PROGRAMMING METHODOLOGY

G. Goos, J. Hartmanis (eds)

The papers in this proceeding were presented at the 4th Informatic-Symposium held in Wildbad, Federal Republic of Germany, from September 25—27, 1974. The symposium was organized by the Scientific Relations Department of IBM Germany and sponsored by IBM Germany and the IBM World Trade Corporation.

In these papers, the industrial aspects system programming and the problems in education, in language design for systems programming and general aspects of software engineering were presented.

Aspects for the development of large systems, organizing for structured programming, investigations about the reliability of programming systems and error analysis and error causes in production programming were covered . New approaches for program testing, new concepts about reasoning in program synthesis, methods of interprocedural, automatic programming and nonprocedural programming were introduced.

The formal definition and representation of programs, the description of mathematical structures in programming languages and the axiomatic foundation of programming languages were exposed.

This proceeding includes the following papers:

1. On the Development of Systems of Man and Machines, by H.D. Mills;
2. A New Look at the Program Development Process, by P. Hiemann;
3. Organizing for Structured Programming, by F.T. Baker;
4. The Reliability of Programming Systems, by H. Gerstmann, H. Diels, W. Witzel;
5. Fehleranalyse und Fehlerursachen in Systemprogrammen, by A. Endres;
6. APLGOL- A Structural Programming Language for APL, by H.G. Kolsty;
7. Systemprogrammierung aus der Sicht der Universitat, by N. Wirth;
8. Systemprogrammiersprachen und Strukturiertes Programmieren, by G. Goss;
9. Software Engineering or Methods for the Multi-Person Construction of Multi-Version Programs, by D.L. Parnas;
10. Knowledge and Reasoning in Program Synthesis, by Z. Manna;
11. A New Approach to Program Testing, by J.C. King;
12. Interprocedural Analysis and the Information Derived by It, by F.E. Allen;
13. Neue Verfahren zur Optimierung und Parallelisierung von Programmen, by G. Urschler;
14. Automatic Programming, by P.C. Goldberg;

aspects of the theory of fuzzy grammas and fuzzy semantics. Such semantics are of some relevance to natural languages and find practical application in construction of query languages for information retrieval systems. Chapter 5 is devoted to fuzzy optimization. The learning behaviour of a fuzzy automation and the application of a fuzzy automaton for optimal control problems are discussed.

The basic definitions are carefully stated. The task of constructing a complete theory of decisions making in fuzzy environment is one of very considerable magnitude and what the book say is merely a first step toward a conceptual framework. A new tentative step in this direction was taken by the authors in the way of fuzzy programming, but unfortunately the book in this edition was printed earlier and miss to present this result published recently. The final chapter 7 contains a discussion of various problems associated with clustering.

In writing a book on fuzzy systems at this level one has to cater for readers whose mathematical attainements are widely varied. A popular style fail to attract those who are most likely to contribute to the development of the subject, while attempts to avoid this early leads to a book which is inaccessible to all but a small number of potential readers. What Negoiță and Ralescu have succeded in doing is to achieve a graceful transition for the former group without loosing the interest of the latter. With its excellent marriage of theory and applications, good organisation and easy reliability, this book will become a reference for a variety of fields where fuzziness is significant.

Ed. Nicolau