

26th International Workshop on Qualitative Reasoning



The world is full of systems that have continuous aspects, and about which we have incomplete, qualitative knowledge. Humans are amazingly effective at working with such knowledge, and many science, engineering, and educational applications could benefit greatly from similar capabilities. In seeking to understand, develop, and exploit the ability to reason qualitatively, the QR community pursues research at the intersection of Artificial Intelligence, Cognitive Science, Engineering, and Science. Some QR researchers study, from a cognitive modeling perspective, how humans represent and use incomplete knowledge. Others develop algorithms and systems for constructing, simulating, and applying qualitative and semi-quantitative models. Still others exploit these insights to develop powerful methods for system modeling, explanation, diagnosis, and design, and in applications in science, engineering, and education.

The 26th International Workshop on Qualitative Reasoning provides a forum for researchers from all of these perspectives. The workshop will be held at the Institute for Creative Technologies in Playa Vista, California, USA, from July 16th to 18th 2012.

QR12 is co-located with 2nd Deep Knowledge Representation Challenge (DKRC2012).

TOPICS

- Qualitative modeling in physical, biological and social sciences, and in engineering.
- Representations and techniques for qualitative reasoning.
- Methods of integrating qualitative reasoning with other forms of knowledge, including quantitative methods and other formalisms.
- The use of qualitative reasoning for diagnosis, design, and monitoring of physical systems.
- Applications of qualitative reasoning, including education, science, and engineering.
- Cognitive models of qualitative reasoning, including the use of existing QR formalisms for cognitive modeling and results from other areas of cognitive science for qualitative reasoning.
- Using qualitative reasoning in understanding language, sketches, images, and other kinds of signals and data sources.
- Formalization, axiomatization, and mathematical foundations of qualitative reasoning.

Contents

Regular Papers

Wouter Beek and Bert Bredeweg	Providing Feedback for Common Problems in Learning by Conceptual Modeling using Expectation-Driven Consistency Maintenance
Bert Bredeweg and Floris Linnebank	Simulation preferences – Means towards usable QR engines
Scott Friedman, David Barbella and Kenneth Forbus	Repairing Qualitative Domain Knowledge with Cross-Domain Analogy
Tom Hinrichs and Kenneth Forbus	Toward Higher-Order Qualitative Representations
Tomoya Horiguchi, Tsukasa Hirashima and Kenneth Forbus	A Model-Building Learning Environment with Error-based Simulation
Matthew Klenk, Daniel Bobrow, Johan de Kleer, John Hanley and Bill Janssen	Placing Qualitative Reasoning in the Design Process
Matthew Klenk, Nick Hawes, Kate Lockwood, Graham Horn and John Kelleher	Using Anchor Points to Define and Transfer Spatial Regions Based on Context
Andrew Lovett, Subu Kandaswamy, Matthew McLure and Kenneth Forbus	Evaluating Qualitative Models of Shape Representation
Matthew McLure and Kenneth Forbus	Encoding Strategies for Learning Geographical Concepts via Analogy
Francisco Ruiz, Núria Agell, Cecilio Angulo and Mónica Sánchez	A Qualitative Learning System to acquire Human Sensory Abilities in Adjustment Tasks
Albert Samà, Francisco J Ruiz and Núria Agell	Granular Singular Spectrum Analysis for Gait Recognition
Jakob Suchan and Mehul Bhatt	Toward High-Level Dynamic Camera Control - An Integrated Qualitative-Probabilistic Approach
Jon Wetzel and Kenneth Forbus	Teleological Representations for Multimodal Design Explanations

Late Breaking Papers

Daniel Bobrow, Matthew Klenk, Johan de Kleer, Bill Janssen, and John Hanley	Challenges for Qualitative Reasoning in Design
Paulo Salles, Bert Bredeweg, Richard Noble, Andreas Zitek, Adriano Souza	Qualitative Model Patterns: a Toolkit for Learning by Modelling

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