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Approved: news-answers-request@MIT.EDU
Summary: This posting contains Frequently Asked Questions (FAQ) about
natural language processing and their answers. It should be read
by anyone who wishes to post to the comp.ai.nat-lang newsgroup.

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This is the latest release of an FAQ (frequently asked questions and answers) list for the comp.ai.nat-lang newsgroup. Please don't hesitate to send me any comments, be they positive or negative. There are many blank spots in the FAQ, please help fill them.

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Many people have contributed to this FAQ. A list of credits is shown at the end of the message.

TABLE OF CONTENTS
==========

[1] What is this FAQ all about
[2] What is Computational Linguistics
[3] What is comp.ai.nat-lang
[4] How to get updates to this FAQ
[5] World-Wide Web resources.
[6] Which schools offer graduate programs in CL/NLP
[7] How to apply to graduate school in CL/NLP in the USA
[9] Major non-academic research laboratories
[10] What major publications exist in the field
[11] Bibliographies
[12] Electronic mailing lists
[13] Newsgroups
[14] Professional Organizations, Associations
[15] Major Conferences
[16] Evaluation Competitions
[17] How to join a mailing list
[18] How to obtain files by anonymous ftp
[19] FTP repositories
[20] What are some important books in NLP
[21] Encyclopedia of Artificial Intelligence
[22] Machine Translation
[23] What are the major accomplishments of the field
[24] Publishers
[25] Credits

Disclaimers and Notes

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1. Please read this FAQ list before posting to comp.ai.nat-lang
2. The FAQ is a collection of materials, rather than a complete reference. Some of the information may be out of date, so please be careful and take everything with a grain of salt. The maintainer, Dragomir R. Radev (radev@cs.columbia.edu), doesn't assume any responsibility for wrong information. The list of contributors to the FAQ appears at the end of this document.
3. Any comments, contributions, and corrections are more than welcome. Please help make the FAQ really helpful and interesting.

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[1] What is this FAQ all about

This is an attempt to put together a list of frequently (and not so frequently) asked questions about Natural Language Processing and their answers. This document is in no way perfect or complete or 100% accurate. In no way should the maintainer be responsible for damage resulting directly or indirectly from using information in this FAQ.

The FAQ originated from Mark Kantrowitz's FAQ on AI. Some questions in the present document come directly from Mark's original FAQ (available at http://www.faqs.org).

This FAQ is maintained by Dragomir R. Radev from Columbia University. Please send me all your comments, suggestions, corrections, additions, and such to my e-mail address:

radev@cs.columbia.edu

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[2] What is Computational Linguistics

Computational linguistics (CL) is a discipline between linguistics and computer science which is concerned with the computational aspects of the human language faculty. It belongs to the cognitive sciences and overlaps with the field of artificial intelligence (AI), a branch of computer science that is aiming at computational models of human cognition. There are two components of CL: applied and theoretical.

The applied component of CL is more interested in the practical outcome of modelling human language use. The goal is to create software products that have some knowledge of human language. Such products are urgently needed for improving human-machine interaction since the main obstacle in the interaction beween human and computer is one of communication. Today's computers do not understand our language, and humans have difficulties understand the computer's language, which does not correspond to the structure of human thought.

Natural language interfaces enable the user to communicate with the computer in German, English or another human language. Some applications of such interfaces are database queries, information retrieval from texts and so-called expert systems. Current advances in recognition of spoken language improve the usability of many types of natural language systems. Communication with computers using spoken language will have a lasting impact upon the work environment, opening up completely new areas of application for information technology.

Although existing CL programs are far from achieving human ability, they have numerous possible applications. Even if the language the machine understands and its domain of discourse are very restricted, the use of human language can increase the acceptance of software and the productivity of its users.

Much older than communication problems between human beings and machines are those between people with different mother tongues. One of the

original goals of applied computational linguistics was fully automatic translation between human languages. From bitter experience scientists have realized that they are far from achieving this. Nevertheless, computational linguists have created software systems which can simplify the work of human translators and clearly improve their productivity.

The future of applied computational linguistics will be determined by the growing need for user-friendly software. Even though the successful simulation of human language competence is not to be expected in the near future, computational linguists have numerous immediate research goals involving the design, realization and maintenance of systems which facilitate everyday work, such as grammar checkers for word processing programs.

Theoretical CL takes up issues in formal theories. It deals with formal theories about the linguistic knowledge that a human needs for generating and understanding language. Today these theories have reached a degree of complexity that can only be managed by employing computers. Computational linguists develop formal models simulating aspects of the human language faculty and implement them as computer programmes. These programmes constitute the basis for the evaluation and further development of the theories. In addition to linguistic theories, findings from cognitive psychology play a major role in simulating linguistic competence. Within psychology, it is mainly the area of psycholinguistics that examines the cognitive processes constituting human language use.

The special attraction of computational linguistics lies in the combination of methods and strategies from the humanities, natural and behavioural sciences, and engineering.

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[3] What is comp.ai.nat-lang

Here follows the original charter for comp.ai.nat-lang.

Name: comp.ai.nat-lang

Moderation: This group will be unmoderated.

Purpose: To discuss issues relating to natural language, especially computer-related issues from an AI viewpoint. The topics that will be discussed in this group will concentrate on, but are not limited to, the following:

* Natural Language Understanding
* Natural Language Generation
* Machine Translation
* Dialogue and Discourse Systems
* Natural Language Interfaces
* Parsing
* Computational Linguistics
* Computer-Aided Language Learning

This group will avoid discussing issues that are more properly covered by other newsgroups. For example, speech synthesis should be discussed in comp.speech. However, due to the interdisciplinary nature of the field, there may be overlap in material between other groups. To try to keep this to a minimum, topics should pertain to computer-related aspects of natural language.

