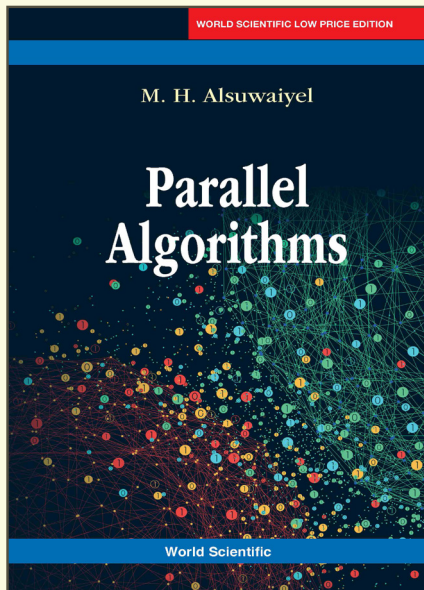


## Parallel Algorithms



By **M. H. Alsuwaiyel**

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Saudi Arabia)*

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### ABOUT THE BOOK

This book is an introduction to the field of parallel algorithms and the underpinning techniques to realize the parallelization. The emphasis is on designing algorithms within the timeless and abstracted context of a high-level programming language. The focus of the presentation is on practical applications of the algorithm design using different models of parallel computation. Each model is illustrated by providing an adequate number of algorithms to solve some problems that quite often arise in many applications in science and engineering.

The book is largely self-contained, presuming no special knowledge of parallel computers or particular mathematics. In addition, the solutions to all exercises are included at the end of each chapter.

The book is intended as a text in the field of the design and analysis of parallel algorithms. It includes adequate material for a course in parallel algorithms at both undergraduate and graduate levels.

### READERSHIP

Advanced undergraduate and graduate students studying parallel algorithms.

### CONTENTS

1. Introduction
2. Shared-memory Computers (PRAM)
3. The Hypercube
4. The Linear Array and the Mesh
5. Fast Fourier Transform
6. Tree-based Networks
7. The Star Network
8. Optical Transpose Interconnection Systems (OTIS)
9. Systolic Computation

## ABOUT THE AUTHOR

**Muhammad Hamad (M H) Alsuwaiyel** is a retired Professor of the Information and Computer Science Department at King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia. He was a member of KFUPM's faculty from 1991 to 2014. Dr Alsuwaiyel taught both undergraduate and graduate courses on design and analysis of algorithms, computer networks, discrete structures, theory of computing, automata and formal languages, foundations of computer science, mathematical logic, design and theory of algorithms, combinatorial algorithms optimization, parallel algorithms, theory of automata and formal languages, computational complexity, and computational geometry. He has many publications in the design and analysis of algorithms. He holds a BS in Systems Engineering from KFUPM, an MS in Computer Science from University of Colorado at Boulder, USA and a PhD in Computer Science from Northwestern University, Illinois, USA. M H Alsuwaiyel is the author of *Algorithms: Design Techniques and Analysis*.



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