

18th International Conference on Principles of Knowledge Representation and Reasoning (KR2021)

Online
3 – 12 November 2021

Editors:

**Meghyn Bienvenu
Gerhard Lakemeyer
Esra Erdem**

ISBN: 978-1-7138-4290-3

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2021) by International Joint Conference on Artificial Intelligence (IJCAI)
All rights reserved. No part of this book may be reproduced in any form by any electronic or mechanical means (including photocopying, recording, or information storage and retrieval) without permission in writing from the publisher.

Printed with permission by Curran Associates, Inc. (2022)

For permission requests, please contact International Joint Conference on Artificial Intelligence (IJCAI) at the address below.

International Joint Conference on Artificial Intelligence (IJCAI)
Information Sciences Institute/USC 4676
Admiralty Way, Marina del Rey
CA 90292
USA

Phone: +49 (761) 203-8221

Fax: +49 (761) 203-8222

nebel@ijcai.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

SOMEBODY KNOWS	1
<i>Thomas Agotnes</i>	
REASONING ABOUT EXPLANATIONS FOR NON-VALIDATION IN SHACL.....	11
<i>Shqiponja Ahmetaj</i>	
GENERALIZED TEMPORAL INFERENCE VIA PLANNING.....	21
<i>Diego Aineto</i>	
EQUIVALENCE OF SEMANTICS IN ARGUMENTATION	31
<i>Leila Amgoud</i>	
SYNTHESIZING BEST-EFFORT STRATEGIES UNDER MULTIPLE ENVIRONMENT SPECIFICATIONS	41
<i>Benjamin Aminof</i>	
CHARACTERIZATIONS AND CLASSIFICATIONS OF ARGUMENTATIVE ENTAILMENTS	51
<i>Ofer Arieli</i>	
ON FREE DESCRIPTION LOGICS WITH DEFINITE DESCRIPTIONS	62
<i>Alessandro Artale</i>	
ON THE COMPUTATIONAL INTELLIGIBILITY OF BOOLEAN CLASSIFIERS	73
<i>Gilles Audemard</i>	
ADMISSIBILITY IN PROBABILISTIC ARGUMENTATION	86
<i>Christel Baier</i>	
CORRECTING HIERARCHICAL PLANS BY ACTION DELETION	98
<i>Roman Barták</i>	
CHOICES AND THEIR CONSEQUENCES - EXPLAINING ACCEPTABLE SETS IN ABSTRACT ARGUMENTATION FRAMEWORKS	109
<i>Ringo Baumann</i>	
DEL-BASED EPISTEMIC PLANNING FOR HUMAN-ROBOT COLLABORATION: THEORY AND IMPLEMENTATION.....	119
<i>Thomas Bolander</i>	
ENFORCING SETS OF FORMULAS IN STRUCTURED ARGUMENTATION	129
<i>Annemarie Borg</i>	
CAPTURING HOMOMORPHISM-CLOSED DECIDABLE QUERIES WITH EXISTENTIAL RULES	140
<i>Camille Bourgaux</i>	
ON THE IDENTIFIABILITY OF HIERARCHICAL DECISION MODELS	150
<i>Roman Bresson</i>	
PARALLELISABLE EXISTENTIAL RULES: A STORY OF PIECES	162
<i>Maxime Buron</i>	

