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 26 (2020) (which includes postage) is £428 net (US\$698 in the USA, Canada and Mexico) for institutions print and electronic, institutions electronic only £354/\$583; £52 net (US\$83 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 £79 (US\$132 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 2020

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 26 Part 1 JANUARY 2020

1 2

1.200

2

CONTENTS

EDITORIAL	
Editorial note Ruslan Mitkov	1
ARTICLES	
Query-based summarization of discussion threads Suzan Verberne, Emiel Krahmer, Sander Wubben and Antal van den Bosch	3
Term evaluation metrics in imbalanced text categorization <i>Behzad Naderalvojoud and Ebru Akcapinar Sezer</i>	31
Robust stylometric analysis and author attribution based on tones and rimes <i>Renkui Hou and Chu-Ren Huang</i>	49
Estimating word-level quality of statistical machine translation output using monolingual information alone <i>Arda Tezcan, Véronique Hoste and Lieve Macken</i>	73
Annotating a broad range of anaphoric phenomena, in a variety of genres: the ARRAU Corpus Olga Uryupina, Ron Artstein, Antonella Bristot, Federica Cavicchio, Francesca Delogu, Kepa J. Rodriguez and Massimo Poesio	95
INDUSTRY WATCH	
Voice assistance in 2019 Robert Dale	129

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

Cambridge Core For further information about this journal

cambridge.org/nle

please go to the journal website at:



Published online by Cambridge University Press

MIX Paper from responsible sources FSC[®] C007785

