First Conference on Applied Natural Language Processing

Association for Computational Linguistics

Proceedings of the Conference

1–3 February 1983
Miramar-Sheraton Hotel
Santa Monica, California, USA

Sponsored by the Association for Computational Linguistics
and the Naval Research Laboratory

© 1983, Association for Computational Linguistics

Order copies of this and other ACL proceedings from:

Donald E. Walker (ACL)
Bellcore
445 South Street, MRE 2A379
Morristown, NJ 07960, USA

NOTES FROM THE CONFERENCE CHAIR

This conference focuses on the use of computational linguistic techniques to solve real world problems. Technical papers are presented in sessions on domain-independent natural language interfaces, knowledge-based approaches, handling ill-formed input, text analysis, machine translation, and speech interfaces. A panel considers the impact of natural language access on database design and implementation. There also are demonstrations of working systems; exhibits of special purpose processors, tools, and other materials that support natural language processing; and tutorials covering special topic areas.

I want to share with you my enthusiasm and pleasure about the way in which the conference has developed over the past eighteen months. Many of us have long felt the need for a special meeting devoted to applied natural language processing. The workshop on Applied Computational Linguistics in Perspective, co-sponsored by the Naval Research Laboratory and the ACL and held just before the 1981 ACL Annual Meeting at Stanford University, highlighted this need and started the ball rolling. Incidentally, a report describing that workshop appears in the **American Journal of Computational Linguistics**, Volume 8, Number 2, April-June, 1982.

The response to the call for papers was gratifying both in the interest expressed by diverse groups and in the large number of high quality papers submitted. Selecting the 26 papers for the conference was not an easy task.

I wish to thank Beatrice Oshika, who chaired our program committee, for her hard work in organizing the program, tutorials, exhibits, and demonstrations, and for her general support in seeing that things ran smoothly. Special thanks to Don Walker, our Secretary-Treasurer, for his expertise in handling the funds and for arranging the printing of the call for papers, the program, and the proceedings.

Thanks to the program committee for a job well done, to Doug Hogan, Martin Kay, and Madeleine Bates for their help in reviewing papers, and to the people who are chairing sessions.

In addition, I would like to thank the Naval Research Laboratory for its financial support, which has helped reduce conference costs.

Finally, I would like to thank you, the attendees, for your interest and support; I look forward to participating with you in what I know will be an exciting and rewarding conference.

Iris Kameny
General Chair

CONFERENCE COMMITTEE

General Chair: Iris M. Kameny, System Development Corporation
Program Chair: Beatrice T. Oshika, System Development Corporation
Secretary-Treasurer: Donald E. Walker, SRI International

Committee Members: Richard Cantone, Navy Center for Applied Research in Artificial Intelligence
Christine A. Montgomery, Operating Systems Division, Logicon
C. Raymond Perrault, University of Toronto
Jane J. Robinson, SRI International
Norman K. Sondheimer, USC/Information Sciences Institute

CONFERENCE PROGRAM

Tuesday, 1 February 1983

8:30-9:15
OPENING REMARKS: Iris M. Kameny, System Development Corporation
Stanley Wilson, Naval Research Laboratory

9:15-10:45
DOMAIN-INDEPENDENT NATURAL LANGUAGE INTERFACES–Session 1 (pages 1-30)
Chair: Aravind K. Joshi, University of Pennsylvania

Problems in natural language interface to DBMS with examples from EUFID
Marjorie Templeton and John Burger, System Development Corporation

Introducing ASK, a simple knowledgeable system
Bozena H. Thompson and Frederick B. Thompson, California Institute of Technology

A robust portable natural language data base interface
Jerrold M. Ginsparg, Bell Laboratories

11:00-noon
KNOWLEDGE-BASED APPROACHES–Session 1 (pages 54-68)
Chair: Ivan A. Sag, Stanford University

Distinguishing fact from opinion and events from meta-events
Christine A. Montgomery, Operating System Division, Logicon

Parsing with logical variables
Timothy W. Finin and Martha Stone Palmer, University of Pennsylvania

noon-2:00 LUNCHEON
GUEST SPEAKER: Dan Schutzer, Technical Director, Office of Naval Intelligence

2:00-3:00

HANDLING ILL-FORMED INPUT (pages 89-106)
Chair: Ralph M. Weischedel, University of Delaware

The 'fitted' parse: 100%parsing capability in a syntactic grammar of English
Karen Jensen and George E. Heidorn, IBM Thomas J. Watson Research Center

Utilizing domain-specific information for processing compact text
Elaine Marsh, New York University Linguistic String Project

Scruffy text understanding: design and implementation of the NOMAD system
Richard H. Granger, Chris J. Staros, Gregory B. Taylor and Rika Yoshii, University of California at Irvine

4:00-5:30
TEXT ANALYSIS–Session 1 (pages 107-131)
Chair: Donald E. Walker, SRI International

Specialized information extraction: automatic chemical reaction coding from English descriptions
Larry H. Reeker, Elaine M. Zamora, and Paul E. Blower, Chemical Abstracts Service

Automatic analysis of descriptive texts
James R. Cowie, University of Strathclyde

'Expertness' from structured text? RECONSIDER: a diagnostic prompting program
Mark S. Tuttle, University of California, San Francisco and Berkeley; David D. Sherertz, Tandem Computers; Marsden S. Blois, University of California, San Francisco; and Stuart Nelson, State University of New York at Stony Brook

Wednesday, 2 February 1983

8:30-10:30
MACHINE TRANSLATION (pages 148-177)
Chair: Gary Martins, Intelligent Software Inc.

