

# VLSI 81

## Very Large Scale Integration

edited by

John P. Gray



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*Department of Computer Science  
University of Edinburgh*

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## PREFACE

VLSI 81 is the first European Conference dedicated to all the subjects involved in the exploitation of silicon as a systems implementation medium. It has only recently become apparent, due to the pioneering work of Mead, that this emerging area of research embraces a very wide range of disciplines from device physics to branches of discrete mathematics.

One of the goals of the Programme Committee was to reflect this diversity by putting together a broad programme. Interestingly, many of the papers also reflect this diversity by bridging a number of apparently disparate subjects. Special emphasis has also been given to the more theoretical aspects of the subject. This is to give increased visibility to the areas which hold, the Committee believe, the more challenging problems, and more fundamental results, for progress in this subject.

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The term VLSI, as an acronym for very large scale integration, is an apparent contradiction, describing as it does the superimposition of complex electronic circuits onto the silicon chip — an object which is anything but large. Nevertheless, as the size of individual device features become smaller, the scope of systems it is possible to integrate onto these chips increases. The progress of basic integrated circuit technology has caused the fusion of ideas from previously separate subjects so that a base of principles and theory for the implementation and application of VLSI is emerging. Thus, although the subject matter has been gestating in computer science and microelectronics for a number of years, it is only recently that the study of VLSI has become a discipline in its own right.

This book contains the papers delivered at the Edinburgh International Conference, VLSI 81, the first meeting to be devoted exclusively to this subject. Rather than a formal organization under traditional subject headings, the papers are grouped to reflect the multidisciplinary nature of the topic of very large scale integration. Within this arrangement the fields of interest covered are the application of discrete mathematics to VLSI systems, novel architectures, design methodologies, design tools, applications of VLSI systems and the design of circuits. Throughout the contributions special emphasis is given to theoretical aspects of the subject and to work which bridges the gap between disciplines.

As the first book of its kind, *VLSI 81* will be an invaluable reference work for professional engineers, research workers and postgraduate students in both hardware and software disciplines. The heterogeneity of the subject matter means it will also be appreciated by mathematicians, and by undergraduates in computer science and engineering.



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