



PATAT

Programme of
The 6th International Conference on the
Practice and Theory of Automated Timetabling

Wednesday 30th August, 2006 – Friday 1st September, 2006

Faculty of Informatics, Masaryk University
Brno, The Czech Republic

Welcome

On behalf of the Steering Committee and the Programme Committee of the PATAT (Practice and Theory of Automated Timetabling) series of conferences, we would like to welcome you to the sixth conference here in Brno. The PATAT conferences, which are held every two years, bring together researchers and practitioners in all aspects of computer-aided timetable generation. This includes university timetabling, school timetabling, personnel rostering, transportation timetabling, sports scheduling and other areas of the subject. The programme of this year's conference features seventy presentations which represent the state-of-the-art in automated timetabling: there are 4 plenary papers, 17 full papers, 39 extended abstracts, and 7 system demonstrations. We

are particularly pleased to welcome system demonstrations which are introduced at PATAT this year for the first time.

We are very happy to welcome you to Brno. We hope you enjoy your stay here and that you get a chance to explore the city and the surrounding area during your visit. We wish you an informative, useful, and interesting conference. Enjoy it!

Edmund K. Burke and Hana Rudová
PATAT 2006 Co-Chairs

Tuesday 29th August, 2006

4:00pm – 6:00pm **Registration**
Foyer of the Congress Hall

6:00pm – **City Tour**
Meeting at the reception desk

Wednesday 30th August, 2006

7:30am – 6:00pm **Registration**
Foyer of the Congress Hall

8:30am – 8:45am **Opening**
Congress Hall

8:45am – 9:45am **Invited Talk**
Chair: Edmund Burke
Congress Hall

Very Large-Scale Neighborhood Search Techniques in Timetabling Problems
James Orlin

9:55am – 10:35am **Extended Abstracts: 3 parallel sessions**

SCHOOL TIMETABLING
Chair: George White
Congress Hall

Scheduling school meetings
Franca Rinaldi, Paolo Serafini

A Four-phase Approach to a Timetabling Problem in Secondary Schools
Peter de Haan, Ronald Landman, Gerhard Post, Henri Ruizenaar

SOCCER TOURNAMENT SCHEDULING
Chair: Celso Ribeiro
Room 4

Scheduling the Belgian Soccer League
Dries Goossens, Frits Spijksma

Scheduling the Brazilian Soccer Championship
Celso C. Ribeiro, Sebastian Urrutia

LOCAL SEARCH
Chair: Dario Landa-Silva
Room 3

An Iterative Re-start Variable Neighbourhood Search for the Examination Timetabling Problem
Masri Ayob, Edmund K. Burke, Graham Kendall

Experiments with a form of double iterated search for use on hard combinatorial problems with many objectives
Mike B. Wright

10:35am – 11:00am **Coffee Break**
Foyer of the Congress Hall

11:00am – 12:30pm

Full Papers: 2 parallel sessions

EDUCATIONAL TIMETABLING

Chair: Keith Murray

Congress Hall

The Teaching Space Allocation Problem with Splitting

Camille Beyrouthy, Edmund K. Burke, J. Dario Landa-Silva, Barry McCollum, Paul McMullan, Andrew J. Parkes

The KTS High School Timetabling System

Jeffrey H. Kingston

Solving the University Timetabling Problem with Optimized Enrolment of Students by A Parallel Self-adaptive GA

Radomir Perzina

TIMETABLING IN HOSPITALS

Chair: Greet Vanden Berghe

Room 4

An Evaluation of Certain Heuristic Optimization Algorithms in Scheduling Medical Doctors and Medical Students

Christine A. White, Emilina Nano, Diem-Hang Nguyen-Ngoc, George M. White

An Empirical Investigation on Memes, Self-generation and Nurse Rostering

Ender Ozcan

An Approach for Automated Surgery Scheduling

Karl-Heinz Krempels, Andriy Panchenko

12:30pm – 2:00pm

Lunch

Lucullus Restaurant

2:00pm – 3:30pm

Full Papers: 2 parallel sessions

EDUCATIONAL TIMETABLING

Chair: Jim Orlin

Congress Hall

Linear Linkage Encoding in Grouping Problems: Applications on Graph Coloring and Timetabling

Ozgur Ulker, Ender Ozcan, Emin Erkan Korkmaz

Artificial Immune Algorithms for University Timetabling

Muhammad Rozi Malim, Ahamad Tajudin Khader, Adli Mustafa

Timetabling problems at the TU Eindhoven

John van den Broek, Cor Hurkens, Gerhard Woeginger

DATA MODELS

Chair: Andrew Parkes

Room 4

Hierarchical Timetable Construction

Jeffrey H. Kingston

An Extensible Modelling Framework for the Examination Timetabling Problem

David Ranson, Samad Ahmadi

3:30pm – 4:00pm

Coffee Break

Foyer of the Congress Hall

4:00pm – 4:40pm

Extended Abstracts: 3 parallel sessions

EXAMINATION TIMETABLING

Chair: Barry McCollum

Congress Hall

Solving exam timetabling problems with the Flex-Deluge algorithm

Edmund K. Burke, Yuri Bykov

A Study on the Short-Term Prohibition Mechanisms in Tabu Search for Examination Timetabling