Rules of Decorum: Because of the unmoderated format, anyone with access to this newsgroup will be able to post without review. This is meant to encourage discussion of the topics. Please refrain from "flames" or unnecessary criticism

of a person's viewpoints or personality in a harsh or insulting manner. Criticisms should constructive and polite whenever possible.

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[4] How to get updates to this FAQ

This FAQ is available currently from the following newsgroups:
comp.ai.nat-lang, comp.answers, comp.ai, and news.answers
It is posted once a month although updates are made less often.

The official archive of the above newsgroups is at MIT. You can get a copy of the FAQ from
ftp://rtfm.mit.edu/pub/usenet-by-hierarchy/comp/ai/nat-lang

Another major site with lots of FAQs (including this one) is
http://www.faqs.org

The current copy can also be retrieved from the following URL:
http://www.aclweb.org/faq/nlpfaq.txt

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[5] World-Wide Web resources.

GENERAL RESOURCES AND CATALOGS

5.1. The Association for Computational Linguistics site:
http://www.aclweb.org

The Association for Computational Linguistics is the major international organization in the field.

5.2. The ACL NLP/CL Universe:
http://www.aclweb.org/u/db/acl/

The largest index of Computational Linguistics and Natural Language Processing resources on the Web. It features a search engine which should allow you to find specific NLP-related Web pages.

5.3. The Computation and Language E-Print Archive
http://xxx.lanl.gov/archive/cs/

The Computation and Language E-Print Archive is a fully automated electronic archive and distribution server for papers on computational linguistics, natural-language processing, speech processing, and related fields.

5.4. The Survey of the State of the Art of Human Language Technology
http://www.cse.ogi.edu/CSLU/HLTsurvey/

This book surveys the state of the art of human language technology. The goal of the survey is to provide an interested reader with an overview of the field---the main areas of work, the capabilities and limitations of current technology, and the technical challenges that must be overcome to realize the vision of graceful human computer interaction using natural communication skills.

5.5. The Linguistic Data Consortium
http://www.ldc.upenn.edu/

The Linguistic Data Consortium is an open consortium of universities, companies and government research laboratories. It creates, collects and distributes speech and text databases, lexicons, and other resources for research and development purposes. The University of Pennsylvania is the LDC's host institution.

5.6. The Language Technology Helpdesk
http://www.ltg.ed.ac.uk/helpdesk/faq/index.html

Frequently-asked questions of the Human COmmunication Research Centre at U. Edinburgh.

RESOURCES ON DIFFERENT TOPICS

5.7. Head-Driven Phrase Structure Grammar
http://julius.ling.ohio-state.edu/HPSG/Hpsg.html

The HPSG offers current information relating to various aspects of the grammar formalism and linguistic theory of Head-Driven Phrase Structure Grammar, a constraint-based, lexicalist approach to grammatical theory that seeks to model human languages as systems of constraints on typed feature structures.

5.8. Lexical Functional Grammar
http://clwww.essex.ac.uk/LFG/

This site provides access to information about various aspects of the grammatical theory known as Lexical Functional Grammar (LFG).

5.9. Word Grammar
http://www.phon.ucl.ac.uk/home/Word-Grammar/wig-www.htm

This site houses publications on Word-Grammar and has some information on the group and its meetings.

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[6] Which schools offer graduate programs in CL/NLP

This list is, *of course*, completely preliminary. Please send me information about other programs. I will try and get in touch with the editors of the ACL guide to Graduate Programs in CL for more information. Universities are given in alphabetical order. If a certain university is not included now and you feel it must be included, please send me some information about it.

Australia:

Melbourne, University of
Microsoft Institute of Advanced Software Technology in association with Macquarie University

Canada:

Montreal, University of
Ottawa, University of
Simon Fraser University
Toronto, University of
Waterloo, University of

Finland:

Helsinki, University of

France:

Paris 7, Jussieu, University of

Germany:

Bonn, University of
Heidelberg, University of

Humboldt University, Berlin
Koblenz-Landau, University of
Munich, University of
Osnabrueck, University of
Saarland, University of the
Potsdam, University of
Stuttgart, University of
Tuebingen, University of

Italy:

Pisa, University of
Trento, University of

Japan:

Kyoto University

Korea:

Pohang University of Science and Technology, Pohang

Netherlands:

Amsterdam, University of
Groningen, University of
Nijmegen, University of
Tilburg, University of
Utrecht, University of

Sweden:

Goteborg (Gothenburg), University of
Skoevde, University of
Uppsala, University of

Switzerland:

Geneva, University of
Zurich, University of

UK:

Brighton, University of
Cambridge, University of
Durham, University of
Essex, University of
Edinburgh, University of
Sheffield, University of
Sussex, University of
University of Manchester Institute of Science and Technology

USA:

Brown University
Buffalo, SUNY at
California at Berkeley, University of
California at Los Angeles, University of
Carnegie-Mellon University
Columbia University
Cornell University
Delaware, University of
Duke University
Georgetown University
Georgia, University of
Georgia Institute of Technology

Harvard University
Indiana University
Johns Hopkins University
Massachusetts at Amherst, University of
Massachusetts Institute of Technology
Michigan, University of
New Mexico State University
New York University
Pennsylvania, University of
Rochester, University of
Southern California, University of
Stanford University
SUNY, Buffalo
Wisconsin - Milwaukee, University of
Yale University

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[7]How to apply to graduate school in CL/NLP in the USA

Usually, the best timetable is as follows (given that M is the month when your studies would start, usually, in September)

