

Preface

This book is an attempt to overcome the gap between science and practice in the field of concurrent control systems specified by Petri nets. It combines theoretical aspects of concurrent systems (with the reference to algorithms and their computational complexity) supplemented with practical implementation and reconfiguration of a given system in an FPGA device.

We indented this book to be useful to CAD researchers, engineers, and designers of concurrent systems. The content of the book includes theoretical background and practical applications, especially regarding implementation and partial reconfiguration of FPGAs. The book may also be useful for students of electrical engineering, computer science, and discrete mathematics.

Almost all of the proposed algorithms and methods were implemented within the system *Hippo* developed at the University of Zielona Góra. Some of ready-to-use tools are available online at: www.hippo.iee.uz.zgora.pl.

I am grateful to:

- M. Wiśniewska for her love, exceptional support, and invaluable patience;
- A. Karatkevich for the support on almost all topics of the book, including verification of algorithms, theorems, and proofs;
- M. Adamski for fruitful discussions and for the inspiration regarding hypergraphs and perfect graphs;
- G. Benysek for the support on the preparation of this book;
- I. Grobelna for the perfect cooperation on the field of concurrent systems;
- G. Bazydło and G. Łabiak for the support and valuable discussions;
- L. Titarenko and A. Barkalov for the verification of the book content;
- M. Szajna for verifying English.

The results presented in Chap. 4 were obtained in cooperation with M. Wiśniewska and M. Adamski. Examples of the milling machine and smart home system are elaborated by I. Grobelna.

Zielona Góra
June 2016

Remigiusz Wiśniewski

Prototyping of Concurrent Control Systems
Implemented in FPGA Devices

Wiśniewski, R.

2017, XI, 173 p. 90 illus., 26 illus. in color., Hardcover

ISBN: 978-3-319-45810-6