Lecture Notes in Computer Science 1959
Edited by G. Goos, J. Hartmanis and J. van Leeuwen

Springer
Berlin
Heidelberg
New York
Barcelona
Hong Kong
London
Milan
Paris
Singapore
Tokyo

Mokrane Bouzeghoub Zoubida Kedad
Elisabeth Métais (Eds.)

Natural Language Processing and Information Systems

5th International Conference on Applications
of Natural Language to Information Systems, NLDB 2000
Versailles, France, June 28-30, 2000
Revised Papers

Springer

Series Editors

Gerhard Goos, Karlsruhe University, Germany
Juris Hartmanis, Cornell University, NY, USA
Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editors

Mokrane Bouzeghoub
Zoubida Kedad
University of Versailles, PRiSM Laboratory
45 av. des Etats-Unis, 78035 Paris, France
E-mail: {Mokrane.Bouzeghoub,Zoubida.Kedad}@prism.uvsq.fr

Elisabeth Métais
CEDRIC Laboratory, CNAM
292 rue Saint-Martin, 75003 Paris
E-mail: elsa@cnam.fr

Cataloging-in-Publication Data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

Natural language processing and information systems : revised papers / 5th International Conference on Applications of Natural Language to Information Systems, NLDB 2000, Versailles, France, June 28 - 30, 2000. Mokrane Bouzeghoub ... (ed.). - Berlin ; Heidelberg ; New York ; Barcelona ; Hong Kong ; London ; Milan ; Paris ; Singapore ; Tokyo : Springer, 2001
(Lecture notes in computer science ; Vol. 1959)
ISBN 3-540-41943-8

CR Subject Classification (1998): H.2, H.3, I.2, F.3-4, H.4, C.2

ISSN 0302-9743
ISBN 3-540-41943-8 Springer-Verlag Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable for prosecution under the German Copyright Law.

Springer-Verlag Berlin Heidelberg New York
a member of BertelsmannSpringer Science+Business Media GmbH

http://www.springer.de

© Springer-Verlag Berlin Heidelberg 2001
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Boller Mediendesign
Printed on acid-free paper SPIN: 10781022 06/3142 5 4 3 2 1 0

Preface

This book includes the papers presented at the fifth International Conference on Application of Natural Language to Information Systems (NLDB 2000) which was held in Versailles (France) on June 28-30. Following NLDB'95 in Versailles, NLDB'96 in Amsterdam, NLDB'97 in Vancouver, and NLDB'99 in Klagenfurt, NLDB 2000 was a forum for exchanging new research results and trends on the benefits of integrating Natural Language resources in Information System Engineering.

Since the first NLDB workshop in 1995 it has become apparent that each aspect of an information system life cycle may be improved by natural language techniques: database design (specification, validation, conflict resolution), database query languages, and application programming that use new software engineering research (natural language program specifications). As information systems are now evolving into the communication area, the term databases should be considered in the broader sense of information and communication systems. The main new trend in NLDB 2000 is related to the WEB wave: WEB querying, WEB answering, and information retrieval.

Among 47 papers submitted from 18 countries, the program committee selected 29 papers to be presented during the conference. Besides these regular papers, two invited talks (given by Pr. Reind P. van de Riet and Pr. Maurice Gross), and a set of posters and demonstrations are also included in these proceedings.

This conference was possible thanks to the support of three main sponsors : the University of Versailles Saint-Quentin-en-Yvelines (Versailles, France), the PRiSM Laboratory (Versailles, France), and the Vrije University of Amsterdam (The Netherlands). We would like to thank them for their support.

We would also like to thank the secretaries and the PhD students of the PRiSM laboratory who put all their competence, enthusiasm, and kindness into making this meeting a real success.

January 2001

Mokrane Bouzeghoub
Zoubida Kedad
Elisabeth Métais

Conference Organization

Conference Chair

Mokrane Bouzeghoub

Program Chair

Elisabeth Métais

Organization Chair

Zoubida Kedad

Program Committee

Alfs T. Berztiss, University of Pittsburgh, U.S.A.
Mokrane Bouzeghoub, PRiSM, Université de Versailles, France
Hans Burg, Ordina Alignment Consulting, The Netherlands
Isabelle Comyn-Wattiau, Université de Cergy, France
Günther Fliedl, Universität Klagenfurt, Austria
Nicola Guarino, CNR, Padova, Italy
Jon Atle Gulla, Norsk Hydro, Norway
Udo Hahn, Freiburg University, Germany
Paul Johannesson, Stockholm University, Sweden
Zoubida Kedad, PRiSM, Université de Versailles, France
Christian Kop, Universität Klagenfurt, Austria
Paul McFetridge, Simon Fraser University, Canada
Henrich Mayr, Universität Klagenfurt, Austria
Ana Maria Moreno, Universidad Politecnica de Madrid, Spain
Odile Piton, Université de Paris 1, France
Reind van de Riet, Vrije Universiteit Amsterdam, The Netherlands
Ans Steuten, Vrije Universiteit Amsterdam, The Netherlands
Veda Storey, Georgia State University, USA
Bernhard Thalheim, University of Cottbus, Germany
Roland Wagner, University of Linz, Austria
Werner Winiwarter, University of Vienna, Austria
Christian Winkler, Universität Klagenfurt, Austria
Stanislaw Wrycza, University of Gdansk, Poland