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        M - 24 : Try to clarify your interests: is it really NLP
                 that you are interested in? What possible
                 subfields might be of interest to you? ...etc.
                 Remember: 5 years working in an area you are
                           not interested in will be a very painful
                           experience.
        M - 18 : Read publications in the area of your interest
                 in order to discover the best places for
                 you. Pay close attention to the specific fields of
                 research: which professors are most active in  those
                 fields, and which institutions.
                 Remember: Unless you are familiar with the most
                           current research, you will not be able
                           to find the best place for you.
        M - 18 : Go to your local library and consult some of the
                 available directories (see [3-3]) - write down
                 as much information as you can about some
                 15-25 universities. These universities form your
                 preliminary list.
                 Remember: There are some 100 universities in the
                           USA offering NLP/CL programs. Some of them
                           will be more attractive to you than others.
        M - 18 : Talk to your advisers at school, talk to other
                 students, post questions on the Internet, visit
                 departmental Web sites.
                 This way you will get advice on a few more univer-
                 sities that you might have skipped until this moment.
                 Remember: Others have faced what you are going
                           through. Use their experience.
        M - 15 : Send letters to the universities that you have
                 on your preliminary list. Make sure you indicate
                 when do you want to start, what degree (MA, MS,
                 Ph.D.) you are interested in, whether or not
                 you will be applying for financial aid, whether
                 you will need some special visa...
                 Remember: Ask for all the information that you
                           need; give them all the information they'd
                           need to satisfy your request.
        M - 12 : Read carefully the information that you have
                 received from the universities. Shorten your list
                 of places to the number that you will eventually
                 apply to (usually 5-8 is a good number).
                 Remember: Make sure you include both your best choice
                           schools and some places where you are almost
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                        certain of getting accepted.
        M - 10 : Fill in all the forms that are sent to you,
                 ask your professors to send reference letters to
                 the schools directly.
                 Remember: Professors will probably be very busy.
                           Give them the reference forms
                           as early as possible and make sure you
                           specify a reasonable time for them to fill
                           them in and send them out.
        M - 10 : (or earlier) - take the necessary tests (GRE,
                 TOEFL, or others) that the schools want. Make sure
                 you tell the testing service which universities
                 you want them to send your scores to.
                 Remember: Time yourself through several practice
                           tests. The GRE General test, for example,
                           is more about mastery of timing than knowledge.
        M -  9 : (approximately) - mail your forms to the schools,
                 preferably 2-3 weeks before the deadlines.
                 Remember: You don't want your applications to get there
                           at the same time as everyone else. Give the
                           admissions committee some extra time to
                           review your application.
        M -  6 : usually six months before the beginning of the semester
                 that you are applying for, you will get a letter
                 saying whether you have been accepted.
                 Remember: Usually, thick letters, e-mails, and telegrams
                           mean acceptance. Thin one-sheet letters will
                           most likely be disappointing for you.
        M -  5 : now, you have been accepted to a few schools. Go back
                 to the same resources that you used when you were
                 deciding where to apply (journals, catalogs, directo-
                 ries, professors, etc.). Ask the schools that accepted
                 you to fly you in for a visit (many will do this).
                 Remember: Don't forget non-academic factors such as
                           location, financial aid, the atmosphere in
                           the department, etc.

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[9] Major non-academic research laboratories

AT&T Research Labs
BBN Systems and Technologies Corporation
Bellcore, Morristown, NJ
DFKI (German research center for AI)
General Electric R&D
IRST, Italy
IBM T.J. Watson Research, NY
Lucent Technologies Bell Labs, Murray Hill, NJ
Microsoft Research, Redmond, WA
MITRE
NEC Corporation
SRI International, Menlo Park, CA
SRI International, Cambridge, UK
Xerox, Palo Alto, CA
XRCE, Grenoble, France

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[10] What major publications exist in the field

10.1. COMPUTATIONAL LINGUISTICS

Computational Linguistics is the only publication devoted exclusively
to the design and analysis of natural language processing
systems. From this unique quarterly, university and industry
linguists, computational linguists, artificial intelligence (AI)
investigators, cognitive scientists, speech specialists, and
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philosophers get information about computational aspects of research on language, linguistics, and the psychology of language processing and performance.

Published by The MIT Press for: The Association for Computational Linguistics.

URL: http://mitpress.mit.edu/journal-home.tcl?issn=08912017

10.2. JOURNAL OF NATURAL LANGUAGE ENGINEERING (JNLE)

Editors:
Dr B. K. Boguraev, IBM Thomas J. Watson Research Center, New York, USA
Professor Roberto Garigliano, University of Durham, UK
Dr John I. Tait, University of Sunderland, UK

Published: March, June, September and December. ISSN:1351-3249.

Natural Language Engineering is an international journal designed to meet the needs of professionals and researchers working in all areas of computerised language processing, whether from the perspective of theoretical or descriptive linguistics, lexicology, computer science or engineering. Its principal aim is to bridge the gap between traditional computational linguistics research and the implementation of practical applications with potential real-world use. As well as publishing research articles on a broad range of topics – from text analysis, machine translation and speech generation and synthesis to integrated systems and multi modal interfaces – the journal also publishes book reviews. Its aim is to provide the essential link between industry and the academic community

10.3. COMPUTER SPEECH & LANGUAGE (CS&L)

Editors: Prof. S.J. Young & Dr. S.E. Levinson
Send manuscripts (worldwide apart from the Americas) to:
Prof. Steve Young, Cambridge University Engineering Dept.,
Trumpington Street, Cambridge, CB2 1PZ, England.
Email: sjy@eng.cam.ac.uk
Send manuscripts (from the Americas) to:
Dr. Steve Levinson, Head Linguistics Reseach,
AT&T Bell Laboratories, 600 Mountain Ave.,
Murray Hill, New Jersey 07974. USA.
Email: sel@research.att.com
US Subscription rates are $170, with a personal rate of $75.
CS&L is published 4 times per year.
The address for subscription orders is:
Harcourt Brace and Company Limited,
High Street, Foots Cray,
Sidcup, Kent, DA14 SHP. England.

