

The 2009 ICAPS conference is sponsored by

University of Macedonia, Greece

Institute of Cognitive Sciences and Technologies, National Research Council
(ISTC-CNR), Italy

Information and Communication Technology Department,
National Research Council (ICT-CNR), Italy

Planning and Scheduling Team, ISTC-CNR, Italy

National Science Foundation (NSF), USA

Artificial Intelligence Journal, Elsevier

International Joint Conference on Artificial Intelligence (IJCAI)

European Coordinating Committee for Artificial Intelligence (ECCAI), Europe

Willow Garage, USA

David E. Smith, USA

NICTA, Australia

European Science Foundation, COST Action, Europe

Marathon Data Systems, Greece

Hellenic Artificial Intelligence Society (EETN), Greece

Prefecture of Thessaloniki, Greece

Hellenic Ministry of Culture, Greece

Klidiarithmos Publishing, Greece

*Held in cooperation with the Association for the
Advancement of Artificial Intelligence*

ICAPS 2009

Proceedings of the Scheduling and Planning Applications woRKshop (SPARK)

Edited by

Luis Castillo, Gabriella Cortellessa and Neil Yorke-Smith

Cover painting courtesy Yannis Stavrou.

Contents

Preface / iv

Luis Castillo, Gabriella Cortellessa and Neil Yorke-Smith

Organizing Committee / v

Programme Committee / v

Papers

Recovering Plans from the Web / 1

Andrea Addis, Giuliano Armano, Daniel Borrajo

Distributed Intelligence System for Online Action-Taking in Non-Anticipated Situations in Nuclear Power Plants / 7

Miltos Alamaniotis, Rong Gao, Lefteri H. Tsoulakas

Deploying RAXEM2: Planning Improvements in Daily Work Practice / 14

Giulio Bernardi, Amedeo Cesta, Gabriella Cortellessa

Challenges in Representing and Reasoning with Spacecraft Operations

Constraints: A Case Study with Earth Observing One/ 22

Steve Chien, Daniel Tran, Gregg Rabideau, Steve Schaffer, Daniel Mandl, Stuart Frye

Integrated Maintenance Scheduling for Semiconductor Manufacturing / 30

Andrew Davenport

Solving Clustered Oversubscription Problems for Planning e-Courses / 36

Susana Fernandez, Daniel Borrajo

Evaluating Multi-Objective Evolutionary Scheduling Strategies for the James Webb Space Telescope / 44

Mark E. Giuliano, Mark D. Johnston

Planning@SAP: An Application in Business Process Management / 52

Jörg Hofmann, Ingo Weber, Frank Michael Kraft

Request-Driven Scheduling for NASA's Deep Space Network / 60

Mark D. Johnston, Daniel Tran, Belinda Arroyo, Chris Page

A Constraint-Based Approach for Plan Management in Intelligent Environments / 68

Federico Pecora, Marcello Cirillo

Flight Trajectory Path Planning / 76

David Sislak, Premysl Volf, Michal Pechoucek

Mission Planning in a Dynamic Ocean Sensorweb / 84

David R. Thompson, Steve Chien, Matthew Arrott, Arjuna Balasuriya, Yi Chao, Peggy Li, Michael Meisinger, Stephanie Petillo, Oscar Schofield

Scheduling in the Real World: Lessons Learnt / 92

Roman van der Krogt, James Little, Helmut Simonis

Planning and Scheduling of Crude Oil Distribution in a Petroleum Plant / 99

Tiago Segun Vaquero, Fernando Sette, José Reinaldo Silva, J. Christopher Beck

Planning as Heuristic Search for Incremental Fault Diagnosis and Repair / 107

Håkan Warnqvist, Jonas Kvarnström, Patrick Doherty

Preface

A perennial question in the AI planning and scheduling community is why such an applicable research field finds so little use. What keeps from the real world the fine advances made over recent years? The international Scheduling and Planning Applications workshop (SPARK) was established to help address the gap.

Building on antecedent events, SPARK'09 is the second edition of a workshop series designed to provide a stable, long-term forum where researchers can discuss the applications of planning and scheduling techniques to real problems.

The challenges and discussions from one year's edition of SPARK set the baseline for the successive editions, so that the workshop fosters an evolving and cumulative perspective of applications and their challenges along the years. This effort is intended to converge to an evolving set of challenges that can aid practitioners and benefit the direction of the research community.

The diverse domains where planning and scheduling research can be applied is seen in the papers to be discussed this year. Applications include semiconductor manufacturing, oil production facilities, nuclear power plant safety, deep sea gliders, extracting plans from collaborative websites, and a range of robot, space, and satellite problems.

We thank the Programme Committee for their commitment and excellence in reviewing. We thank the ICAPS'09 workshop and publication chairs for their support. Finally, we thank the session chairs who agreed to lead discussion during the workshop.

– *Gabriella Cortellessa, Luis Castillo, Neil Yorke-Smith*
Workshop co-Chairs

Organizing Committee

Luis Castillo, University of Granada, Spain

Gabriella Cortellessa, ISTC-CNR, Italy

Neil Yorke-Smith, SRI International, USA

Programme Committee

Roman Barták, Charles University, Czech Republic

Mark Boddy, Adventium Labs, USA

Daniel Borrajo, University Carlos III de Madrid, Spain

Luis Castillo, University of Granada, Spain

Steve Chien, NASA JPL, USA

Gabriella Cortellessa, ISTC-CNR, Italy

Andrew Davenport, IBM Yorktown, USA

Minh Do, PARC, USA

Juan Fernández-Olivares, University of Granada, Spain

Oscar García-Pérez, IActive Intelligent Solutions, Spain

Felix Ingrand, LAAS, France

Peter Jarvis, NASA Ames, USA

Philippe Laborie, ILOG, France

Karen Myers, SRI International, USA

Nicola Policella, ESOC, Germany

Rong Qu, University of Nottingham, UK

Riccardo Rasconi, ISTC-CNR, Italy

Tiago Vaquero, University of Sao Paulo, Brazil

Gerard Verfaillie, CERT, France

Neil Yorke-Smith, SRI International, USA