avoid the accusation he has written a book for the purpose of promoting Pascal. There seems to be little real danger of this accusation's actually being leveled, for the book so clearly emphasizes the concepts dealt with more programming that in any text dealing with the same material as preceding chapters, would considerably enhance the value of future editions of this book (especially among engineers and businessmen), and would introduce the student to systematic uses of data structures. And, more important, this would emphasize Pascal's data-structuring capabilities, which exempt it from the criticism so often directed at Algol 60 (viz., Algol's utility outside of scientific computing is marginal since it cannot handle structured data).

My remarks regarding two things I should like to have seen included in the book should in no way be interpreted negatively. They are matters of personal taste. Seldom does one find a book so well written that it is possible to think of only two ways of improving it! You will enjoy this book. Read it.

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This book covers most of the major topics in pattern recognition at a level appropriate to a new student of the field. Therefore it can be very useful as a textbook either for an introductory graduate, or an advanced undergraduate course. The authors have deliberately played down the mathematical formalism (no long or rigorous proofs) and assumed only that background which students in such courses are expected to have. They supply numerous problems and quite a few illustrative and instructive examples. One attractive feature is the critical evaluation of many of the techniques discussed which their own experience enables them to do. I enjoyed reading statements like the one on p. 179 about the literature on linear discriminant functions. Finally each chapter is followed by extensive historical and bibliographical remarks.

The book is divided into two parts as its title implies. The first consists of six chapters describing the statistical techniques used for pattern recognition: Bayes decision theory (including multivariate normal and independent binary features), maximum likelihood estimation, nonparametric techniques (Parzen windows, nearest neighborhood based estimates), linear discriminant functions (including both the separable and nonseparable cases), linear programming, potential functions, a brief review of stochastic approximation and an extensive treatment of clustering and unsupervised learning. Emphasis is placed on problems which have been of special interest in pattern recognition. Thus a detailed analysis is made of the effect of adding new features in the performance of a pattern classifier. Examples are given illustrating the multiplicity of solutions and the pitfalls of the clustering techniques. The material is well organized and cohesive.

The second part also consists of six chapters dealing with problems inherent in the processing of pictorial data. The title scene analysis does not do justice to the breadth of the coverage since only part of the last chapter deals with that subject which is traditionally referred to under the term. In contrast to the first part, the treatment here is less organized or complete and this is certainly due to the great flux (and associated controversy) of the state of the art in the field of computer processing of pictorial data. Parts which provide background methodology deal with spatial Fourier transform, perspective transformations, projective invariants, and line fitting techniques. There the coverage is quite systematic. Other parts deal with more involved topics and in particular regional analysis, shape description, and syntactic description. There one could argue on many points but it is certainly to the authors credit that they even attempted to tackle these subjects in the limited space available. A reasonably complete coverage of these topics is probably outside the scope of a general introductory course. On the other hand I wish the authors had said a few more words than they do in p. 306 about the comparison of the various techniques of boundary shape description (e.g., Fourier coefficients versus the earlier discussed points of maximum curvature). It would have also been nice if the computational complexity of the various schemes had been discussed since it has often been the case that otherwise attractive methods often suffer in this respect.

There are close to 400 references and although they do not cover by any means the enormous literature on the subject they give a fair sampling of it for a beginner to get started.

Overall the book is a very worthwhile addition to the literature, especially because of its breadth of coverage.

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This volume is one of a series of state of the art reports by Infotech. In some respects it is reminiscent of the software which is discussed within it. Its organization is a good example of top down specification via the method of successive refinement. There are other analogies which shall be pointed out later.

The organization of the book is as follows:

How To Use This Report: This is a one-page guide to the reading of this volume. It describes the organization of the report in terms of levels. A description such as this is essential for a report of this size. Software system documentors take note.

Forward: The forward provides, in six pages, a very broad brush discussion of the subject matter of the report plus addition commentary on the organization and use of the report. This is considered to be level 1 of the hierarchically structured report.

Analysis: This section is entitled "Software Engineering" and comprises, in just over 200 pp., a wide ranging overview of software engineering. The subject is organized into the following constituents.

1. Software design.
2. Project control.
3. Documentation.
4. Software production.
5. Correctness and testing.
6. Performance evaluation.
7. The software industry.
8. Education for software engineers.

Though its possible to quibble with this breakdown (everyone has their own list) this is a perfectly reasonable organization of the subject.

In this analysis section, other analogies to large software efforts begin to appear. While the editor(s) intersperse connecting paragraphs, the meat of this section consists mostly of excerpts from the following section which consists of presentations and invited papers. There is an attempt to simulate a discussion among the participants by juxtaposing these excerpts. While this technique occasionally succeeds, it as often as not does not. The analogy to software is the corresponding lack of integration so frequently found in large systems.

The analysis does succeed in conveying that the subject area is not rigorously enough defined for a common terminology to exist or, at times, for very meaningful things to be said. The essential aspect of the problems of software engineering are presented. Its most useful function might well lie in indicating where no adequate methodology exists. However, the disparagement of software engineering vis-a-vis so-called ordinary engineering is at least in part overdone. The CS-A and Concorde airplanes and certain power generating nuclear reactors have had project difficulties not unlike large software systems. Even relatively stable fields have difficulties, e.g., witness the frequent automotive call-back campaigns.

Presentations and Invited Papers: There are eighteen presentations or invited papers, covering most of the areas described in the