10.4. MACHINE TRANSLATION
Published 4 times annually. ISSN 0922-6567.
Subscriptions: Institutions $141 plus $16 postage; Individuals $55 (members of ACL $46).
Kluwer Academic Publishers, PO Box 322, 3300 AH Dordrecht, The Netherlands, or Kluwer Academic Publishers, PO Box 358, Accord Station, Hingham, MA 02018-0358.

10.5. SPEECH TECHNOLOGY
Published quarterly, since 1981.
Media Dimensions, New York, NY, USA

10.6. NATURAL LANGUAGE & LINGUISTIC THEORY (NALA)
Published quarterly. ISSN 0167-806X
Subscriptions: Individual $59,-/Dfl.156,-; Institutional $200,-/Dfl.383,- including p&h. Kluwer Academic Publishers
USA: Order Dept, Box 358, Accord Station, Hingham, MA 02018-0358. Phone

(617) 871-6600; Fax (617) 871-6528; E-mail: Kluwer@world.std.com
Other: P.O.Box 322, 3300 AH Dordrecht, The Netherlands. Phone (31) 78 524400; Fax (31) 78 183273; Telex: kadc nl; E-mail: vanderLinden@wkap.nl

10.7. MIND AND LANGUAGE
Editors: Cotheart, Davies, Guttenplan, Harris, Humphreys, Leslie, Smith, Wilson.
4 times annually
Blackwell Publishers, Oxford, UK.

10.8. JOURNAL OF LOGIC, LANGUAGE AND INFORMATION
Editor: Peter Gardenfors

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[11] Bibliographies

NLP/CL:

For information on a fairly complete bibliography of computational linguistics and natural language processing work from the 1980s, send mail to clbib@csli.stanford.edu with the subject HELP.

The CSLI linguistics bibliography contains 3,300 entries in bib/tib/refer format. The bibliography is heavily slanted towards phonetics and phonology but also includes a fair amount of computational morphology, syntax, semantics, and psycholinguistics. The bibliography can be used with James Alexander's tib bibliography system, which is available from minos.inria.fr [128.93.39.5] among other places. The bibliography itself is available by anonymous ftp from
csli.stanford.edu:/pub/bibliography/
Contributions are welcome, but should be in tib format.
For more information, contact Andras Kornai <kornai@csli.stanford.edu>

NLG:

Robert Dale's Natural Language Generation (NLG) bibliography is available by anonymous ftp from
scott.cogsci.ed.ac.uk:/pub/nlg/ [129.215.144.3]
Note that it is formatted for A4 paper. Stick in a line
.94 .94 scale
after the %! line to print on 8.5 x 11 paper. For further information, write to Robert Dale, University of Edinburgh, Centre for Cognitive Science, 2 Buccleuch Place, Edinburgh EH8 9LW Scotland, or <R.Dale@edinburgh.ac.uk> or <rdale@microsoft.com>.

Mark Kantrowitz's Natural Language Generation (NLG) bibliography is available by anonymous ftp from
ftp.cs.cmu.edu:/user/ai/areas/nlp/nlg/bib/mk/ [128.2.206.173]
In addition to the tech report, the BibTeX file containing the bibliography is also available. The bibliography contains more than 1,200 entries. A searchable index to the bibliography is available via the URL
http://liinwww.ira.uka.de/bibliography/Ai/nlg.html
Additions and corrections should be sent to mkant@cs.cmu.edu.

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[12] Electronic mailing lists

(This section is out of date - should be fixed for next release.)

Information Retrieval:
irlist <ir-l%uccvma.bitnet@vm1.nodak.edu>

Natural Language and Knowledge Representation (moderated):
nl-kr@cs.rpi.edu (formerly nl-kr@cs.rochester.edu)

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   Gatewayed to the newsgroup comp.ai.nlang-know-rep.

Natural Language Generation:
   siggen@black.bgu.ac.il

LFG (Lexical-Functional Grammar):
   http://linguistlist.org/subscribing/sub-lfg.html

Parsing:
   sigparse@cs.cmu.edu

Statistics, Natural Language, and Computing:
   empiricists@csli.stanford.edu

Colibri (weekly update on Conferences, Seminars, Jobs and Shareware in
NLP and speech)
   colibri-request@let.ruu.nl

Dependency Grammar
   dg@ai.uga.edu

Prosody:
   listserv@purccvm.bitnet

TEI:
   tei-l

Text Analysis and Natural Language Applications:
   SCHOLAR@CUNYVM.BITNET

Text Corpora:
   corpora-request@nora.hd.uib.no

Speech production and perception:
   foNETiks <fonetiks@mailbase.ac.uk>

LN:
   ln@frmop11.bitnet

Linguist:
   linguist@tamvm1.tamu.edu

ELSNET:
   elsnet-list@cogsci.ed.ac.uk

Eastern (European) Language Engineering list:
   to join, send mail to poul_andersen@eurokom.ie

Preprint archive mailing list

  For further information about (among other topics) submission of papers to
  the server, subscribing or canceling your subscription, requesting full
  text of any of the papers above, retrieving macro files for these papers,
  searching past listings, or submitting comments to the server operators,
  send a message:
     To: CMP-LG@XXX.LANL.GOV
     Subject: help

