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A. Şima Etaner-Uyar · Ender Özcan
Neil Urquhart
Editors

# Automated Scheduling and Planning

## From Theory to Practice

Springer

*Editors*
A. Şima Etaner-Uyar
Elektrik-Elektronik Fakultesi
Istanbul Teknik Universitesi
Istanbul
Turkey

Ender Özcan
School of Computer Science
University of Nottingham
Nottingham
UK

Neil Urquhart
Centre for Emergent Computing
Edinburgh Napier University
Edinburgh
UK

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*To Pudra and Alice - Ş.E.U.*
*To Ayla and Burhan - E.Ö.*
*To Siân- N.U.*

# Foreword

I was delighted and honoured to be asked by the editors of this book to write a short foreword to help set the scene. The goal of the book is to provide introductions to search methodologies and their applications to real world scheduling problems. I think that this is very much a worthwhile aim that resonates with the international scientific research agenda in scheduling research. The goal of closing the gap between real world practice and scientific theory in this research field plays a prominent role in that agenda. Scheduling problems are ubiquitous. They appear in many different forms across industry, leisure and the public sector. All of these sectors are represented here. Indeed, the breadth of the application areas is one of the particularly impressive features of this volume. This book brings together a selection of world leading authors from across a wide range of disciplines and scientific backgrounds. The editors have carefully constructed a volume which not only introduces modern search methodologies for the selected application areas, but it also provides insightful case studies which illustrate the effectiveness of some of these techniques. The book reflects a variety of important methodologies for a broad spectrum of challenging application areas.

The automation of scheduling problems across all of these important application areas represents a major challenge and it also represents significant potential impact. Intelligent decision support systems offer the potential to generate significant environmental, financial and social benefits. Some of the example application areas presented in this book provide compelling evidence for this claim. More effective radiotherapy scheduling has the potential to save patients lives. More efficient personnel scheduling can lead to a happier and more productive workforce. High quality airport scheduling could lead to lower levels of aircraft fuel burn. Factory floor scheduling can lead to improvements in production. Search methods can underpin the engines of intelligent decision support systems and this book provides an insight into how search methods can address challenging scheduling problems.

I have enjoyed reading through the chapters of this book. I would like to congratulate the editors on putting together such an interesting and informative volume. I am sure that this will provide a valuable resource to the scientific community and to practitioners for many years to come. I hope that you enjoy reading it as much as I have.

March 2013 Edmund Burke

# Preface

This book was conceived as a result of the EvoStim (Nature-inspired Techniques in Scheduling, Planning and Timetabling) tracks held in Turin in 2011 and Malaga in 2012, as part of EvoStar: The Leading European Event on Bio-Insipired Computation. This book encompasses a wide range of research areas that fall under the generic title of automated scheduling, including healthcare, aviation, timetabling, manufacturing and computing. A very deliberate emphasis is placed on real-world applications.

We would like to offer our gratitude to all our distinguished authors for their valuable contributions and their diligence, without whom this book would not have been possible. They have met our deadlines and then patiently awaited this book to appear in print. We would also like to thank Edmund Burke for writing the foreword and providing invaluable advice. Finally, special thanks go to the staff at Springer, in particular Holger Schäpe, for their support.

We hope that you enjoy reading this book.

Istanbul, Nottingham, Edinburgh,
February 2013

A. Şima Etaner-Uyar
Ender Özcan
Neil Urquhart

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# List of Contributors

Bahriye Akay
Dept of Computer Engineering, Erciyes University, 38039, Melikgazi, Kayseri, Turkey,
e-mail: bahriye@erciyes.edu.tr

María Arsuaga-Ríos
Beams Department, European Organization for Nuclear Research, CERN, CH-1211, Geneva 23, Switzerland,
e-mail: maria.arsuaga.rios@cern.ch

Jason Atkin
School of Computer Science, Jubilee Campus, The University of Nottingham, NG8 1B, UK,
e-mail: jason.atkin@nottingham.ac.uk

Burak Bilgin
CODeS, KAHO Sint-Lieven Gebr. De Smetstraat 1, 9000 Gent, Belgium,
Tel: +32 9-265.86.10
e-mail: burak.bilgin@kahosl.be

Elkin Castro,
ASAP research group, School of Computer Science, University of Nottingham, Jubilee Campus, Wollaton Road, Nottingham, NG8 1BB, UK,
e-mail: edc@cs.nott.ac.uk

