

| Special Issue on Finite-State Methods in NLP  |   |             |
|---|---|-------------|
| Introduction to the Special Issue on<br>Finite-State Methods in NLP                                       | Lauri Karttunen and Kemal Oflazer                                   | 1           |
| Articles  |   |             |
| Incremental Construction of Minimal Acyclic<br>Finite-State Automata                                      | Jan Daciuk, Stoyan Mihov, Bruce W.<br>Watson, and Richard E. Watson | 3           |
| Practical Experiments with Regular<br>Approximation of Context-Free Languages                             | Mark-Jan Nederhof   | 17          |
| Learning Dependency Translation Models as<br>Collections of Finite-State Head Transducers                 | Hiyan Alshawi, Srinivas Bangalore, and<br>Shona Douglas             | 45          |
| Treatment of Epsilon Moves in Subset<br>Construction  | Gertjan van Noord   | 61          |
| Multitiered Nonlinear Morphology Using<br>Multitape Finite Automata: A Case Study on<br>Syriac and Arabic | George Anton Kiraz  | <b>77</b> · |



## Editor 1993-

Julia Hirschberg AT&T Labs-Research 180 Park Avenue, A257 Florham Park, NJ 07932-0971 (+1 973) 360-8330 acl@research.att.com

# **Editorial Assistant**

Ana Pereira AT&T Labs-Research Room A240 180 Park Avenue, P.O. Box 971 Florham Park, NJ 07932-0971 acl@research.att.com fax: (973) 360-8970

#### **Book Review Editor**

Graeme Hirst University of Toronto Department of Computer Science Toronto, CANADA M5S 3G4 (+1 416) 978-8747 gh@cs.toronto.edu

# Squibs and Discussions Editor

Pierre Isabelle Xerox Research Centre Europe 6, chemin de Maupertuis 38240 Meylan, France +33 4 76 61 51 98 Pierre.Isabelle@xrce.xerox.com

# Editorial Board Members 1998-2000:

Steven Abney, AT&T Labs-Research Chris Brew, University of Edinburgh Jean Carletta, University of Edinburgh Genichiro Kikui, NTT Information and Communication Systems Labs Shalom Lappin, King's College London Christopher Manning, University of Sidney Christine Nakatani, AT&T Labs-Research Philip Resnik, University of Maryland Giorgio Satta, University of Padua Karen Sparck-Jones, University of Cambridge Dekai Wu, Hong Kong University of Science and Technology

## 1999-2001:

Michael Elhadad, Ben Gurion University Kôiti Hasida, Electrotechnical Laboratory Marti Hearst, University of California at Berkeley Andrew Kehler, SRI International, Menlo Park Daniel Jurafsky, University of Colorado Kevin Knight, USC Information Sciences Institute Elizabeth Shriberg, SRI International, Menlo Park

## 2000-2002:

Gosse Bouma, University of Groningen Michael Collins, AT&T Labs-Research Jennifer Chu-Carroll, Lucent Technologies Bell Labs Stanley F. Chen, IBM/TJ Watson Research Center Dan Roth, University of Illinois, Urbana/Champaign Lillian Lee, Cornell University Mark-Jan Nederhof, DFKI, Saarbrücken

# Computational Linguistics

| Special Issue on Finite-State Methods in NLP  |   |    |  |
|---|---|----|--|
| Introduction to the Special Issue on<br>Finite-State Methods in NLP                                       | Lauri Karttunen and Kemal Oflazer                                   | 1  |  |
| Articles  |   |    |  |
| Incremental Construction of Minimal Acyclic<br>Finite-State Automata                                      | Jan Daciuk, Stoyan Mihov, Bruce W.<br>Watson, and Richard E. Watson | 3  |  |
| Practical Experiments with Regular<br>Approximation of Context-Free Languages                             | Mark-Jan Nederhof   | 17 |  |
| Learning Dependency Translation Models as<br>Collections of Finite-State Head Transducers                 | Hiyan Alshawi, Srinivas Bangalore, and<br>Shona Douglas             | 45 |  |
| Treatment of Epsilon Moves in Subset<br>Construction  | Gertjan van Noord   | 61 |  |
| Multitiered Nonlinear Morphology Using<br>Multitape Finite Automata: A Case Study on<br>Syriac and Arabic | George Anton Kiraz  | 77 |  |

Copyright ©2000 by the Association for Computational Linguistics. Permission to photocopy articles for internal or personal use, or the internal or personal use of specific clients, is granted by the copyright owner for users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the fee of \$3.00 per article-copy is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923. The fee code for users of the Transactional Reporting Service is 0891-2017/00 \$3.00. For those organizations that have been granted a photocopy license with CCC, a separate system of payment has been arranged. Such permission requests and other permission inquiries should be addressed to the Managing Editor at the address given on the inside front cover of this issue.

Computational Linguistics is abstracted and/or indexed in the following publications: Annual Review of Information Science and Technology, CompuMath Citation Index, Computer Abstracts, Computing Reviews, Current Contents: Social and Behavioral Sciences, Engineering Index, Knowledge Engineering Review, Language and Language Behavior Abstracts, Linguistic Abstracts, Linguistic Bibliography, Research Alert, Science Abstracts (INSPEC Section C), SciSearch, Social Sciences Citation Index, and Social SciSearch.

Volume 14 and subsequent volumes of *Computational Linguistics* are available on microfilm through University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106, USA.

Send advertising and mailing list inquiries to Marketing Dept., MIT Press Journals, Five Cambridge Center, Cambridge, MA 02142-1407; Phone: (617) 253-2866; fax: (617) 258-5028; e-mail: journals-info@mit.edu. Individual Subscriptions to Computational Linguistics are available only with membership in the Association for Computational Linguistics (ACL). Annual Membership Dues are as follows: regular, \$50.00; *student* — taking a full-time program of courses and not earning a regular income, \$30.00; retired, \$30.00; joint - for couples receiving one subscription, \$60.00. A membership application together with an order form for back issues and conference proceedings is included at the end of this issue. Send membership applications and address changes to Priscilla Rasmussen, Association for Computational Linguistics (ACL), P.O. Box 6090, Somerset, NJ 08875, USA. However, note that it is also possible to pay by credit card (both by e-mail and by postal mail) and through banks in Switzerland and Japan.

**Institutional Subscriptions** are \$128.00. Outside the U.S. and Canada add \$18.00 postage handling. Canadian subscribers add 7% GST. Single copies of current and back issues are \$33.00. Outside U.S. and Canada add \$5.00 per issue for postage and handling. Canadians add 7% GST. Send institutional subscription orders and address changes to MIT Press Journals, Five Cambridge Center, Cambridge, MA 02142-1407; phone: (617) 253-2889; fax: (617) 577-1545; e-mail: journals-orders@mit.edu. Claims for missing issues will be honored free of charge if made within three months after the publication date of the issue. Claims may be emailed to: journals-claims@mit.edu. Prices subject to change without notice. Institutions should order back issues before 1988 and all proceedings from the ACL at the address above.

http://mitpress.mit.edu/COLI