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[13] Newsgroups

alt.usage.english          English grammar, word usages, and related
                           topics.
comp.ai.nat-lang           Natural language processing by computers.
comp.ai.nlang-know-rep     Natural Language and Knowledge Representation.
                           (Moderated)
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comp.speech                 Research & applications in speech science &
                            technology.
sci.lang                    Natural languages, communication, etc.
alt.etext                   Electronic texts.
comp.text.sgml              ISO 8879 SGML structured documents markup
                            languages
comp.theory.info-retrieval  Information Retrieval topics. (Moderated)
comp.ai.doc-analysis.misc   General document understanding technologies
comp.internet.library       Discussing electronic libraries. (Moderated)
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[14] Professional Organizations, Associations

ASSOCIATION FOR COMPUTATIONAL LINGUISTICS (ACL)
Membership in the Association for Computational Linguistics is for the calendar year, regardless of when dues are paid. Membership includes a full year of the ACL journal, Computational Linguistics, reduced registration at most ACL-sponsored conferences, and discounts on ACL-sponsored publications. Payments for membership dues, fund donations, back issues, and proceedings may be made in Europe or the USA.

URL: http://www.aclweb.org

(The rest of this section is not up to date - should be fixed for next release):

ASSOCIATION FOR MACHINE TRANSLATION IN THE AMERICAS (AMTA)
655 Fifteenth Street, NW, Suite 310, Washington, DC 20005
Membership: $40 Associate members, $65 active members, Institutional $200, Corporate $400. Members receive the MT News International and the MT Yellow Pages.

SIGNLL is the ACL Special Interest Group on Natural Language Learning (language acquisition and related topics). To join, send mail to walter.daelemans@kub.nl or use the forms on the SIGNLL home page. For more information, see the SIGNLL home page at the URL
   http://www.cs.rulimburg.nl/~antal/signll/signll-home.html

COGNITIVE SCIENCE SOCIETY
Membership: $50 individuals, $25 student. Add $15 overseas postage. Members receive a copy of the journal Cognitive Science without additional charge. Write to Alan Lesgold, Secretary/Treasurer, Cognitive Science Society, LRDC, University of Pittsburgh, 3939 O'Hara Street, Pittsburgh, PA 15260, fax 1-412-624-9149, email al+@pitt.edu.

AMERICAN ASSOCIATION FOR ARTIFICIAL INTELLIGENCE (AAAI)
AAAI, 445 Burgess Drive, Menlo Park, CA 94025.
phone 415-328-3123, fax 415-328-4457, info@aaai.org, membership@aaai.org,
Membership includes AI Magazine, and the AI Directory:
$50 regular, $20 student, $75 institution/library (US/Canadian)
$75 regular, $45 student, $100 institution/library (Foreign)
AAAI has several special interest groups (SIGs) on medicine, manufacturing, business, and law. (Add $10/year for each subgroup.)
Life memberships $700 (US/Canadian), $1000 (Foreign)

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[15] Upcoming Conferences

2000

The 2000 ACL Applied Natural Language Processing Conference will be organized jointly with the first North American CL Conference. The joint NAACL-ANLP'00 conference will be held in the Spring of 2000.

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          URL: http://www.gte.com/anlp-naacl2000

          Coling 2000 will be held in Luxembourg, Saarbruecken, and
          Nancy in August.

          ACL 2000 will be organized in Hong Kong in October.

2001
          ACL 2001 will be held jointly with EACL 2001. The site has
          not been announced yet but will obviously be in Europe.

2002
          Coling 2002 will be in Taipei, Taiwan.
          The site for ACL 2002 will be announced in 2001.

For an updated list, check:

http://www.cs.columbia.edu/~radev/newacl/conferences.html

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[16] Evaluation Competitions

TREC - DARPA Text Retrieval Conference
Information retrieval using NLP/statistical techniques.
http://trec.nist.gov

NIST Spoken Language Technology Evaluations
http://www.nist.gov/speech/test.htm

MUC - DARPA Message Understanding Conference

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[17] How to join a mailing list

A: Most often, you have to send mail to the listserver at the site where
   the mailing list resides, and put "subscribe <listname> <yourname> in the
   body of the mail message. The underlined text is what you have to type in.

      Example:

      Mail listserv@tamvm1.tamu.edu
      ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

      Subject: some text here
               ^^^^^^^^^^^^^^
      subscribe LINGUIST Dragomir R. Radev
      ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
      .
      ^

------------------------------------------------------------------------------
 [18] How to obtain files by anonymous ftp

A: There are many ways. The most common way, however, is using a local ftp
   client.
   Suppose you want to get the file /pub/editors/webster.tar.Z
   from ftp.uu.net

   Here is a sample session. You type in whatever is underlined here.

      $ftp ftp.uu.net
       ^^^^^^^^^^^^^^
      Connected to ftp.uu.net.
      220 ftp.UU.NET FTP server Thu Apr 14 15:45:10 EDT 1994) ready.
      Name (ftp.uu.net:radev): anonymous
                               ^^^^^^^^^
```

```
      331 Password required for  anonymous.
      Password: radev@cs.columbia.edu
                ^^^^^^^^^^^^^^^^^^^^^  (put your email address here)