Table of Contents

Linguistics in Information Systems Design

WordNet++: A Lexicon Supporting the Color-X Method 1
Ans A.G. Steuten, Frank Dehne, Reind P. van de Riet

Temporal Databases

Generating Narratives from Plots Using Schema Information 17
Antonio L. Furtado, Angelo E.M. Ciarlini

Temporal Granularity Enlightened by Knowledge 30
Sylviane R. Schwer

Word-Sense Disambiguation

Coping with Different Types of Ambiguity Using a Uniform Context Handling Mechanism 42
Martin Romacker, Udo Hahn

WSD Algorithm Applied to a NLP System 54
Andrés Montoyo, Manuel Palomar

"Beijing Frowns and Washington Pays Close Attention" Computer Processing of Relations between Geographical Proper Names in Foreign Affairs 66
Odile Piton, Denis Maurel

Semantic Relationships in Databases

Understanding and Representing Relationship Semantics in Database Design 79
Veda C. Storey

An Ontology for Classifying the Semantics of Relationships in Database Design 91
Harald Ullrich, Sandeep Purao, Veda C. Storey

A Very Large Database of Collocations and Semantic Links 103
Igor Bolshakov, Alexander Gelbukh

Semantic and Contextual Document Retrieval, Traceability

Using Terminology Extraction to Improve Traceability from Formal Models to Textual Requirements 115
Farid Cerbah, Jérôme Euzenat

Natural Language Analysis for Semantic Document Modeling 127
Terje Brasethvik, Jon Atle Gulla

Domain Analysis and Queries in Context 141
Alfs T. Berztiss

Natural Language Generation for Answering E-Mail and OLAP

Using Information Extraction and Natural Language Generation to Answer E-Mail 152
Leila Kosseim, Stéphane Beauregard, Guy Lapalme

Using OLAP and Data Mining for Content Planning in Natural Language Generation 164
Eloi L. Favero, Jacques Robin

NLP Techniques for Information Retrieval

Toward an Enhancement of Textual Database Retrieval Using NLP Techniques 176
Asanee Kawtrakul, Frederic Andres, Kinji Ono, Chaiwat Ketsuwan, Nattakan Pengphon

Document Identification by Shallow Semantic Analysis 190
Abdelhamid Bouchachia, Roland T. Mittermeir, Heinz Pozewaunig

Automated Information Extraction out of Classified Advertisements 203
Ramón Aragüés Peleato, Jean-Cédric Chappelier, Martin Rajman

WEB Information Retrieval

A Smart Web Query Engine for Semantic Retrieval of Web Data and Its Application to E-Trading 215
Roger H.L. Chiang, Cecil Chua, Veda C. Storey

GETESS: Constructing a Linguistic Search Index for an Internet Search Engine 227
Ilvio Bruder, Antje Düsterhöft, Markus Becker, Jochen Bedersdorfer, Günter Neumann

Using Semantics for Efficient Information Retrieval 239
Amalia Todiraşcu, François de Beuvron, Dan Gâlea, Bernard Keith, François Rousselot

Guidelines for NL-Based Requirements Specifications in NIBA 251
Günther Fliedl, Christian Kop, Willi Mayerthaler, Heinrich C. Mayr, Christian Winkler

Developing Document Analysis and Data Extraction Tools for Entity Modelling 265
Heather Fulford

On the Automatization of Database Conceptual Modelling through Linguistic Engineering 276
Paloma Martínez, Ana García-Serrano

Technical Databases

The REVERE Project: Experiments with the Application of Probabilistic NLP to Systems Engineering 288
Paul Rayson, Luke Emmet, Roger Garside, Pete Sawyer

Presenting Mathematical Concepts as an Example for Inference-Rich Domains 301
Helmut Horacek

Users and Interactions in WEB Querying

Modeling Interaction and Media Objects 313
Klaus-Dieter Schewe, Bernhard Thalheim

Conceptual Patterns

Validating Conceptual Models - Utilising Analysis Patterns as an Instrument for Explanation Generation 325
Maria Bergholtz, Paul Johannesson

Conceptual Patterns - A Consolidation of Coad's and Wohed's Approaches 340
Petia Wohed

Patterns Retrieval System: A First Attempt 352
Catherine Berrut, Agnès Front-Conte

Posters and Demonstrations

Ontology Learning from Text 364
Alexander Maedche, Steffen Staab

ISIS: Interaction through Speech with Information Systems 365
Afzal Ballim, Jean-Cédric Chappelier, Martin Rajman, Vincenzo Pallotta

Effects of Hypertext Navigational Structure on Knowledge Acquisition 366
Mohamed Khalifa, Rinky Lam

MEDIEVAL: A Navigation Tool Through Medieval Documents 367
Afzal Ballim, Hatem Ghorbel

MESIA: A Web Site Assistant for Document Filtering 368
Pablo Sanchez Torralba, Ana García-Serrano

LExIS: A Query Language to Scan Information Flow 369
Jérôme Carrère, Frédéric Cuppens, Claire Saurel

A Financial Data Mining Trading System 370
Véronique Plihon, Fei Wu, Georges Gardarin

Author Index 371