Investigating the possibility of a microprocessor-based machine translation system
Harold L. Somers, University of Manchester

An application of Montague grammar to English-Japanese machine translation
Toyoaki Nishida and Shuji Doshita, Kyoto University

A status report on the LRC machine translation system
Jonathan Slocum, Siemens Corporation

Computer assisted translation systems: the standard design and a multi-level design
Alan K. Melby, Brigham Young University

11:00-noon
SPEECH INTERFACES (pages 178-197)
Chair: Douglas L. Hogan, Consultant

Interactive natural language processing: a pragmatic approach
A. Biermann, R. Rodman, B. Ballard, T. Betancourt, G. Bilbro, H. Deas, L. Fineman, P. Fink, D. Gregory, K. Gilbert, and F. Heidlage; Duke University and North Carolina State University

Application of the Liberman-Prince stress rules to computer synthesized speech
David L. McPeters, Bell Laboratories; and Alan L. Tharp, North Carolina State University

noon-2:00 LUNCHEON
GUEST SPEAKER: Martin Kay, Xerox Palo Alto Research Center

2:00-3:00
PANEL: THE IMPACT OF NATURAL LANGUAGE ACCESS ON DATABASE DESIGN AND IMPLEMENTATION (page 198)
Chair: S. Jerrold Kaplan, Teknowledge
Panelists: Jeffrey Hill, Artificial Intelligence Corporation
Francisco Corella, Symantec
Jim Davidson, Stanford University
Steven Shwartz, Cognitive Systems, Inc.
Robert Wilensky, University of California at Berkeley

4:00-5:30
TEXT ANALYSIS-Session 2 (pages 132-147)
Chair: Donald E. Walker, SRI International

Using natural language descriptions to improve the usability of databases
Carole D. Hafner and John D. Joyce, General Motors Research Laboratories

Natural language text segmentation techniques applied to the automatic compilation of printed subject indexes and for online database access
George Vladutz, Institute for Scientific Information

Automatic representation of the semantic relationships corresponding to a French surface expression
Gian Piero Zarri, Centre National de la Recherche Scientifique

Thursday, 3 February 1983

8:30-10:00
DOMAIN INDEPENDENT NATURAL LANGUAGE INTERFACES–Session 2 (pages 31-53)
Chair: Aravind K. Joshi, University of Pennsylvania

IR-NLI: an expert natural language interface to online data bases
Giovanni Guida and Carlo Tasso, Universita di Udine

TEAM, a transportable natural language interface system
Barbara J. Gross, SRI International

Isolating domain dependencies in natural language interfaces
R. Grishman, New York University and Navy Center for Applied Research in AI; L. Hirschman, Burroughs Corporation; and C. Friedman, New York University Linguistic String Project

10:30-noon
KNOWLEDGE BASED APPROACHES–Session 2 (pages 69-88)
Chair: Ivan A. Sag, Stanford University

Explorer: a natural language processing system for oil exploration
Wendy G. Lehnert, University of Massachusetts; and Steven P. Shwartz, Cognitive Systems, Inc.

Knowledge based question answering
Michael L. Pazzani and Carl Engelman, The MITRE Corporation

How to derive a database front end using general semantic information
B. K. Boguraev and K. Sparck Jones, University of Cambridge

noon-1:30 LUNCHEON

1:30-3:30
PANEL SUMMARY AND RECOMMENDATIONS
Chair: Iris M. Kameny, System Development Corporation
Panelists: Jude Franklin, Navy Center for Applied Research in AI
Douglas L. Hogan, Consultant
Aravind K. Joshi, University of Pennsylvania
Martin Kay, Xerox Palo Alto Research Center
Gary Martins, Intelligent Software Inc.
Ivan A. Sag, Stanford University
Donald E. Walker, SRI International
Ralph M. Weischedel, University of Delaware

TABLE OF CONTENTS

DOMAIN-INDEPENDENT NATURAL LANGUAGE INTERFACES

Introduction
Aravind K. Joshi 1

Problems in natural language interface to DBMS with examples from EUFID
Marjorie Templeton and John Burger 3

Introducing ASK, a simple knowledgeable system
Bozena H. Thompson and Frederick B. Thompson 17