      230 Guest login ok, access restrictions apply.
      ftp> cd pub/editors
           ^^^^^^^^^^^^^^
      ftp> binary
           ^^^^^^
      ftp> get webster.tar.Z
           ^^^^^^^^^^^^^^^^^
      200 PORT command successful.
      150 Opening BINARY mode data connection for webster.tar.Z (148579 bytes).
      226 Transfer complete.
      local: webster.tar.Z remote: webster.tar.Z
      148579 bytes received in 2.2 seconds (67 Kbytes/s)
      ftp> quit
           ^^^^
      $
```

---

[19] FTP repositories

(This section is out of date).

19.1. Consortium for Lexical Research (CRL)

The Consortium for Lexical Research is designed to serve as a repository for software and resources of importance to the natural language processing research community. Sharable resources, and the task of centralizing lexical data and tools, are of foremost concern in lexical research and computational linguistics It is our objective to help alleviate the repeated recreation of basic software tools, and to assist in making essential data sources more generally available.

CLR maintains a public ftp site, and a separate library of materials only for members of CLR. Currently CLR has about 60 members, mostly academic institutions, and almost every major natural language processing center in the U.S. belongs. Access to the members-only materials is strictly regulated by password and userid.

Our catalog of current holdings is available by using anonymous ftp to clr.nmsu.edu

19.2. Oxford Text Archive (OTA)

ftp ota.ox.ac.uk
ota/textarchive.list the current catalogue

There are two classes of texts available from this FTP server:

(a) texts which are in TEI format and which we can make freely available (these all appear as category P texts in the shortlist)

(b) texts which are available only under our standard conditions of use, (these all appear as category U or A in the shortlist)

19.3. University of Michigan Linguistics Archive (UMICH)

ftp linguistics.archive.umich.edu
/linguistics
moderator: John Lawler (jlawler@umich.edu)

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[20] What are some important books in NLP

Textbooks:

Allen, James F., "Natural Language Understanding", The Benjamin/Cummings Publishing Company, Menlo Park, California, (Addison-Wesley Publishing Company, Reading, Massachusetts).

Manning, C. and Schuetze, H. Foundations of Statistical Natural Language Processing. Hardcover - 680 pages (July 1999) MIT Press; ISBN: 0262133601 http://www.sultry.arts.usyd.edu.au/fsnlp/promo/

Jurafsky, D. and Martin, J. Speech and Language Processing. http://www.cs.colorado.edu/~martin/slp.html

Gazdar, G. and Mellish, C., "Natural Language Processing in Lisp: An Introduction to Computational Linguistics", Addison-Wesley, Reading, Massachusetts, 1989. (There are three different editions of the book, one for Lisp, one for Prolog, and one for Pop-11.)

Michael A. Covington, "Natural Language Processing for Prolog Programmers", Prentice-Hall, Englewood Cliffs, NJ, 1994. ISBN 0-13-629213-5.

General:

Rustin, Randall (ed.) "Natural Language Processing", Algorithmics Press, New York, NY, 1973.

Schank, Roger C., and Colby, Kenneth M. (eds.) "Computer Models of Thought and Language", W.H. Freeman, San Francisco, CA, 1973, 454 pp.

Charniak, Eugene and Wilks, Yorick A. (eds.) "Computational Semantics", North-Holland, Amsterdam, Netherlands, 1976, 294 pp.

Metzing, Dieter (ed.) "Frame Conceptions and Text Understanding", De Gruyter, Berlin, Germany, 1980, 167 pp.

Tennant, Harry R., "Natural Language Processing", Petrocelli Books, New York, NY, 1981.

Lehnert, Wendy G., and Ringle, Martin H. (eds.) "Strategies for Natural

Language Processing", Lawrence Erlbaum Associates, Hillsdale, NJ, 1982, 533 pp.

King, Margaret (ed.) "Parsing Natural Language", Academic Press, London, England, 1983, 308 pp.

Grosz, Barbara J., Sparck-Jones, Karen, and Webber, Bonnie L., eds. "Readings in Natural Language Processing", Morgan Kaufmann Publishers, Los Altos, CA, 1986, 664 pages. ISBN 0-934613-11-7, $44.95.

Robert C. Berwick, "Computational Linguistics", MIT Press, Cambridge, MA, 1989, ISBN 0262-02266-4.

Brady, Michael, and Berwick, Robert C., eds. "Computational Models of Discourse", MIT Press, Cambridge, MA, 1983.

Ralph Grishman, "Computational Linguistics: An Introduction", Cambridge University Press, New York, 1986, 193 pages.

Terry Winograd, "Language as a Cognitive Process", Addison-Wesley, Reading, MA, 1983.

Schank, R. and Abelson, R. "Scripts, Plans, Goals, and Understanding," Lawrence Erlbaum Associates, Hillsdale, New Jersey, 1977.

Terminology:

David Crystal, "A Dictionary of Linguistics and Phonetics", 3rd Edition, Basil Blackwell Publishers, New York, 1991.

Parsing:

Tomita, M. (Editor), "Current Issues in Parsing Technology", Kluwer Academic Publishers, Norwell, MA, 1991.

Marcus, M. "A Theory of Syntactic Recognition for Natural Language," The MIT Press, Cambridge, MA, 1980.

Pereira, F. and Sheiber, S. "Prolog and Natural-Language Analysis," Center for the Study of Language and Information, 1987.

Probabilistic Parsing:

Ted Briscoe and John Carroll, "Generalised Probabilistic LR Parsing of Natural Language (Corpora) with Unification-based Grammars", University of Cambridge Computer Laboratory, Technical Report Number 224, 1991.

