

# ACL 2007

# **Computing and Historical Phonology**

# Proceedings of the Ninth Meeting of the ACL Special Interest Group in Computational Morphology and Phonology

June 28, 2007 Prague, Czech Republic



The Association for Computational Linguistics

Production and Manufacturing by Omnipress 2600 Anderson Street Madison, WI 53704 USA

©2007 Association for Computational Linguistics

Order copies of this and other ACL proceedings from:

Association for Computational Linguistics (ACL) 209 N. Eighth Street Stroudsburg, PA 18360 USA Tel: +1-570-476-8006 Fax: +1-570-476-0860 acl@aclweb.org

## Preface

Welcome to the ACL Workshop on Computing and Historical Phonology, the 9th Meeting of ACL Special Interest Group for Computational Morphology and Phonology, a meeting held in conjunction with the 45th Meeting of the ACL in Prague. An introductory article explains our motivation for holding the workshop, which attracted 16 submissions, all but one of which is included in this volume of proceedings. We are gratified not only by the level of interest, but also by the quality of submissions we received.

We hoped to attract interest not only in the computational linguistics community *sensu stricto* but also in the broader linguistics community, and in the group of geneticists who have begun to apply phylogenetic analysis to linguistic data. As the reader may verify in these proceedings, we were not disappointed in this hope. Perhaps it is worth adding that, while we are in principle interested in further meetings of this sort, there are at the time of this writing no concrete plans for follow-ups.

Our thanks are largely given in the acknowledgments section of the introductory article, but let's add thanks here to Simone Teufel, the workshop chair of the conference, who ushered us through the various steps from the proposal through the production of this publication, and also to the committee she chaired.

John Nerbonne, T. Mark Ellison and Grzegorz Kondrak (Chairs)

## Organizers

#### **Chairs:**

John Nerbonne, University of Groningen Grzegorz Kondrak, University of Alberta T. Mark Ellison, University of Western Australia

#### **Program Committee:**

Chris Brew, Ohio State University Pierre Darlu, Paris Michael Dunn, Max Planck, Nijmegen Sheila Embleton, York University, Toronto Hans Goebl, Salzburg Russell Gray, Auckland Sheldon Harrison, Western Australia Wilbert Heeringa, Groningen Brian Joseph, Ohio State University Brett Kessler, Washington University of St. Louis Simon Kirby, Edinburgh Bill Kretzschmar, Georgia Franz Manni, Paris Hermann Moisl, Newcastle David Nash, Australian National University, Canberra Michael Oakes, Sunderland Jon Patrick, Sydney Gerald Penn, Toronto Janet Pierrehumbert, Northwestern Thomas Pilz, Duisburg Joe Salmons, Wisconsin Tandy Warnow, University of Texas

#### **Keynote Speaker:**

Brett Kessler, Washington University of St. Louis

#### **Other Reviewers:**

Hans J. Holm, Hannover Sebastian Kürschner, University of Groningen

## **Table of Contents**

Computing and Historical Phonology John Nerbonne, T. Mark Ellison and Grzegorz Kondrak
Word Similarity Metrics and Multilateral Comparison        Brett Kessler
Bayesian Identification of Cognates and Correspondences      T. Mark Ellison    15
Testing Cladistics on Dialect Networks and Phyla (Gallo-Romance Vowels, Southern Italo-Romance Di- asystems and Mayan Languages)Antonella Gaillard-Corvaglia, Jean-Léo Léonard and Pierre Darlu23
The Relative Divergence of Dutch Dialect Pronunciations from their Common Source: An Exploratory      Study      Wilbert Heeringa and Brian Joseph
Can Corpus Based Measures be Used for Comparative Study of Languages? Anil Kumar Singh and Harshit Surana
Inducing Sound Segment Differences Using Pair Hidden Markov Models Martijn Wieling, Therese Leinonen and John Nerbonne
Phonological Reconstruction of a Dead Language Using the Gradual Learning Algorithm Eric Smith
<i>Evolution, Optimization, and Language Change: The Case of Bengali Verb Inflections</i> Monojit Choudhury, Vaibhav Jalan, Sudeshna Sarkar and Anupam Basu
On the Geolinguistic Change in Northern France between 1300 and 1900: A Dialectometrical Inquiry Hans Goebl
Visualizing the Evaluation of Distance Measures Thomas Pilz, Axel Philipsenburg and Wolfram Luther
Data Nonlinearity in Exploratory Multivariate Analysis of Language Corpora   Hermann Moisl   93
<i>Emergence of Community Structures in Vowel Inventories: An Analysis Based on Complex Networks</i> Animesh Mukherjee, Monojit Choudhury, Anupam Basu and Niloy Ganguly
Cognate Identification and Alignment Using Practical Orthographies Michael Cysouw and Hagen Jung
ParaMor: Minimally Supervised Induction of Paradigm Structure and Morphological Analysis Christian Monson, Jaime Carbonell, Alon Lavie and Lori Levin