Luca Di Gaspero, Marco Chiarandini, Andrea Schaerf

SPORTS TIMETABLING

Chair: Graham Kendall

Room 4

Referee Assignment in Sports Tournaments

Alexandre R. Duarte, Celso C. Ribeiro, Sebastian Urrutia

Minimizing the Carry-Over Effects Value in a Round-Robin Tournament

Ryuhei Miyashiro, Tomomi Matsui

GENERAL ISSUES

Chair: Han Hoogeveen

Room 3

A Decomposition Approach with Inserted Idle Time Scheduling Subproblems in Group Scheduling

Cumhur A. Gelogullari, Rasaratnam Logendran

New concepts in neighborhood search for permutation optimization problems

Wojciech Bozejko, Mieczyslaw Wodecki

System Demonstrations

Congress Hall

Automated System for University Timetabling

Keith Murray, Tomas Muller

Process Plan Optimization using a Genetic Algorithm

Fabian Marki, Manfred Vogel, Martin Fischer

HARMONY System demonstration

Laurens Fijn van Draat, Gerhard Post, Bart Veltman

5:00pm – 6:00pm

6:30pm –

Conference Dinner at the Spilberk Castle

Meeting at the reception desk

Thursday 31st August, 2006

8:15am – 6:00pm

Registration

Foyer of the Congress Hall

8:40am – 9:40am

Invited Talk

Chair: Wilhelm Erben

Congress Hall

Measurability and Reproducibility in Timetabling Research: State-of-the-Art and Discussion

Andrea Schaerf

9:50am – 10:30am

Extended Abstracts: 3 parallel sessions

EXAMINATION TIMETABLING

Chair: Rong Qu

Congress Hall

Examination Timetabling:

A New Formulation

Edmund K. Burke, Barry McCollum,

Paul McMullan, Rong Qu

Modelling and Solving the Italian Examination Timetabling Problem using Tabu Search

Andrea Zampieri, Andrea Schaerf

SPORTS TIMETABLING

Chair: Mike Wright

Room 4

Scheduling Sport Leagues using Branch-and-Price

Dirk Briskorn

Branch-and-cut for a real-life highly constrained soccer tournament scheduling problem

Guillermo Duran, Thiago F. Noronha, Celso C. Ribeiro, Sebastian Souyris, Andres Weintraub

DISTRIBUTED TIMETABLING

Chair: Jonathan Garibaldi

Room 3

Framework for negotiation in Distributed Nurse Rostering Problems

Stefaan Haspeslagh, Patrick De Causmaecker, Greet

Vanden Berghe

How to solve a timetabling problem by negotiation

Marie-Helene Verrons, Philippe Mathieu

10:30am – 11:00am

Coffee Break

Foyer of the Congress Hall

11:00am – 12:30pm

Full Papers: 2 parallel sessions

EMPLOYEE TIMETABLING

Chair: Gerhard Post

Congress Hall

Generating Personnel Schedules in an Industrial Setting Using a Tabu Search Algorithm

Pascal Tellier, George White

A flexible model and a hybrid exact method for integrated employee timetabling and production scheduling

Christian Artigues, Michel Gendreau, Louis-Martin Rousseau

Strategic Employee Scheduling

Peter Chan, Michael Hiroux, Georges Weil

EXAMINATION TIMETABLING

Chair: Sanja Petrovic

Room 4

A Novel Fuzzy Approach to Evaluate the Quality of Examination Timetabling

Hishammuddin Asmuni, Edmund K. Burke, Jonathan M. Garibaldi, Barry McCollum

An Experimental Study on Hyper-heuristics and Final Exam Timetabling

Burak Bilgin, Ender Ozcan, Emin Erkan Korkmaz

Ant algorithms for the exam timetabling problem

Michael Eley

12:30pm – 2:00pm **Lunch**
Lucullus Restaurant

2:00pm – 3:00pm **Invited Talk**
Chair: Patrick De Causmaecker
Congress Hall

University Timetabling: Bridging the Gap between Research and Practice
Barry McCollum

3:00pm – 3:45pm **Discussion**
Chair: Patrick De Causmaecker
Congress Hall

Future of the Timetabling

3:45pm – 4:15pm **Coffee Break**
Foyer of the Congress Hall

4:15pm – 5:15pm **Extended Abstracts: 3 parallel sessions**

UNIVERSITY COURSE TIMETABLING
Chair: Jeffrey Kingston
Congress Hall

A Constraint Logic Programming Based Approach to the International Timetabling Competition
Patrick Pleass, Mark Wallace, Mauro Bampo

