Keh-Yih Su
Jun'ichi Tsujii
Jong-Hyeok Lee
Oi Yee Kwong (Eds.)

LNAI 3248

Natural Language Processing – IJCNLP 2004

First International Joint Conference
Hainan Island, China, March 2004
Revised Selected Papers

Springer

Keh-Yih Su Jun'ichi Tsujii
Jong-Hyeok Lee Oi Yee Kwong (Eds.)

Natural Language Processing – IJCNLP 2004

First International Joint Conference
Hainan Island, China, March 22-24, 2004
Revised Selected Papers

Springer

Series Editors

Jaime G. Carbonell, Carnegie Mellon University, Pittsburgh, PA, USA
Jörg Siekmann, University of Saarland, Saarbrücken, Germany

Volume Editors

Keh-Yih Su
Behavior Design Corporation
2F, No.5, Industry E. Rd., IV Science-Based Industrial Park Hsinchu, Taiwan
E-mail: kysu@bdc.com.tw

Jun'ichi Tsujii
University of Tokyo
Faculty of Science and Graduate School of Information Science and Technology
Department of Computer Science
7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan
E-mail: tsujii@is.s.u-tokyo.ac.jp

Jong-Hyeok Lee
Pohang University of Science and Technology (POSTECH)
Department of Computer Science and Engineering
San 31 Hyoja-dong, Nam-gu, Pohang 790-784, Republic of Korea
E-mail: jhlee@postech.ac.kr

Oi Yee Kwong
City University of Hong Kong
Language Information Sciences Research Centre
Tat Chee Avenue, Kowloon, Hong Kong
E-mail: rlolivia@cityu.edu.hk

Library of Congress Control Number: 2004117792

CR Subject Classification (1998): I.2.7, I.2, F.4.3, I.7, J.5, H.3, F.2

ISSN 0302-9743
ISBN 3-540-24475-1 Springer Berlin Heidelberg New York

Typesetting: Camera-ready by author, data conversion by Olgun Computergrafik
Printed on acid-free paper SPIN: 11382423 06/3142 5 4 3 2 1 0

Foreword

IJCNLP 2004 heralded a new era for computational linguistics and natural language processing in Asia, as it coincided with the launching of the Asian Federation of NLP Associations (AFNLP) in Sanya, Hainan, China. This was a timely development for the most populous and linguistically diversified region in the world, and there is little wonder that this conference managed to draw over 200 participants. Following an enthusiastic response to the call for papers from 19 regions and the vigorous and rigorous efforts of the Program Committee Co-chairs, the sizable collection of papers presented at this conference enabled AFNLP to be compared with related organizations such as COLING and ACL, which have been in existence for more than 40 years.

The organizers recognized that it is important for serious attempts to be made to increase and improve efforts in this area all across Asia. Towards this end, and to contribute to a better awareness of topical issues, IJCNLP 2004 included two panels of special interest: (1) Panel on Emerging Asian Language Processing Efforts, and (2) Panel on Multilingual NLP for Public Information Services, which was devoted to the NLP requirements envisioned by the organizers of the 2008 Olympics. There were also two thematic sessions on (a) Natural Language Technology in Mobile Information Retrieval and Text Processing User Interfaces, and (b) Text Mining in Biomedicine. The offerings of this conference were further enriched by tutorials and workshops as well as an Asian Symposium on Natural Language Processing to Overcome Language Barriers, organized as a satellite event by the Institute of Electronics, Information and Communication Engineers (IEICE) and the Communications Research Laboratory (CRL) of Japan.

The publication of the collection of papers from IJCNLP 2004 by Springer in the Lecture Notes in Artificial Intelligence (LNAI) series is a welcome move and further testifies to the standards of the research efforts reported here.