Dynamic Correspondences: An Object-Oriented Approach to Tracking Sound Reconstructions	
Tyler Peterson and Gessiane Picanco	126
Creating a Comparative Dictionary of Totonac-Tepehua Grzegorz Kondrak, David Beck and Philip Dilts	134
enzegenz menanan, zwie zwie men ministra in strange zwie strange zwie zwie zwie zwie zwie zwie strange zwie strange zwie strange zwie zwie zwie zwie zwie zwie zwie zwi	

# Workshop Program

### Thursday, June 28, 2007

8:30-8:45	Opening
	Computing and Historical Phonology
	John Nerbonne, T. Mark Ellison and Grzegorz Kondrak
8:45–9:45	Keynote Speaker
	Word Similarity Metrics and Multilateral Comparison
	Brett Kessler
9:45-10:15	Bayesian Identification of Cognates and Correspondences
	T. Mark Ellison
10:15-10:45	Testing Cladistics on Dialect Networks and Phyla (Gallo-Romance Vowels, South-
	ern Italo-Romance Diasystems and Mayan Languages)
	Antonella Gaillard-Corvaglia, Jean-Léo Léonard and Pierre Darlu
10:45-11:15	Break
11.15 11.45	The Polative Divergence of Dutch Dislast Provinciations from their Common
11:15–11:45	The Relative Divergence of Dutch Dialect Pronunciations from their Common Source: An Exploratory Study
	Wilbert Heeringa and Brian Joseph
11:45–12:15	Can Corpus Based Measures be Used for Comparative Study of Languages?
	Anil Kumar Singh and Harshit Surana
12:15–12:45	Inducing Sound Segment Differences Using Pair Hidden Markov Models
	Martijn Wieling, Therese Leinonen and John Nerbonne
12:45-14:15	Lunch
14.15 14.45	Discussional Decomposition of a Daniel Lancesco Maine de Carada al Lancesia Al
14:15–14:45	Phonological Reconstruction of a Dead Language Using the Gradual Learning Algorithm
	Eric Smith
14:45–15:15	Evolution, Optimization, and Language Change: The Case of Bengali Verb Inflec-
14.43-13.13	tions
	Monojit Choudhury, Vaibhav Jalan, Sudeshna Sarkar and Anupam Basu

#### Thursday, June 28, 2007 (continued)

15:15–15:45 Posters

On the Geolinguistic Change in Northern France between 1300 and 1900: A Dialectometrical Inquiry Hans Goebl

*Visualizing the Evaluation of Distance Measures* Thomas Pilz, Axel Philipsenburg and Wolfram Luther

Data Nonlinearity in Exploratory Multivariate Analysis of Language Corpora Hermann Moisl

Emergence of Community Structures in Vowel Inventories: An Analysis Based on Complex Networks Animesh Mukherjee, Monojit Choudhury, Anupam Basu and Niloy Ganguly

Cognate Identification and Alignment Using Practical Orthographies Michael Cysouw and Hagen Jung

ParaMor: Minimally Supervised Induction of Paradigm Structure and Morphological Analysis Christian Monson, Jaime Carbonell, Alon Lavie and Lori Levin

- 15:45–16:15 Break
- 16:15–16:45 Dynamic Correspondences: An Object-Oriented Approach to Tracking Sound Reconstructions
   Tyler Peterson and Gessiane Picanco
- 16:45–17:15 *Creating a Comparative Dictionary of Totonac-Tepehua* Grzegorz Kondrak, David Beck and Philip Dilts
- 17:15–17:45 Discussion
- 17:45-18:00 Closing