Conceptual Structures: Extracting and Representing Semantics

Contributions to ICCS 2001
The 9th International Conference on Conceptual Structures
July 30th to August 3rd, 2001
Stanford University, California, USA

Guy W. Mineau (Ed.)
Dept. of Computer Science
Faculty of Sciences and Engineering
University Laval
Quebec City, Quebec, Canada
mineau@ift.ulaval.ca

Conference Summary

Following a series of seven annual workshops, the International Conferences on Conceptual Structures (ICCS) have been held annually in Europe (Darmstadt, 2000; Montpellier, 1998), Australia (Sydney, 1996), and North America (Blacksburg, 1999; Seattle, 1997; Santa Cruz, 1995; Washington, 1994; Quebec City, 1993). Their focus is on the formal analysis and representation of conceptual knowledge with applications to artificial intelligence, computational linguistics, and related areas of computer science.

Historically, a group of researchers working on the theory and applications of conceptual graphs (CG) founded ICCS. Over the years, they have broadened the scope to include a wide range of related theories: formal concept analysis, formal ontologies, description logics, situation theory, discourse representation theory, SNePS, and other related topics.

Papers presented at ICCS 2001 cover the following topics: conceptual graphs (theory, applications, and experience with case studies); formal concept analysis, natural language processing with emphasis on semantics and pragmatics; conceptual analysis, knowledge modeling, representation, and visualization; knowledge acquisition; and the theory and applications of ontologies.

The conference proceedings are published each year by Springer-Verlag as part of their Lecture Notes on Artificial Intelligence (LNAI) series (#699, #835, #954, #1115, #1257, #1453, #1640, #1867). This year's proceedings are also published by Springer-Verlag (LNAI #2120), and papers describing on-going research appear in these supplementary proceedings (also available at: http://sunsite.informatik.rwth-aachen.de/Publications/CEUR-WS/).

Each paper in this volume was classified under one of the following three categories: querying, extracting semantics, and conceptual categories. As we move towards knowledge servers accessible over the World Wide Web, the issues pertaining to the extraction of semantics from text, to the creation of relevant and meaningful structures that capture this knowledge (like ontologies), and our subsequent ability to query these knowledge structures are of the outmost importance. This year's conference definitely draws a path in the right direction. We hope that you enjoy the papers that it has to offer, and that they are useful in your own research.

Organizing Committees

General Chair
Robert Levinson (USA)

Local Arrangement Chair
Robert Spillers (USA)

Program Cochairs
Harry Delugach (USA) & Gerd Stumme (Germany)

Editorial Board
Galia Angelova (Bulgaria)
Michel Chein (France)
Peter Eklund (Australia)
John Esch (USA)
Bernhard Ganter (Germany)
Roger Hartley (USA)
Mary Keeler (USA)
Lotfi Lakhal (France)
Wilfried Lex (Germany)
Deborah McGuinness (USA)
Guy Mineau (Canada)
Bernard Moulin (Canada)
Marie-Laure Mugnier (France)
Heather Pfeiffer (USA)
Uta Priss (USA)
John Sowa (USA)
Bill Tepfenhart (USA)
Rudolf Wille (Germany)

Program Committee
Jean-François Baget (France)
Tru Cao (U.K.)
Claudio Carpineto (Italy)
Paul Compton (Australia)
Dan Corbett (Australia)
Judy Dick (Canada)
David Genest (France)
Olivier Gerbé (Canada)
Carole Goble (UK)
Robert Godin (Canada)
Michel Habib (France)
Ollivier Haemmerlé (France)
Adil Kabbaj (Morocco)
Adalbert Kerber (Germany)
Sergei Kuznetsov (Germany)
Pavel Kocura (UK)
Wolfgang Lenski (Germany)
Graham Mann (Australia)
Philippe Martin (Australia)
João P. Martins (Portugal)
Ralf Moeller (Germany)
Aldo de Moor (Netherlands)
Amadeo Napoli (France)
Lhouari Nourine (France)
Peter Øhrstrøm (Denmark)
Silke Pollandt (Germany)
Susanne Prediger (Germany)
Richard Raban (Australia)
Anne-Marie Rassinoux (Switzerland)
Daniel Rochowiak (USA)
Eric Salvat (France)
Ulrike Sattler (Germany)
Peter Patel-Schneider (USA)
Stuart Shapiro (USA)
Finnegan Southey (Canada)
Thanwadee Thanitsukkarn (Thailand)
Petko Valtchev (Canada)
Michel Wermelinger (Portugal)
Karl Erich Wolff (Germany)

Contents

Querying

CG-KQML+: An Agent Communication Language
and its Use in a Multi-Agent System……..…… 1
K. Bouzouba, B. Moulin, A. Kabbaj

An Algorithmic Definition of CG Operations Based
on a Bootstrap Step……..……. 15
A. Kabbaj, B. Moulin

A CG Query Engine Based on Relational Power Context
Families…….……..……. 33
B. Groh, P. Eklund

A Web-based Browsing Mechanism Based on Conceptual
Structures…….……. 47
M. Kim, P. Compton

Extracting Semantics

Authoring Operations Based on Weighted Schemata …….....……. 61
F. H. Gatzemeier

Structural Parsing…….…..……... 75
C. Hoede, L. Zhang

CGExtract: Towards Extraction of Conceptual Graphs from
Controlled English……...……..…….. 89
S. Boytcheva, P. Dobrev, G. Angelova

Dependency Analysis Using Conceptual Graph……..….. 117
L. Cox, H. S. Delugach

Conceptual Categories

Conceptual Modeling Systems: Active Knowledge Processes
in Conceptual Categories……...…….... 131
C. Landauer, K. L. Bellman

Multi-dimensional Representations of Conceptual Hierarchies……. 145
P. Becker

A Triadic Model of Information Flow…….…….…. 159
U. Priss

Relational Constructions on Semiconcept Graphs….……...… 171
S. Pollandt

Position Papers

The Philosophical Foundation of Conceptual Knowledge –
A Sociopragmatic
Approach…….…….…..……...…...189
B. Wyssusek, M. Schwartz, B. Kremberg

Flexible Concept Lattices……..……. 193
E. Mephu Nguifo

SemTalk: A RDFS Editor for Visio 2000……..……..…..… 197
C. Fillies, F. Weichhardt

Description Logics Emerge from Ivory Towers …….……..... 203
D. McGuinness

Process Representation in Temporal Concept Analysis……..……... 211
K.E. Wolff