Zhi Biao Wu, Loke Soo Hsu, and Chew Lim Tan, "A Survey of Statistical Approaches to Natural Language Processing", Technical report TRA4/92, Department of Information Systems and Computer Science, National University of Singapore, 1992

Natural Language Understanding:

Dyer, M. "In-Depth Understanding: A Computer Model of Integrated Processing for Narrative Comprehension," MIT Press, Cambridge, MA, 1983.

Aravind Joshi, Bonnie Webber and Ivan Sag, eds. "Elements of Discourse Understanding", Cambridge University Press, New York, 1981.

Cohen, P. R., Morgan, J. and Pollack, M., editors, "Intentions in Communication", MIT Press, Cambridge, MA, 1990.

Natural Language Interfaces:

Raymond C. Perrault and Barbara J. Grosz, "Natural Language Interfaces", Annual Review of Computer Science, volume 1, J.F. Traub, editor, pages 435-452, Annual Reviews Inc., Palo Alto, CA, 1986.

Natural Language Generation:

McKeown, Kathleen R. and Swartout, William R., "Language Generation and Explanation", in Zock, M. and Sabah, G., editors, Advances in Natural Language Generation, Volume 1, Pages 1-51, Ablex Publishing Company, Norwood, NJ, 1988. (Overview of the state of the art in natural language generation.)

Mann, W. & S. Thompson. Rhetorical Structure Theory: a theory of text organization.

Speech:

Ronnie W. Smith and D. Richard Hipp, "Spoken Natural Language Dialog Systems: A Practical Approach", Oxford University Press, ISBN #0-19-509187-6

John Allen, Sharon Hunnicut and Dennis H. Klatt, "From Text to Speech: The MITalk System", Cambridge University Press, 1987. [Synthesis, precursor of DECtalk.]

Frank Fallside and William A. Woods (editors), "Computer Speech Processing" Prentice Hall, Englewood Cliffs, NJ, 1985.

X. D. Huang, Y. Ariki and M. A. Jack, "Hidden Markov Models for Speech Recognition", Edinburgh University Press, 1990. [Analysis]

A. Nejat Ince (editor), "Digital Speech Processing: Speech Coding, Synthesis, and Recognition", Kluwer Academic Publishers, Boston, 1992. [Analysis and Synthesis]

Kai-Fu Lee, "Automatic Speech Recognition: The Development of the SPHINX System", Kluwer Academic Publishers, Boston, MA, 1989. [Analysis]

Douglas O'Shaughnessy, "Speech Communication: Human and Machine" Addison-Wesley, MA, 1987. [Analysis and Synthesis]

Lawrence R. Rabiner and Ronald W. Schafer, "Digital Processing of Speech Signals", Prentice Hall, Englewood Cliffs, NJ, 1978. [Analysis and Synthesis]

Lawrence R. Rabiner and Biing-Hwang Juang, "Fundamentals of Speech Recognition", Prentice Hall, Englewood Cliffs, NJ, 1993. ISBN 0-13-015157-2. [Analysis]

Ronald W. Schafer and John D. Markel (editors), "Speech Analysis", IEEE Press, New York, 1979. [Analysis]

Alex Waibel and Kai-Fu Lee (editors), "Readings in Speech Recognition" Morgan Kaufmann Publishers, San Mateo, CA, 1990, 680 pages. ISBN 1-55860-124-4, $49.95. [Analysis]

Alex Waibel, "Prosody and Speech Recognition", Morgan Kaufmann Publishers, San Mateo, CA, 1988. [Analysis]

Machine Translation:

W. John Hutchins and Harold L. Somers, "An Introduction to Machine Translation", Academic Press, San Diego, 1992. 362 pages, ISBN 0-123-62830-X.

Bonnie J. Dorr, "Machine Translation: A View from the Lexicon" MIT Press, Cambridge, MA 1993. 432 pages, ISBN 0-262-04138-3.

Kenneth Goodman and Sergei Nirenburg., editors, "The KBMT Project: A Case Study in Knowledge-Based Machine Translation", Morgan Kaufmann Publishers, San Mateo, CA, 1991. 331 pages, ISBN 1-558-60129-5, $34.95.

Arnold, D.J.; Balkan, L.; Lee Humphreys, R.; Meijer, S.; and Sadler, L. (1994). Machine Translation: An Introductory Guide. NCC Blackwell.

The journal "Machine Translation" is the principle forum for current research.

A review of MT systems on the market appeared in BYTE 18(1), January 1993.

Reversible Grammars:

Tomek Strzalkowski, editor, "Reversible Grammar in Natural Language Processing", Kluwer Academic Publishers, 1993.

Proceedings of the ACL Workshop on Reversible Grammar in Natural Language Processing, UC Berkeley, 1991. (See especially Remi

Zajac's paper.)

Statistical Processing:
Eugene Charniak, "Statistical Language Learning", MIT Press, Cambridge, Massachusetts, 1993, 170 pages.

Categorial Grammar (CG):

M. Moortgat, "Categorial Investigations. Logical and Linguistic Aspects of the Lambek Calculus", Groningen-Amsterdam Studies in Semantics:9, Foris, Dordrecht, Holland, 1988.

Richard T. Oehrle, Emmon Bach and Deirdre Wheeler, "Categorial Grammars and Natural Language Structures", Studies in Linguistics and Philosophy:32, D. Reidel Publishing Company, Dordrecht, 1988.

Mary McGee Wood, "Categorial Grammars", Linguistic Theory Guides, Routledge, London, 1993.

Dependency Grammar:

Igor' Aleksandrovich Mel'cuk, "Dependency syntax : theory and practice", State University Press of New York, 1987.

Functional Grammar (aka Systemic Grammar):

Michael A. K. Halliday, "An Introduction to Functional Grammar", Edward Arnold, London, 1985.

Generalized Phrase Structure Grammar (GPSG):

Gerald Gazdar, Ewan Klein, Geoffrey Pullum and Ivan Sag, "Generalized Phrase Structure Grammar", Oxford:Blackwell, 1985.

