

NATURAL

LANGUAGE

ENGINEERING

Edited by

Ruslan Mitkov

Branimir K. Boguraev

Volume 28 Part 5 September 2022

CAMBRIDGE UNIVERSITY PRESS

Munnin

Natural Language Engineering meets the needs of professionals and researchers working in all areas of automatic language processing, whether from the perspective of theoretical or corpus linguistics, translation, lexicography, computer science or engineering. Its aim is to bridge the gap between traditional computational linguistics research and the implementation of practical applications with potential real-world use. As well as publishing original research articles on a broad range of topics - from text analysis, machine translation, information retrieval, speech processing and generation to integrated systems and multi-modal interfaces - it also publishes special issues on specific natural language processing methods, tasks or applications. The journal welcomes survey papers describing the state of the art of a specific topic. The Journal of Natural Language Engineering also publishes the popular Industry Watch and Emerging Trends columns as well as book reviews.

EDITORS

Ruslan Mitkov (Executive Editor), University of Wolverhampton, UK. Email: R.Mitkov@wlv.ac.uk Branimir K. Boguraev, IBM Thomas J. Watson Research Center, USA. Email: boguraev@gmail.com

ASSOCIATE EDITORS

Diana Inkpen, University of Ottawa, Canada. Email: Diana.Inkpen@uottawa.ca Sandra Kübler, University of Indiana, USA. Email: skuebler@indiana.edu Burcu Can, University of Wolverhampton, UK

BOOK EDITOR

Diana Maynard, University of Sheffield, UK. Email: d.maynard@sheffield.ac.uk

INDUSTRY WATCH EDITOR

Robert Dale, Language Technology Group, Australia. Email: rdale@language-technology.com

EMERGING TRENDS EDITOR

Kenneth Church, Baidu, CA, USA. Email: kennethchurch@baidu.com

FOUNDING EDITORS

Roberto Garigliano, SenseGraph Ltd., UK. John I. Tait, johntait.net Ltd., UK. Email: john@johntait.net

EDITORIAL BOARD

Frederic Blain, University of Wolverhampton, UK Heike Adel, Bosch Center for Artificial Intelligence, Germany Kevin Bretonnel Cohen, University of Colorado, USA Tracy Holloway King, A9 Amazon, USA Chu-ren Huang, The Hong Kong Polytechnic University

Jing Jiang, Singapore Management University, Singapore Suresh Manandhar, NAAMI Institute, Nepal Preslav Nakov, Qatar Computing Research Institute, HBKU, Qatar

Roberto Navigli, Sapienza Universtiy of Rome, Italy Kemal Oflazer, Carnegie Mellon University, Qatar Constantin Orasan, University of Surrey, UK Sebastian Padó, University of Stuttgart, Germany Nasredine Semmar, CEA-List, Universite Paris-Saclay, France Khalil Sima'an, University of Amsterdam, The Netherlands Richard Sproat, Google, USA

Tomek Strzalkowski, Rensselaer Polytechnic Institute, Troy, NY, USA

Hwee Tou Ng, National University of Singapore, Singapore Aline Villavicencio, Federal University of Rio Grande do Sul, Brazil and University of Sheffield, UK Xiaojun Wan, Peking University, China Bonnie Webber, University of Edinburgh, UK Wajdi Zaghouani, Hamad Bin Khalifa University, Qatar Min Zhang, Soochow University, China

SENIOR EDITORIAL ASSISTANTS

Isuri Anuradha, University of Wolverhampton, UK Maria Carmela Cariello, University of Wolverhampton, UK Rocío Caro Quintana, University of Wolverhampton, UK Sandra Elfiky, University of Wolverhampton, UK Marie Escribe, University of Wolverhampton, UK Maria Kunilovskaya, University of Wolverhampton, UK Kanishka Silva, University of Wolverhampton, UK

EDITORIAL ASSISTANTS

Dayana Abuin Rios, University of Malaga, Spain Khadija Ait ElFqih, Università degli Studi di Napoli "L'Orientale", Italy

Anastasia Bezobrazova, University of Malaga, Spain Amal El Fahmat, University of Malaga, Spain Amal Haddad, University of Granada, Spain Lilit Kharatyan, University of Malaga, Spain Gabriela Llull, University of Wolverhampton, UK Daria Sokova, New Bulgarian University, Bulgaria