Multi-Site Timetabling
Ruben Gonzalez-Rubio

Understanding the Role of UFOs Within Space Exploitation
Camille Beyrouthy, Edmund K. Burke, J. Dario Landa-Silva, Barry McCollum, Paul McMullan, Andrew J. Parkes

SPORTS TIMETABLING
Chair: Jan Schreuder
Room 4

A Tiling Approach for Fast Implementation of the Traveling Tournament Problem
Amotz Bar-Noy, Douglas Moody

Constructive Algorithms for the Constant Distance Traveling Tournament Problem
Nobutomo Fujiwara, Shinji Imahori, Tomomi Matsui, Ryuhei Miyashiro

A Constructive Heuristic for the Travelling Tournament Problem
Graham Kendall, Wim Miserez, Greet Vanden Berghe

TRANSPORT TIMETABLING
Chair: Raymond Kwan
Room 3

Dynamically Configured l-opt Heuristics for Bus Scheduling
Prapa Rattadilok, Raymond Kwan

Time windows and constraint boundaries for public transport scheduling
Ignacio Laplagne, Raymond Kwan, Ann Kwan

A dispatching tool for railway transportation
Pascal Rebreyend

System Demonstrations

Congress Hall

SWOPS – Shift Work Optimized Planning and Scheduling

Dagan Gilat, Ariel Landau, Amnon Ribak, Yossi Shiloach, Segev Wasserkrug

5:30pm – 6:30pm

Optime: Integrating Research Expertise with Institutional Requirements

Edmund Burke, Graham Kendall, Barry McCollum, Paul McMullan, Jim Newall

Dialog-Based Intelligent Operation Theatre Scheduler

Karl-Heinz Krempels, Andriy Panchenko

An integrated Framework for Distributed Timetabling

Peter Wilke

7:00pm –

Reception at the hotel

Lucullus Restaurant

Friday 1st September, 2006

8:30am – 12:30pm

Registration

Foyer of the Congress Hall

9:00am – 9:15am

Final Remarks

Congress Hall

9:15am – 10:15am

Invited Talk

Chair: Hana Rudova

Congress Hall

Physicians Scheduling in Emergency Rooms

Michel Gendreau

10:15am – 10:45am

Coffee Break

Foyer of the Congress Hall

10:45am – 12:25pm

Extended Abstracts: 3 parallel sessions

UNIVERSITY COURSE TIMETABLING

*Chair: Andrea Schaerf
Congress Hall*

Tackling the university course timetabling problem with an aggregation approach

Mieke Adriaen, Patrick De Causmaecker, Peter De-meester, Greet Vanden Berghe

Computational Complexity Issues in University Interview Timetabling

Yuuki Kiyonari, Eiji Miyano, Shuichi Miyazaki

A Simulated Annealing Hyper-heuristic for University Course Timetabling

Ruibin Bai, Edmund K. Burke, Graham Kendall, Barry McCollum

Lecture and tutorial timetabling at a Tunisian university

Abdelaziz Dammak, Abdelkarim Elloumi, Hichem Kamoun

Solving Timetabling Problems by Hybridizing Genetic Algorithms and Tabu Search

Malek Rahoual, Rachid Saad

EMPLOYEE TIMETABLING & GENERAL ISSUES

*Chair: Michel Gendreau
Room 4*

Making good rosters for the security personnel

Han Hoogeveen, Eelko Penninx

An employee timetabling problem in a maintenance service of a software company

Laure-Emmanuelle Drezet, Deborah Chesnes, Odile Bellenguez-Morineau

Optimality aspects with assigning of Magistrates to Sessions and Teams of the Amsterdam Criminal Court

Jan Schreuder

Progress Control in Variable Neighbourhood Search

Tim Curtois, Laurens Fijn van Draat, Jan-Kees van Ommeren, Gerhard Post

Scheduling with Soft CLP(FD) Solver

Tomas Cerny, Hana Rudova

SCHOOL TIMETABLING

*Chair: Ender Ozcan
Room 3*

Local Search Heuristics for the Teacher/Class Timetabling Problem

Yuri Kochetov, Polina Obuhovskaya, Mikhail Paschenko

Timetabling at German Secondary Schools: Tabu Search versus Constraint Programming

Frank Jacobsen, Andreas Bortfeldt, Hermann Gehring

12:30pm – 2:00pm

Lunch

Lucullus Restaurant

Saturday 2nd September, 2006

7:30am – 5:00pm

Saturday Trip

Meeting at the reception desk

Steering Committee

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