A conference of this size and scope is not possible without the contributions of many individuals. Special thanks must go to the International Advisory Committee (Nicoletta Calzolari, Eva Hajicova, Eduard Hovy, Mark Johnson, Aravind Joshi, Martin Kay, Bente Maegaard, Joseph Mariani, Makoto Nagao, Donia Scott, Hozumi Tanaka, Hans Uszkoreit, Tianshun Yao), and the Organizing Committee. In particular, we are especially grateful to the Program Committee Co-chairs, Keh-Yih Su and Jun'ichi Tsujii; Publicity Chair, Hitoshi Isahara; Satellite Events Chair, Key-Sun Choi; Finance Committee Chair and Vice Chair, Kam-Fai Wong and Tom Lai, who had to deal with a complex "one conference, two currencies" situation and separate budgeting; and the Publication Chair and Vice Chairs, Jong-Hyeok Lee, Olivia Kwong and Sadao Kurohashi. The Local Organizing Committee in Beijing undertook the challenging responsibility for local arrangements in Sanya, and we are grateful to its Chair, Youqi Cao, and its Vice Chair and External Liaison Person, Maosong Sun.

We must also thank Makoto Nagao, the Honorary Chair of the conference, and the three keynote speakers, Ching-Chun Hsieh, Mark Johnson and Hans Uszkoreit.

IJCNLP 2004 must gratefully acknowledge financial sponsorship from a number of sources: the Association for Computational Linguistics (ACL), the Association for Computational Linguistics and Chinese Language Processing (ACLCLP), the Association of Natural Language Processing (ANLP), the Chinese Information Processing Society of China (CIPS), the Korean NLP Society, Microsoft Japan for the workshop "Beyond Shallow Analyses – Formalisms and Statistical Modeling for Deep Analyses," and the Chinese Language Computer Society (CLCS) for the workshop "Named Entity Recognition for Natural Language Processing Applications." Through CIPS, additional contributions were obtained from the National Natural Science Foundation of China, Fujitsu R&D Center Co., Ltd., Institute of Automation, Chinese Academy of Sciences, Microsoft Research Asia, NEC Laboratories, China, Peking University, TRS Information Technology Limited, and Tsinghua University. Without such support this conference would not have been possible. We also wish to thank the Finance Office of the City University of Hong Kong for graciously taking on the responsibility as credit card clearinghouse, and the City University Press and the University Printing Office for advice. Last but not least, to the many unnamed individuals and students in Beijing, Hong Kong, Pusan, Taipei and Tokyo, whose contributions were no less important in making this conference possible, we say thank you.

The Sanya region of Hainan Island has gained considerable prominence in recent years, the latest global event being the Miss World Contest. It is hoped that in future years, reference will be made in NLP circles to AFNLP's IJCNLP in Sanya as a watershed in NLP development.

August 2004

Benjamin K. Tsou
President, AFNLP

Preface

This book is a collection of selected papers presented at the 1st International Joint Conference on Natural Language Processing (IJCNLP 2004), the flagship conference organized by the Asian Federation of Natural Language Processing Associations (AFNLP) which took place on Hainan Island, China during 22–24 March, 2004.

A total of 211 papers from 19 regions were submitted to the conference. The program committee which consisted of 20 internationally well-respected experts acting as area chairs and organizers of the thematic sessions, selected 66 papers for oral presentation and 35 for poster presentation. Authors were invited to revise their papers to reflect the vigorous and constructive discussions at the conference, and we received 84 revised papers for this volume.

The articles in this volume cover diverse fields in NLP, from theoretical contributions in finite state technology, parsing, discourse modeling, machine learning, etc., to basic NLP technologies of semantic disambiguation, shallow parsing, sentence/text generation, etc., to NLP applications such as machine translation, text mining and information retrieval. We also have articles on topics crucial for Asian language processing, including word segmentation, chunkers, etc. The linguistic diversity in Asia has posed exciting challenges, not only to researchers who believe in the universality of human language and the technologies in computational linguistics, but also to those interested in practical applications of NLP for Asian languages. This volume should give them a good collection of the current and the most advanced results in such research.

At the same time, since the conference attracted contributions from active and respected researchers all over the world, the articles in this volume not only showcase language-specific research output, but also represent the general current achievements in our field, from both the theoretical and technological fronts. In particular, the two thematic sessions, "Text Mining in Biomedicine" and "Natural Language Technology in Mobile Information Retrieval and Text Processing User Interfaces," solicited high-quality contributions on these emerging technological challenges.

We would like to thank the area chairs and the reviewers who carried out professionally rigorous reviews and selection of papers for the conference, as well as the authors who revised their already high-quality papers to reflect the discussion at the conference. Special thanks are also given to Jin-Dong Kim (University of Tokyo) and Christine Günther (Springer) who gave technical and editorial support in the preparation of this volume.

