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Book Review

ALAN C. GILLIES

The Integration of Expert Systems into Mainstream Software
Chapman & Hall, 1991. £19.95. ISBN 0-412-39930-X.

The various branches of computer science have developed distinct subcultures which are, in part, defined by the programming languages that they favour and their styles of design and development. The profession of systems programmer arises from the need to bridge the gap between the subculture of operating systems developers and that of application programmers. If database systems had had their roots in artificial intelligence, there would be a similar niche for programmers who could work across the Lisp-Cobol fault line. But it is the real gap between the subcultures of expert systems and software engineering that provides the subject matter of Alan Gillies' book.

It recommends three strategies for bridging this gap. One is a modified version of the technique described in T. DeMarco's *Structured Analysis and Systems Specification*. This is referred to as 'structured integrated

expert system methodology' and aims to involve the disciplines of software engineering during the knowledge-acquisition phase of developing a system. The second strategy, called 'data centred design', is proposed for systems in which a database and a knowledge-based system mutually interact in use but which may be developed, at least, partly, independently of each other. The final strategy, 'prototyping and porting', is succinctly described by its name.

Although these strategies are supported by case studies, their initial exposition is quite brief. They seem plausible enough, but no justification for them is offered and no alternative reviewed. Space in the book which could have been used for this purpose is devoted to introductory treatments of expert systems, software engineering and human-computer interaction. This seems to me to be a mistake; and I am not sure that the author, who is a lecturer in the Information Technology Institute of the University of Salford, has succeeded in his aim of producing a suitable 'teaching text' for BSc and MSc students. Such students need a rather more

comprehensive understanding of these topics than can be provided in single chapters before they study the problems of software integration.

But if the book is weak because it includes too much introductory material, its strength lies in its generous use of extended examples. Three chapters are devoted to case studies: one is concerned with a system to automate photoelastic stress analysis, a second case study describes a military decision support system and the final case study is an 'expert database system', which handles PAYE problems. These are clearly written in unpretentious language and contain references to source material.

Until some happy future time when the various branches of computer science are unified by an all-embracing theory, there will be a demand for books like Alan Gillies' which attempts to help those forced to deal simultaneously with more than one computing subculture.

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Announcement

21–23 MAY 1993

PDK '93, International Workshop on Processing Declarative Knowledge – Representation and Implementation Methods – Yorktown Heights, New York, U.S.A.

The PDK workshops aim to provide a forum for discussing the practical and theoretical aspects of processing declarative knowledge. A main topic of interest is the trade-off between the need for efficient processing and the desire for meaningful and modular specifications. Work that addresses linguistic, semantic and processing issues in an integrated fashion is specially welcome.

The first PDK workshop was held in Kaiserslautern, Germany, and gathered researchers and practitioners from the areas of AI, Logic Programming and Databases. For our next workshop in 1993 we are inviting contributions on theoretical ideas, practical techniques, and the development of systems or software tools in the area of knowledge-based systems.

Topics of interest include but are not limited to:

- extensions and variations of declarative programming paradigms (e.g. logic, rule-based, constraint and object-oriented programming);
- reasoning methods for dealing with disjunctions, constraints, probabilities, etc.;
- architectures for default, causal, abductive and temporal reasoning;
- studies of processing algorithms for complexity-expressivity and completeness-soundness trade-offs.

Abstracts submission

Please submit four (4) copies of an abstract of up to 10 pages, written in English, by 5 January 1993 (not via email or fax).

The abstracts should accurately represent the theme of the proposed presentation during the workshop: synthesis of important previous results, new significant results or directions, descriptions of ongoing research projects, design, implementation and applications of software tools and systems.

After the workshop is held we shall consider

publication of full papers in a special issue of the *Annals of Mathematics and Artificial Intelligence*.

Authors will be notified of acceptance or rejection of submitted abstracts by 20 February 1993.

Please direct contributions to the following address:

PDK '93, c/o W. Zadrozny, IBM Research, T. J. Watson Research Center, 30 Saw Mill River Road (route 9A), Hawthorne, NY 10532, USA.

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