A robust portable natural language data base interface
Jerrold M. Ginsparg 25

IR-NLI: an expert natural language interface to online data bases
Giovanni Guida and Carlo Tasso 31

TEAM, a transportable natural language interface system
Barbara J. Grosz 39

Isolating domain dependencies in natural language interfaces
R. Grishman, L. Hirschman, and C. Friedman 46

KNOWLEDGE-BASED APPROACHES

Introduction
Ivan A. Sag 54

Distinguishing fact from opinion and events from meta-events
Christine A. Montgomery 55

Parsing with logical variables
Timothy W. Finin and Martha Stone Palmer 62

Explorer: a natural language processing system for oil exploration
Wendy G. Lehnert and Steven P. Shwartz 69

Knowledge based question answering
Michael J. Pazzani and Carl Engelman 73

How to drive a database front end using general semantic information
B. K. Boguraev and K. Sparck Jones 81

HANDLING ILL-FORMED INPUT

Introduction
Ralph M. Weischedel 89

The 'fitted' parse: 100%parsing capability in a syntactic grammar of English
Karen Jensen and George E. Heidorn 93

Utilizing domain-specific information for processing compact text
Elaine Marsh 99

Scruffy text understanding: design and implementation of the NOMAD system
Richard H. Granger, Chris J. Staros, Gregory B. Taylor, and Rika Yoshii 104

TEXT ANALYSIS

Introduction
Donald E. Walker 107

Specialized information extraction: automatic chemical reaction coding from English descriptions
Larry H. Reeker, Elaine M. Zamora, and Paul E. Blower 109

Automatic analysis of descriptive texts
James R. Cowie 117

'Expertness' from structured text? RECONSIDER: a diagnostic prompting program
Mark S. Tuttle, David D. Sherertz, Marsden S. Blois, and Stuart Nelson 124

Using natural language descriptions to improve the usability of databases
Carole D. Hafner and John D. Joyce 132

Natural language text segmentation techniques applied to the automatic compilation of printed subject indexes and for online database access
George Vladutz 136

Automatic representation of the semantic relationships corresponding to a French surface expression
Gian Piero Zarri 143

MACHINE TRANSLATION

Introduction
Gary Martins 148

Investigating the possibility of a microprocessor-based machine translation system
Harold L. Somers 149

An application of Montague grammar to English-Japanese machine translation
Toyoaki Nishida and Shuji Doshita 156

A status report on the LRC machine translation system
Jonathan Slocum 166

Computer assisted translation systems: the standard design and a multi-level design
Alan K. Melby 174

SPEECH INTERFACES

Inroduction
Douglas L. Hogan 178

Interactive natural language processing: a pragmatic approach
A. Biermann, R. Rodman, B. Ballard, T. Betancourt, G. Bilbro, H. Deas, L. Fineman, P. Fink, D. Gregory, K. Gilbert, and F. Heidlage 180

Application of the Liberman-Prince stress rules to computer synthesized speech
David L. McPeters and Alan L. Tharp 192

PANEL: THE IMPACT OF NATURAL LANGUAGE ACCESS ON DATABASE DESIGN AND IMPLEMENTATION

Introduction
S. Jerrold Kaplan 198

AUTHOR INDEX

B. Ballard 180
T. Betancourt 180
A. Biermann 180
G. Bilbro 180
Marsden S. Blois 124
Paul E. Blower 109
B. K. Boguraev 81
John Burger 3
James R. Cowie 117
H. Deas 180
Shuji Doshita 156
Carl Engelman 73
L. Fineman 180
Timothy W. Finin 62
P. Fink 180
C. Friedman 46
K. Gilbert 180
Jerrold M. Ginsparg 25
Richard H. Granger 104
D. Gregory 180
R. Grishman 46
Barbara J. Grosz 39
Giovanni Guida 31
Carole D. Hafner 132
F. Heidlage 180
George E. Heidorn 93
L. Hirschman 46
Douglas L. Hogan 178
Karen Jensen 93
Aravind K. Joshi 1
John D. Joyce 132
S. Jerrold Kaplan 198
Wendy G. Lehnert 69
Elaine Marsh 99
Gary Martins 148
David L. McPeters 192
Alan K. Melby 174
Christine A. Montgomery 55
Stuart Nelson 124
Toyoaki Nishida 156
Martha Stone Palmer 62
Michael J. Pazzani 73
Larry H. Reeker 109
R. Rodman 180
Ivan A. Sag 54
David D. Sherertz 124
Steven P. Shwartz 69
Jonathan Slocum 166
Harold L. Somers 149
K. Sparck Jones 81
Chris J. Staros 104
Carlo Tasso 32
Gregory B. Taylor 104
Marjorie Templeton 3
Alan L. Tharp 192
Bozena H. Thompson 17
Frederick B. Thompson 17
Mark S. Tuttle 124
George Vladutz 136
Donald E. Walker 107
Ralph M. Weischedel 89
Rika Yoshii 104
Elaine M. Zamora 109
Gian Pietro Zarri 143