August 2004

Keh-Yih Su, Jun'ichi Tsujii,
Jong-Hyeok Lee, Oi Yee Kwong

Conference Co-chairs

Guangnan Ni	Chinese Academy of Engineering, Beijing
Benjamin K. Tsou	City University of Hong Kong, Hong Kong

Program Co-chairs

Keh-Yih Su	Behavior Design Corporation, Hsinchu
Jun'ichi Tsujii	University of Tokyo, Tokyo

Program Committee

John Carroll	Sussex University, Brighton
Keh-Jiann Chen	Academia Sinica, Taipei
Ann Copestake	University of Cambridge, Cambridge
Robert Dale	Macquarie University, Sydney
Chu-Ren Huang	Academia Sinica, Taipei
Chin-Hui Lee	Georgia Institute of Technology, Atlanta
Gary Geunbae Lee	Pohang University of Science and Technology, Pohang
Alessandro Lenci	University of Pisa, Pisa
Dekang Lin	University of Alberta, Alberta
Yuji Matsumoto	NAIST, Nara
Sung Hyon Myaeng	Information and Communications University, Daejeon
Hwee Tou Ng	National University of Singapore, Singapore
Franz Och	ISI-USC, Los Angeles
Manabu Okumura	Tokyo Institute of Technology, Tokyo
Martha Palmer	University of Pennsylvania, Philadelphia
Laurent Romary	LORIA, Paris
Declerck Thierry	DFKI and Saarland University, Saarbruecken
Kenji Yamanishi	NEC, Tokyo
Tiejun Zhao	Harbin Institute of Technology, Harbin
Chengqing Zong	Chinese Academy of Sciences, Beijing

Reviewers

Steven Abney	Pierrette Bouillon	Jason Chang
Hani Abu-Salem	Thorsten Brants	Eugene Charniak
Eneko Agirre	Elizabeth Owen Bratt	Hsin-Hsi Chen
Akiko Aizawa	Paul Buitelaar	John Chen
Collin Baker	Harry Bunt	Hua Cheng
Nuria Bel	Miriam Butt	Colin Cherry
Emily Bender	Jean Caelen	Lee-Feng Chien
Christian Boitet	Nicoletta Calzolari	Tat-Seng Chua
Kalina Bontcheva	Jeongwon Cha	Fabio Ciravegna

Fabio Crestani
Dan Cristea
Dick Crouch
Chris Culy
Hamish Cunningham
Walter Daelemans
Ido Dagan
Jianwu Dang
Jean-Louis Dessalles
Laurence Devillers
Bonnie Dorr
Phil Edmonds
Gregor Erbach
Christiane Fellbaum
Sandiway Fong
Anette Frank
Pascale Fung
Jianfeng Gao
Sheng Gao
Ismael García Varea
Daniel Gildea
Claire Grover
Koiti Hasida
Wen-Lian Hsu
Taiyi Huang
Kentaro Inui
Masato Ishizaki
Donghong Ji
Hongyan Jing
Kristiina Jokinen
Arne Jönsson
Min-Yen Kan
Seungshik Kang
Kyoko Kanzaki
Lauri Karttunen
John Kelleher
Chris Khoo
Genichiro Kikui
Jong-Bok Kim
Jung-Hee Kim
Minkoo Kim
Alistair Knott
Philipp Koehn
Greg Kondrak
Anna Korhonen
Geert-Jan Kruijff
Sadao Kurohashi
Kui-Lam Kwok
Oi Yee Kwong
Tom Lai
Wai Lam
Philippe Langlais
Mirella Lapata
Gianni Lazzari
Gary Geunbae Lee
Jong-Hyeok Lee
Tan Lee
Mun-Kew Leong
Gina-Anne Levow
David Lewis
Haizhou Li
Hang Li
Chin-Yew Lin
Charles X. Ling
Bing Liu
Ting Liu
Robert Luk
Qing Ma
Bernardo Magnini
Robert Malouf
Inderjeet Mani
Daniel Marcu
Stella Markantonatou
Shigeru Masuyama
Yuji Matsumoto
Diana McCarthy
Kathleen McCoy
Paul Mc Kevitt
Helen Meng
Paola Merlo
Robert Moore
Tatsunori Mori
Masaaki Nagata
Chieko Nakabasami
Hwee Tou Ng
Grace Ngai
Jian-Yun Nie
Takashi Ninomiya
Cheng Niu
Tadashi Nomoto
Stephan Oepen
Kemal Oflazer
Miles Osborne
Kyonghee Paik
Patrick Pantel
Jong Park
Seong-Bae Park
John Patrick
Adam Pease
Ted Pedersen
Gerald Penn
Wim Peters
Detlef Prescher
Dragomir Radev
Stefan Riezler
German Rigau
Hae-Chang Rim
Brian Roark
Tetsuya Sakai
Susanne Salmon-Alt
Rajeev Sangal
Anoop Sarkar
Mark Seligman
Melanie Siegel
Jacques Siroux
Virach Sornlertlamvanich
Richard Sproat
Suzanne Stevenson
Michael Strube
Tomek Strzalkowski
Jian Su
Eiichiro Sumita
Maosong Sun
Hisami Suzuki
Hideki Tanaka
Hozumi Tanaka
Takaaki Tanaka
Jianhua Tao
Declerck Thierry
Takenobu Tokunaga
Peter Turney
Akira Ushioda
Takehito Utsuro
Antal van den Bosch

