

SUBSCRIPTIONS

Natural Language Engineering (ISSN 1351-3249; electronic 1469-8110) is published six times a year in January, March, May, July, September and November. Six parts form a volume. The subscription price (excluding VAT and sales tax) of volume 23 (2017) (which includes postage) is £368 net (US\$601 in the USA, Canada and Mexico) for institutions print and electronic, institutions electronic only £305/\$502; £43 net (US\$71 in the USA, Canada and Mexico) for individuals ordering direct from the publisher and certifying that the journal is for their personal use. Single parts are £68 (US\$114 in the USA, Canada and Mexico) plus postage.

Orders, which must be accompanied by payment, may be sent to a bookseller, subscription agent or direct to the publisher: Cambridge University Press, Journals Fulfillment Department, UPH, Shaftesbury Road, Cambridge CB2 8BS, UK; or in the USA, Canada and Mexico: Cambridge University Press, Journals Fulfillment Department, 1 Liberty Plaza, Floor 20, New York, NY 10006, USA. EU subscribers who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number. Japanese prices for institutions are available from Kinokuniya Company Ltd, PO Box 55, Chitose, Tokyo 156, Japan.

COPYING

This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA. Organizations in the USA who are also registered with C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of U.S. Copyright law) subject to payment to C.C.C. of the per-copy fee of \$16.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 1351-3249/2015.

ISI Tear Sheet Service, 3501 Market Street, Philadelphia, PA 19104, USA, is authorised to supply single copies of separate articles for private use only.

Organisations authorised by the Copyright Licensing Agency may also copy material subject to the usual conditions.

For all other use, permission should be sought from Cambridge or from the American Branch of Cambridge University Press.

INSTRUCTIONS FOR CONTRIBUTORS

Instructions for Contributors will be found on the Journal's webpage at www.cambridge.org/nle

This journal and other journals are included in the Cambridge Journals Online service which can be found at journals.cambridge.org

© Cambridge University Press 2017

This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, non-for-profit organization established to promote the responsible management of the world's forests. Please see www.fsc.org for information.

NATURAL LANGUAGE ENGINEERING

Volume 23 Part 3 May 2017

CONTENTS

ARTICLES

- Deep-neural network approaches for speech recognition with heterogeneous groups of speakers including children 325
Romain Serizel and Diego Giuliani
- Improving mention detection for Basque based on a deep error analysis 351
Ander Soraluze, Olatz Arregi, Xabier Arregi and Arantza Díaz de Ilarraza
- Supervised approach to recognise Polish temporal expressions and rule-based interpretation of timexes 385
Jan Kocoń and Michał Marciń czuk
- POS-tagging arabic texts: A novel approach based on ant colony 419
Chiraz Zribi Ben Othmane, Ferial Ben Fraj and Ichraf Limam
- NERA 2.0: Improving coverage and performance of rule-based named entity recognition for Arabic 441
Mai Oudah and Khaled Shaalan
- Emerging trends: I did it, I did it, I did it, but... 473
Kenneth Ward Church
- Book Review
- Domain-Sensitive Temporal Tagging 481
Jannik Strötgen, Michael Gertz

The cover illustration is computer generated from an engraving of the Tower of Babel in an eighteenth-century bible.

Cambridge Journals Online

For further information about this journal please go to the journal website at:
cambridge.org/nle



MIX
Paper from
responsible sources
FSC® C007785

CAMBRIDGE
UNIVERSITY PRESS