

BOOK REVIEW

Readings in Medical Artificial Intelligence: The First Decade. William J. Clancey and Edward H. Shortliffe, Editors. Reading, Massachusetts: Addison-Wesley, 1984.

This book is a collection of many of the seminal papers from the first decade of research in artificial intelligence in medicine (AIM). The editors state that the need for such a collection became evident when a two-day AIM tutorial was held at Stanford in 1980, following the annual national AIM research workshop.

The 19 papers included in the book are each introduced by a short section written by the editors. Typically one page in length, these introductory sections are designed to place the paper into context in the field. In addition, the editors have included introductory and concluding chapters of their own.

The readings themselves start with three papers by different authors, each giving in its own fashion an overview of the field of AIM. The remaining papers describe different developmental AIM systems. These include: MYCIN, PIP, CASNET, INTERNIST, VM, GUIDON, LCS, MDX, ABEL, NEOMYCIN, XPLAIN, RX, SEEK, PUFF, and SPE.

In evaluating a book like this, it is useful to look at the different purposes which the book might serve.

As a text for a graduate AIM seminar:

A primary purpose of this book of readings is to serve as a text for an AIM seminar. Indeed, we have used it as such, and found it to be excellent for this purpose. It certainly greatly facilitates preparing such a seminar to have a core of readings so nicely packaged.

In this regard, however, the book is not completely comprehensive. Several papers which merit inclusion have been omitted. For instance, there is no paper describing the Digitalis Advisor system. Another obvious gap ironically involves the editors' own research group. This gap presumably occurs because another book was being prepared simultaneously describing this research (Buchanan & Shortliffe, 1984)* For example, an important paper on the evaluation of the MYCIN system is available only in the second book.

As a result, although the book forms an excellent core text for a seminar, it should be supplemented by further readings. In addition, of course, there are more recent publications which such a seminar might include as well.

As an introduction to the AIM field:

Another purpose of the book might be to serve as an introduction to the field of artificial intelligence in

medicine. For this purpose, the book could usefully have included even more detailed evaluative material, written in retrospect, to help the reader put the various papers into perspective. What were the limitations of the various systems and techniques described? What were the major lessons learned? In what respect were they successful and unsuccessful? What do they tell us about the future?

When the book is used in a seminar, these issues can be addressed in class discussions. If the book is used as a stand-alone introduction to the field, however, the short introductory sections which accompany each chapter, while good, are limited in the amount of evaluative material which they include.

As a historical resource for builders of expert systems:

The current explosive growth in expert system technology arose to a large extent from the work described in this book. As a result, a third purpose of the book might be as a historical resource to give perspective on the field of expert system development to someone working in, or entering, that field. One subject not explicitly covered in the book which might be helpful to such a reader is a focussed discussion of the medical domain. What are the different components of medical decision-making? How is the domain similar and dissimilar to other domains? Is the medical domain in some sense more complex, fuzzy, and tangled than many other domains?

Of course a book cannot be all things to all people. This is a very useful book, and the editors are to be commended for perceiving its need. If the field of Medical Information Science/Medical Artificial Intelligence is to become established as an independent research discipline in its own right, it is important that books like this be published.

One final comment: in looking over the table of contents outlining the many developmental systems, one is reminded of the story of a young boy out hunting with his father, who comes running back shouting, "Deer tracks, dad, I found deer tracks!" To this the father replied, "Good, son, take them home to your mother. I've never had deer track stew before." One hopes that the second decade of this research will see increasing numbers of robust, operational systems. In planning the 10th annual Symposium on Computer Applications in Medical Care, to be held in conjunction with the 1986 international MEDINFO conference, the theme "Past Failures and Future Promise" has been suggested. It is certainly important that this turns out to be the correct pairing of adjectives with nouns.

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*Buchanan, G. B. & Shortliffe, E. H., (Eds.), (1984). *Rule-based expert systems: the MYCIN experiments of the Stanford Heuristic Programming Project* Reading, Massachusetts: Addison-Wesley