Josef van Genabith
Gertjan van Noord
Renata Vieira
Stephan Vogel
Haifeng Wang
Taro Watanabe
David Weir
Fuliang Weng
Jan Wiebe
Andi Wu
Dekai Wu
Lide Wu
Jun Xu
Peng Xu
Bert Xue
Endong Xun
Kenji Yamada
Qiang Yang
Jiangsheng Yu
Min Zhang
Shuwu Zhang
Fang Zheng
Guodong Zhou
Ming Zhou

Lecture Notes in Artificial Intelligence 3248

Edited by J. G. Carbonell and J. Siekmann

Subseries of Lecture Notes in Computer Science

Lecture Notes in Artificial Intelligence (LNAI)

Vol. 3345: Y. Cai (Ed.), Ambient Intelligence for Scientific Discovery. XII, 311 pages. 2005.

Vol. 3339: G.I. Webb, X. Yu (Eds.), AI 2004: Advances in Artificial Intelligence. XXII, 1272 pages. 2004.

Vol. 3336: D. Karagiannis, U. Reimer (Eds.), Practical Aspects of Knowledge Management. X, 523 pages. 2004.

Vol. 3327: Y. Shi, W. Xu, Z. Chen (Eds.), Data Mining and Knowledge Management. XIII, 263 pages. 2004.

Vol. 3315: C. Lemaître, C.A. Reyes, J.A. González (Eds.), Advances in Artificial Intelligence – IBERAMIA 2004. XX, 987 pages. 2004.

Vol. 3303: J.A. López, E. Benfenati, W. Dubitzky (Eds.), Knowledge Exploration in Life Science Informatics. X, 249 pages. 2004.

Vol. 3275: P. Perner (Ed.), Advances in Data Mining. VIII, 173 pages. 2004.

Vol. 3265: R.E. Frederking, K.B. Taylor (Eds.), Machine Translation: From Real Users to Research. XI, 392 pages. 2004.

Vol. 3264: G. Paliouras, Y. Sakakibara (Eds.), Grammatical Inference: Algorithms and Applications. XI, 291 pages. 2004.

Vol. 3259: J. Dix, J. Leite (Eds.), Computational Logic in Multi-Agent Systems. XII, 251 pages. 2004.

Vol. 3257: E. Motta, N.R. Shadbolt, A. Stutt, N. Gibbins (Eds.), Engineering Knowledge in the Age of the Semantic Web. XVII, 517 pages. 2004.

Vol. 3249: B. Buchberger, J.A. Campbell (Eds.), Artificial Intelligence and Symbolic Computation. X, 285 pages. 2004.

Vol. 3248: K.-Y. Su, J.'i. Tsujii, J.-H. Lee, O.Y. Kwong (Eds.), Natural Language Processing – IJCNLP 2004. XVIII, 817 pages. 2005.