CLOSED- AND OPEN-WORLD REASONING IN DL-LITE FOR CLOUD INFRASTRUCTURE SECURITY	173
<i>Claudia Cauli</i>	
ON EVENTUAL APPLICABILITY OF PLANS IN DYNAMIC ENVIRONMENTS WITH CYCLIC PHENOMENA	183
<i>Lukáš Chrupa</i>	
AN ACCOUNT OF INTENSIONAL AND EXTENSIONAL ACTIONS, AND ITS APPLICATION TO BELIEF, NONDETERMINISTIC ACTIONS AND FALLIBLE SENSORS	193
<i>Jens Claßen</i>	
A COMPILATION OF SUCCINCTNESS RESULTS FOR ARITHMETIC CIRCUITS	204
<i>Alexis De Colnet</i>	
THE NONDETERMINISTIC SITUATION CALCULUS	215
<i>Giuseppe De Giacomo</i>	
TIMED TRACE ALIGNMENT WITH METRIC TEMPORAL LOGIC OVER FINITE TRACES	226
<i>Giuseppe De Giacomo</i>	
SYNTHESIS WITH MANDATORY STOP ACTIONS	236
<i>Giuseppe De Giacomo</i>	
BEYOND SIMPLE IMAGES: HUMAN KNOWLEDGE-GUIDED GANS FOR CLINICAL DATA GENERATION	246
<i>Devendra Singh Dhani</i>	
EXPRESSING AND EXPLOITING THE COMMON SUBGOAL STRUCTURE OF CLASSICAL PLANNING DOMAINS USING SKETCHES	257
<i>Dominik Drexler</i>	
TREEWIDTH-AWARE CYCLE BREAKING FOR ALGEBRAIC ANSWER SET COUNTING	268
<i>Thomas Eiter</i>	
ANSWER-SET PROGRAMMING FOR LEXICOGRAPHICAL MAKESPAN OPTIMISATION IN PARALLEL MACHINE SCHEDULING.....	279
<i>Thomas Eiter</i>	
BORDA, CANCELLATION AND BELIEF MERGING.....	290
<i>Patricia Everaere</i>	
REASONING OVER ATTACK-INCOMPLETE AAFS IN THE PRESENCE OF CORRELATIONS.....	300
<i>Bettina Fazzinga</i>	
RATIONAL VERIFICATION FOR PROBABILISTIC SYSTEMS.....	311
<i>Julian Gutierrez</i>	
HOW TO APPROXIMATE ONTOLOGY-MEDIATED QUERIES	322
<i>Anneke Haga</i>	
APPROXIMATION FIXPOINT THEORY FOR NON-DETERMINISTIC OPERATORS AND ITS APPLICATION IN DISJUNCTIVE LOGIC PROGRAMMING	333
<i>Jesse Heyninck</i>	

REVISION AND CONDITIONAL INFERENCE FOR ABSTRACT DIALECTICAL FRAMEWORKS.....	344
<i>Jesse Heyninck</i>	
ON EFFICIENTLY EXPLAINING GRAPH-BASED CLASSIFIERS.....	355
<i>Xuanxiang Huang</i>	
STRATEGIC ABILITIES OF ASYNCHRONOUS AGENTS: SEMANTIC SIDE EFFECTS AND HOW TO TAME THEM.....	367
<i>Wojciech Jamroga</i>	
SAFE LEARNING OF LIFTED ACTION MODELS.....	378
<i>Brendan Juba</i>	
SEPARATING DATA EXAMPLES BY DESCRIPTION LOGIC CONCEPTS WITH RESTRICTED SIGNATURES	389
<i>Jean Christoph Jung</i>	
SATISFIABILITY CHECKING OF STRATEGY LOGIC WITH SIMPLE GOALS	399
<i>Magdalena Kacprzak</i>	
FORMALIZING STATISTICAL BELIEFS IN HYPOTHESIS TESTING USING PROGRAM LOGIC.....	410
<i>Yusuke Kawamoto</i>	
SEMI-STABLE SEMANTICS FOR ABSTRACT DIALECTICAL FRAMEWORKS	421
<i>Atefeh Keshavarzi Zafarghandi</i>	
UNFOUNDED SETS FOR DISJUNCTIVE HYBRID MKNF KNOWLEDGE BASES	431
<i>Spencer Killen</i>	
DIAGNOSIS OF ACTIVE SYSTEMS WITH ABSTRACT OBSERVATIONS AND COMPILED KNOWLEDGE	441
<i>Gianfranco Lamperti</i>	
UNSUPERVISED NOVELTY CHARACTERIZATION IN PHYSICAL ENVIRONMENTS USING QUALITATIVE SPATIAL RELATIONS.....	453
<i>Ruiqi Li</i>	
ON THE PROGRESSION OF BELIEF.....	464
<i>Daxin Liu</i>	
APPROXIMATE INFERENCE FOR NEURAL PROBABILISTIC LOGIC PROGRAMMING	474
<i>Robin Manhaeve</i>	
STRATEGIC REASONING IN AUTOMATED MECHANISM DESIGN	486
<i>Bastien Maubert</i>	
PROPERTIES OF MODULE NOTIONS AND ATOMIC DECOMPOSITION	496
<i>Robin Nolte</i>	
MONOTONICITY AND NOISE-TOLERANCE IN CASE-BASED REASONING WITH ABSTRACT ARGUMENTATION	507
<i>Guilherme Paulino-Passos</i>	
REPRESENTING AND REASONING WITH EVENT MODELS FOR EPISTEMIC PLANNING.....	518
<i>David Rajaratnam</i>	

