from pictures, applied case studies). Numerical classification methods are described in chapter 4 (Bayesian and likelihood methods, minimum-distance criteria, error probabilities, nonparametric and distribution free classification using separating hyperplanes or nearest-neighbour criteria, specialized methods for nominal data accounting for context, learning classificators, the influence of dimensionality). Chapter 5 presents a concise introduction to syntactic classification methods, mainly designed for the processing of structural properties of objects (grammars, e.g. string, tree, graph, or stochastic grammars, parsing, classification of strings by regular or context-free grammars, automatic construction of grammars). The last chapter 6 describes, as a practical application, the implementation of the methods in an automatic address reading machine and supplements the many other examples scattered through the text, from biology, engineering, photogrammetry etc.

The monograph is to be highly recommended for people which are accustomed to mathematical notations or probabilistic and statistical arguments (e.g. engineers, biometricians, computer specialists, mathematicians and statisticians). It parallels the two other books of the author: 'Methoden der Mustererkennung' (Akademische Verlagsgesellschaft, Frankfurt/Main, 1974) and 'Pattern analysis' (Springer, Berlin, 1981). Readers without a sound mathematical background may profit, however, from the informal introductions into the single chapters and subsections where the purpose and essence of the formal methods are clearly presented.

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