Vol. 3245: E. Suzuki, S. Arikawa (Eds.), Discovery Science. XIV, 430 pages. 2004.

Vol. 3244: S. Ben-David, J. Case, A. Maruoka (Eds.), Algorithmic Learning Theory. XIV, 505 pages. 2004.

Vol. 3238: S. Biundo, T. Frühwirth, G. Palm (Eds.), KI 2004: Advances in Artificial Intelligence. XI, 467 pages. 2004.

Vol. 3230: J.L. Vicedo, P. Martínez-Barco, R. Muñoz, M. Saiz Noeda (Eds.), Advances in Natural Language Processing. XII, 488 pages. 2004.

Vol. 3229: J.J. Alferes, J. Leite (Eds.), Logics in Artificial Intelligence. XIV, 744 pages. 2004.

Vol. 3228: M.G. Hinchey, J.L. Rash, W.F. Truszkowski, C.A. Rouff (Eds.), Formal Approaches to Agent-Based Systems. VIII, 290 pages. 2004.

Vol. 3215: M.G.. Negoita, R.J. Howlett, L.C. Jain (Eds.), Knowledge-Based Intelligent Information and Engineering Systems, Part III. LVII, 906 pages. 2004.

Vol. 3214: M.G.. Negoita, R.J. Howlett, L.C. Jain (Eds.), Knowledge-Based Intelligent Information and Engineering Systems, Part II. LVIII, 1302 pages. 2004.

Vol. 3213: M.G.. Negoita, R.J. Howlett, L.C. Jain (Eds.), Knowledge-Based Intelligent Information and Engineering Systems, Part I. LVIII, 1280 pages. 2004.

Vol. 3209: B. Berendt, A. Hotho, D. Mladenic, M. van Someren, M. Spiliopoulou, G. Stumme (Eds.), Web Mining: From Web to Semantic Web. IX, 201 pages. 2004.

Vol. 3206: P. Sojka, I. Kopecek, K. Pala (Eds.), Text, Speech and Dialogue. XIII, 667 pages. 2004.

Vol. 3202: J.-F. Boulicaut, F. Esposito, F. Giannotti, D. Pedreschi (Eds.), Knowledge Discovery in Databases: PKDD 2004. XIX, 560 pages. 2004.

Vol. 3201: J.-F. Boulicaut, F. Esposito, F. Giannotti, D. Pedreschi (Eds.), Machine Learning: ECML 2004. XVIII, 580 pages. 2004.

Vol. 3194: R. Camacho, R. King, A. Srinivasan (Eds.), Inductive Logic Programming. XI, 361 pages. 2004.

Vol. 3192: C. Bussler, D. Fensel (Eds.), Artificial Intelligence: Methodology, Systems, and Applications. XIII, 522 pages. 2004.

Vol. 3191: M. Klusch, S. Ossowski, V. Kashyap, R. Unland (Eds.), Cooperative Information Agents VIII. XI, 303 pages. 2004.

Vol. 3187: G. Lindemann, J. Denzinger, I.J. Timm, R. Unland (Eds.), Multiagent System Technologies. XIII, 341 pages. 2004.

Vol. 3176: O. Bousquet, U. von Luxburg, G. Rätsch (Eds.), Advanced Lectures on Machine Learning. IX, 241 pages. 2004.

Vol. 3171: A.L.C. Bazzan, S. Labidi (Eds.), Advances in Artificial Intelligence – SBIA 2004. XVII, 548 pages. 2004.

Vol. 3159: U. Visser, Intelligent Information Integration for the Semantic Web. XIV, 150 pages. 2004.

Vol. 3157: C. Zhang, H. W. Guesgen, W.K. Yeap (Eds.), PRICAI 2004: Trends in Artificial Intelligence. XX, 1023 pages. 2004.

Vol. 3155: P. Funk, P.A. González Calero (Eds.), Advances in Case-Based Reasoning. XIII, 822 pages. 2004.

Vol. 3139: F. Iida, R. Pfeifer, L. Steels, Y. Kuniyoshi (Eds.), Embodied Artificial Intelligence. IX, 331 pages. 2004.