CONSOLIDATION VIA TACIT CULPABILITY MEASURES: BETWEEN EXPLICIT AND IMPLICIT DEGREES OF CULPABILITY	528
<i>Jandson S. Ribeiro</i>	
LEARNING FIRST-ORDER REPRESENTATIONS FOR PLANNING FROM BLACK BOX STATES: NEW RESULTS	538
<i>Ivan D. Rodriguez</i>	
EXISTENTIAL ABSTRACTION ON ARGUMENTATION FRAMEWORKS VIA CLUSTERING	548
<i>Zeynep G. Saribatur</i>	
BOOLEAN NETWORK LEARNING IN VECTOR SPACES FOR GENOME-WIDE NETWORK ANALYSIS	559
<i>Taisuke Sato</i>	
DECIDABILITY AND COMPLEXITY OF SOME FINITELY-VALUED DYNAMIC LOGICS.....	569
<i>Igor Sedlár</i>	
GAUSSIAN ELIMINATION MEETS MAXIMUM SATISFIABILITY.....	580
<i>Mate Soos</i>	
BELIEF CONTRACTION IN NON-CLASSICAL LOGICS AS HYPERINTENSIONAL BELIEF CHANGE	587
<i>Marlo Souza</i>	
LIFTED INFERENCE WITH TREE AXIOMS	598
<i>Timothy Van Bremen</i>	
DATALOGMTL WITH NEGATION UNDER STABLE MODELS SEMANTICS	608
<i>Przemyslaw A. Waega</i>	
FINITELY MATERIALISABLE DATALOG PROGRAMS WITH METRIC TEMPORAL OPERATORS.....	618
<i>Przemyslaw A. Waega</i>	
A PRINCIPLE-BASED ANALYSIS OF ABSTRACT AGENT ARGUMENTATION SEMANTICS	628
<i>Liuwen Yu</i>	
MAKING DL-LITE PLANNING PRACTICAL	639
<i>Stefan Borgwardt</i>	
A MANY-VALUED LOGIC FOR LEXICOGRAPHIC PREFERENCE REPRESENTATION.....	644
<i>Angelos Charalambidis</i>	
UNIVERSAL AND UNIFORM ACTION REVERSIBILITY	649
<i>Lukáš Chrpá</i>	
MEASURING INCONSISTENCY OVER SEQUENCES OF BUSINESS RULE CASES	654
<i>Carl Corea</i>	
INTRODUCING K-LINGO: A K-DEPTH BOUNDED VERSION OF ASP SYSTEM CLINGO	659
<i>Fabio Aurelio D'Asaro</i>	

COMBINING LOGIC AND NATURAL LANGUAGE PROCESSING TO SUPPORT INVESTMENT MANAGEMENT.....	664
<i>Marjolein Deryck</i>	
ON THE COMPLEXITY OF PREFERRED SEMANTICS IN ARGUMENTATION FRAMEWORKS WITH BOUNDED CYCLE LENGTH.....	669
<i>Wolfgang Dvořák</i>	
A DYNAMIC EPISTEMIC LOGIC WITH FINITE ITERATION AND PARALLEL COMPOSITION.....	674
<i>Andreas Herzig</i>	
ON THE EPISTEMIC LOGIC OF INCOMPLETE ARGUMENTATION FRAMEWORKS.....	679
<i>Andreas Herzig</i>	
DISTINGUISHABILITY IN ABSTRACT ARGUMENTATION.....	684
<i>Isabelle Kuhlmann</i>	
STICKY EXISTENTIAL RULES AND DISJUNCTION ARE INCOMPATIBLE.....	689
<i>Michael Morak</i>	
RANDOMIZED PROBLEM-RELAXATION SOLVING FOR OVER-CONSTRAINED SCHEDULES.....	694
<i>Patrick Rodler</i>	
FLEXIBLE ROBOTIC ASSEMBLY BASED ON ONTOLOGICAL REPRESENTATION OF TASKS, SKILLS, AND RESOURCES.....	700
<i>Philipp Matthias Schäfer</i>	
ON THE MAXIMAL NUMBER OF COMPLETE EXTENSIONS IN ABSTRACT ARGUMENTATION FRAMEWORKS.....	705
<i>Markus Ulbricht</i>	
PATCHCOMM: USING COMMONSENSE KNOWLEDGE TO GUIDE SYNTACTIC PARSERS.....	710
<i>Yida Xin</i>	

Author Index