Patrick De Causmaecker
KU Leuven Campus Kortrijk, Department of Computer Science E. Sabbelaan 53, 8500 Kortrijk, Belgium, Tel: +32 56-28.28.73
e-mail: patrick.decausmaecker@kuleuven-kortrijk.be

Johannes Gärtner
XIMES GmbH, Austria,
e-mail: gaertner@ximes.com

Luca Di Gaspero
DIEGM, Università degli Studi di Udine, Italy,
e-mail: l.digaspero@uniud.it

İsa Güney
Faculty of Engineering and Architecture, Yeditepe University,
Istanbul,Turkey,

Mark Johnston
Victoria University of Wellington, New Zealand,
e-mail: mark.johnston@msor.vuw.ac. nz

Truword Kapamara
Faculty of Engineering and Computing, Coventry University, Priory Street,
Coventry, CV15FB, UK,
e-mail: d.petrovic@coventry.ac.uk

Graham Kendall
University of Nottingham, Nottingham, UK and Malaysia,
e-mail: graham. kendall@nottingham.ac.uk

Jeffrey H. Kingston
School of Information Technologies, University of Sydney, Australia,
e-mail: jeff@it.usyd.edu.au

Gürhan Küçük
Faculty of Engineering and Architecture, Yeditepe University, Istanbul, Turkey,
e-mail: gkucuk@cse.yeditepe.edu.tr

Michalis Mavrovouniotis
Centre for Computational Intelligence (CCI), School of Computer Science and
Informatics, De Montfort University, The Gateway, Leicester LE1 9BH, U.K.,
e-mail: mmavrovouniotis@dmu.ac.uk

Nysret Musliu
DBAI, Technische Universität Wien, Austria,
e-mail: musliu@dbai.tuwien.ac.at

Su Nguyen
Victoria University of Wellington, New Zealand,
e-mail: su.nguyen@ecs.vuw.ac.nz

Dobrila Petrovic
Faculty of Engineering and Computing, Coventry University, Priory Street,
Coventry, CV15FB, UK,
e-mail: d.petrovic@coventry.ac.uk

Sanja Petrovic
Division of Operations Management and Information Systems,
Nottingham University Business School, Jubilee Campus, Wollaton Road,
Nottingham NG8 1BB, UK,
e-mail: sanja.petrovic@nottingham.ac.uk

Dmitry Ponomarev
SUNY Binghamton,
e-mail: dima@cs.binghamton.edu

Andrea Schaerf
DIEGM, Università degli Studi di Udine, Italy,
e-mail: schaerf@uniud.it

Werner Schafhauser
XIMES GmbH, Austria,
e-mail: schafhauser@ximes.com

Pieter Smet
CODeS, KAHO Sint-Lieven Gebr. De Smetstraat 1, 9000 Gent, Belgium,
Tel: +32 9-265.86.10
e-mail: pieter.smet@kahosl.be

Wolfgang Slany
IST, Technische Universität Graz, Austria,
e-mail: wolfgang.slany@tugraz.at

Kay Chen Tan
National University of Singapore, Singapore,
e-mail: eletankc@nus.edu.sg

Greet Vanden Berghe
CODeS, KAHO Sint-Lieven Gebr. De Smetstraat 1, 9000 Gent, Belgium,
Tel: +32 9-265.86.10
e-mail: greet.vandenberghe@kahosl.be

Miguel A. Vega-Rodríguez
ARCO Research Group, University of Extremadura, Dept. Technologies of
Computers and Communications, Escuela Politécnica, Cáceres, Spain,
e-mail: mavega@unex.es

Stephan Westphal
Institute for Numerical and Applied Mathematics,
Georg-August University, Germany,
e-mail: s.westphal@math.uni-goettingen.de

Shengxiang Yang
Centre for Computational Intelligence (CCI), School of Computer Science and
Informatics, De Montfort University, The Gateway, Leicester LE1 9BH, U.K.,
e-mail: syang@dmu.ac.uk

Xin Yao
Center of Excellence for Research in Computational Intelligence and Applications, School of Computer Science, University of Birmingham, Birmingham B15 2TT, U.K.,
e-mail: x.yao@cs.bham.ac.uk

Mengjie Zhang
Victoria University of Wellington, New Zealand,
e-mail: mengjie.zhang@ecs.vuw.ac.nz