Vol. 3131: V. Torra, Y. Narukawa (Eds.), Modeling Decisions for Artificial Intelligence. XI, 327 pages. 2004.

Vol. 3127: K.E. Wolff, H.D. Pfeiffer, H.S. Delugach (Eds.), Conceptual Structures at Work. XI, 403 pages. 2004.

Vol. 3123: A. Belz, R. Evans, P. Piwek (Eds.), Natural Language Generation. X, 219 pages. 2004.

Vol. 3120: J. Shawe-Taylor, Y. Singer (Eds.), Learning Theory. X, 648 pages. 2004.

Vol. 3097: D. Basin, M. Rusinowitch (Eds.), Automated Reasoning. XII, 493 pages. 2004.

Vol. 3071: A. Omicini, P. Petta, J. Pitt (Eds.), Engineering Societies in the Agents World. XIII, 409 pages. 2004.

Vol. 3070: L. Rutkowski, J. Siekmann, R. Tadeusiewicz, L.A. Zadeh (Eds.), Artificial Intelligence and Soft Computing - ICAISC 2004. XXV, 1208 pages. 2004.

Vol. 3068: E. André, L. Dybkjær, W. Minker, P. Heisterkamp (Eds.), Affective Dialogue Systems. XII, 324 pages. 2004.

Vol. 3067: M. Dastani, J. Dix, A. El Fallah-Seghrouchni (Eds.), Programming Multi-Agent Systems. X, 221 pages. 2004.

Vol. 3066: S. Tsumoto, R. Słowiński, J. Komorowski, J.W. Grzymała-Busse (Eds.), Rough Sets and Current Trends in Computing. XX, 853 pages. 2004.

Vol. 3065: A. Lomuscio, D. Nute (Eds.), Deontic Logic in Computer Science. X, 275 pages. 2004.

Vol. 3060: A.Y. Tawfik, S.D. Goodwin (Eds.), Advances in Artificial Intelligence. XIII, 582 pages. 2004.

Vol. 3056: H. Dai, R. Srikant, C. Zhang (Eds.), Advances in Knowledge Discovery and Data Mining. XIX, 713 pages. 2004.

Vol. 3055: H. Christiansen, M.-S. Hacid, T. Andreasen, H.L. Larsen (Eds.), Flexible Query Answering Systems. X, 500 pages. 2004.

Vol. 3048: P. Faratin, D.C. Parkes, J.A. Rodríguez-Aguilar, W.E. Walsh (Eds.), Agent-Mediated Electronic Commerce V. XI, 155 pages. 2004.

Vol. 3040: R. Conejo, M. Urretavizcaya, J.-L. Pérez-de-la-Cruz (Eds.), Current Topics in Artificial Intelligence. XIV, 689 pages. 2004.

Vol. 3035: M.A. Wimmer (Ed.), Knowledge Management in Electronic Government. XII, 326 pages. 2004.

Vol. 3034: J. Favela, E. Menasalvas, E. Chávez (Eds.), Advances in Web Intelligence. XIII, 227 pages. 2004.

Vol. 3030: P. Giorgini, B. Henderson-Sellers, M. Winikoff (Eds.), Agent-Oriented Information Systems. XIV, 207 pages. 2004.

Vol. 3029: B. Orchard, C. Yang, M. Ali (Eds.), Innovations in Applied Artificial Intelligence. XXI, 1272 pages. 2004.

Vol. 3025: G.A. Vouros, T. Panayiotopoulos (Eds.), Methods and Applications of Artificial Intelligence. XV, 546 pages. 2004.

Vol. 3020: D. Polani, B. Browning, A. Bonarini, K. Yoshida (Eds.), RoboCup 2003: Robot Soccer World Cup VII. XVI, 767 pages. 2004.

Vol. 3012: K. Kurumatani, S.-H. Chen, A. Ohuchi (Eds.), Multi-Agents for Mass User Support. X, 217 pages. 2004.

Vol. 3010: K.R. Apt, F. Fages, F. Rossi, P. Szeredi, J. Váncza (Eds.), Recent Advances in Constraints. VIII, 285 pages. 2004.

Vol. 2990: J. Leite, A. Omicini, L. Sterling, P. Torroni (Eds.), Declarative Agent Languages and Technologies. XII, 281 pages. 2004.

Vol. 2980: A. Blackwell, K. Marriott, A. Shimojima (Eds.), Diagrammatic Representation and Inference. XV, 448 pages. 2004.

Vol. 2977: G. Di Marzo Serugendo, A. Karageorgos, O.F. Rana, F. Zambonelli (Eds.), Engineering Self-Organising Systems. X, 299 pages. 2004.

Vol. 2972: R. Monroy, G. Arroyo-Figueroa, L.E. Sucar, H. Sossa (Eds.), MICAI 2004: Advances in Artificial Intelligence. XVII, 923 pages. 2004.

Vol. 2969: M. Nickles, M. Rovatsos, G. Weiss (Eds.), Agents and Computational Autonomy. X, 275 pages. 2004.

Vol. 2961: P. Eklund (Ed.), Concept Lattices. IX, 411 pages. 2004.

Vol. 2953: K. Konrad, Model Generation for Natural Language Interpretation and Analysis. XIII, 166 pages. 2004.

Vol. 2934: G. Lindemann, D. Moldt, M. Paolucci (Eds.), Regulated Agent-Based Social Systems. X, 301 pages. 2004.

Vol. 2930: F. Winkler (Ed.), Automated Deduction in Geometry. VII, 231 pages. 2004.

Vol. 2926: L. van Elst, V. Dignum, A. Abecker (Eds.), Agent-Mediated Knowledge Management. XI, 428 pages. 2004.

Vol. 2923: V. Lifschitz, I. Niemelä (Eds.), Logic Programming and Nonmonotonic Reasoning. IX, 365 pages. 2003.

Vol. 2915: A. Camurri, G. Volpe (Eds.), Gesture-Based Communication in Human-Computer Interaction. XIII, 558 pages. 2004.

Vol. 2913: T.M. Pinkston, V.K. Prasanna (Eds.), High Performance Computing - HiPC 2003. XX, 512 pages. 2003.

Vol. 2903: T.D. Gedeon, L.C.C. Fung (Eds.), AI 2003: Advances in Artificial Intelligence. XVI, 1075 pages. 2003.

Vol. 2902: F.M. Pires, S.P. Abreu (Eds.), Progress in Artificial Intelligence. XV, 504 pages. 2003.

Vol. 2892: F. Dau, The Logic System of Concept Graphs with Negation. XI, 213 pages. 2003.

Vol. 2891: J. Lee, M. Barley (Eds.), Intelligent Agents and Multi-Agent Systems. X, 215 pages. 2003.

Vol. 2882: D. Veit, Matchmaking in Electronic Markets. XV, 180 pages. 2003.

Vol. 2872: G. Moro, C. Sartori, M.P. Singh (Eds.), Agents and Peer-to-Peer Computing. XII, 205 pages. 2004.

Vol. 2871: N. Zhong, Z.W. Raś, S. Tsumoto, E. Suzuki (Eds.), Foundations of Intelligent Systems. XV, 697 pages. 2003.

Vol. 2854: J. Hoffmann, Utilizing Problem Structure in Planing. XIII, 251 pages. 2003.

Vol. 2843: G. Grieser, Y. Tanaka, A. Yamamoto (Eds.), Discovery Science. XII, 504 pages. 2003.

Vol. 2842: R. Gavaldá, K.P. Jantke, E. Takimoto (Eds.), Algorithmic Learning Theory. XI, 313 pages. 2003.

Vol. 2838: N. Lavrač, D. Gamberger, L. Todorovski, H. Blockeel (Eds.), Knowledge Discovery in Databases: PKDD 2003. XVI, 508 pages. 2003.

Vol. 2837: N. Lavrač, D. Gamberger, L. Todorovski, H. Blockeel (Eds.), Machine Learning: ECML 2003. XVI, 504 pages. 2003.

Table of Contents

Dialogue and Discourse

FSA, Parsing Algorithms

Information Extraction and Question Answering

Information Retrieval

Lexical Semantics, Ontology and Linguistic Resources

Machine Translation and Multilinguality

NLP Software and Application

Semantic Disambiguation

Statistical Models and Machine Learning for NLP

Taggers, Chunkers, Shallow Parsers

Text and Sentence Generation