Government and Binding (GB):

Noam Chomsky, Lectures on government and binding, Foris Publications 1981.

Vivian J. Cook, "Chomsky's Universal Grammar: An Introduction", Basil Blackwell Publisher, New York, 1988, 201 pages.

Victoria Fromkin and Robert Rodman, "An Introduction to Language", Holt, Rinehart, and Winston, New York, 4th edition, 1988, 474 pages.

Liliane M.V. Haegeman, "Introduction to Government and Binding Theory", Basil Blackwell Publishers, Oxford, 1991, 618 pages.

Geoffrey C. Horrocks, "Generative Grammar", Longman, London, 1987, 339 pages.

Andrew Radford, "Transformational Grammar: A First Course", Cambridge University Press, New York, 1988, 625 pages.

Stabler, E.P. (1992). The Logical Approach to Syntax. Cambridge, Massachusetts: MIT Press, 1992.

Head-driven Phrase Structure Grammar (HPSG):

Carl Pollard and Ivan Sag, "Information-based Syntax and Semantics", Stanford:CSLI, University of Chicago Press, 1987.

Pollard, Carl and Ivan A. Sag. 1994. Head-Driven Phrase Structure Grammar. Chicago: University of Chicago Press and Stanford: CSLI Publications.

Lexical-Functional Grammar (LFG):

Joan Bresnan (ed.), "The Mental Representation of Grammatical Relations", Cambridge:MA, MIT Press, 1982.

Dalrymple, Kaplan, Maxwell & Zaenen, eds. (1995) 'Formal Issues in Lexical-Functional Grammar', CSLI Publications, Stanford CA (distributed by Cambridge University Press)

Tree Adjoining Grammar (TAG):

A. Joshi, L. Levy and M. Takahasihi, "Tree Adjunct Grammars" In: Journal of Computer and System Sciences 10:136-63, 1975.

A. Joshi, "An Introduction to Tree Adjoining Grammars" In: Alexis Manaster-Ramer (ed.), "The Mathematics of Language", Benjamins, Philadelphia, 1987.

Cognitive Grammar:

Ronald W. Langacker, "Foundations of cognitive grammar" Stanford University Press, 1987.

Programming for NLP:

Pereira, Fernando C.N. and Shieber, Stuart "Prolog and Natural-Language Analysis," Center for the Study of Language and Information, Stanford, CA 1987, 264 pp.

Gazdar, Gerald and Mellish, Christopher S., "Natural Language Processing in Lisp: An Introduction to Computational Linguistics", Addison-Wesley, Reading, Massachusetts, 1989. (There are three different editions of the book, one for Lisp, one for Prolog, and one for Pop-11.)

Michael A. Covington, "Natural Language Processing for Prolog Programmers", Prentice-Hall, Englewood Cliffs, NJ, 1994. ISBN 0-13-629213-5.

Peter Norvig. Paradigms of AI Programming

Bibliographies:

Gazdar, Gerald, Alex Franz, Karen Osborne, and Roger Evans (1987). "Natural Language Processing in the 1980s: A Bibliography", Center for the Study of Language and Information (CSLI) lecture notes no. 12, CSLI, Stanford, CA, 240 pp.

Computational Morphology

Richard Sproat, Morphology and Computation, MIT Press, Cambridge, 1992.

Graeme D. Ritchie, Graham J. Russell, Allan W. Black, Stephen G. Pulman, Computational Morphology, MIT Press, Cambridge/London, 1992.

Miscellaneous:

Austin, J.L. How to do things with words.

Searle, J. Speech acts.

Levinson, S. Pragmatics.

Ross, Don, and Dan Brink (eds.) (1994) "Research in Humanities Computing 3: Selected Papers from the ALLC/ACH Conference, Tempe, Arizona, March 1991,"

Clarendon Press, Oxford, England.

Gazdar, Gerald, Franz, Alex, Osborne, Karen, and Evans, Roger, "Natural Language Processing in the 1980s: A Bibliography", Center for the Study of Language and Information (CSLI) lecture notes no. 12, CSLI, Stanford, CA, 1987, 240 pp.

The Mulltilingual PC Directory. By Ian Tresman. 254pp. Stamford CT: Knowledge Computing Ltd.

Stefan Wermter, Hybrid connectionist natural language processing Chapman & Hall Inc, 1995.

Connectionist approaches to natural language processing. Edited by Ronan G. Reilly and Noel E. Sharky. Earlsdale, 1992 ISBN 0-86377-179-3

Natural Language Processing. Ed. Fernando C.N. Pereira and Barbara J. Grosz. A Bradford Book. Cambridge, MA, and London: The MIT Press, 1994. Rptd from _Artificial Intelligence: An International Journal_, Volume 63, Numbers 1-2 (1993).

Research in Humanities Computing 1: Selected Papers from the ALLC/ACH Conference, Toronto, June 1989. Ed. Ian Lancashire. Oxford: Clarendon Press, 1991.

Peter D. Smith, _An Introduction to Text Processing_. Cambridge MA and London: The MIT Press, 1990. ISBN 0-262-19299-3.

Computer processing of natural language
Author Gilbert K Krulee
published Prentice Hall
ISBN 0-13-610299-3

Sadock, J. Toward a linguistic theory of speech acts.

Vanderveken, D. & J. Searle. Meaning and speech acts. (2 vols.)

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[21] Encyclopedia of Artificial Intelligence

A GUIDE TO COMPUTATIONAL LINGUISTICS ARTICLES IN THE ENCYCLOPEDIA OF ARTIFICIAL INTELLIGENCE, 2nd Edition

Stuart C. Shapiro (editor) (John Wiley & Sons, 1992)

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AUTHOR	TITLE	PAGES
	Volume 1:	
Bookman, L. A., & Alterman, R.	Analog Semantic Features	27-28
Alvarado, S. J.	Argument Comprehension	30-52
Kucera, H.	Brown Corpus	128-130
Srihari, S. N.,		

& Hull, J. J.	Character Recognition	138-150
Ballard, B., & Jones, M.	Computational Linguistics	203-224
Hardt, S. L.	Conceptual Dependency	259-265
Hindle, D.	Deep Structure	328-330
Ingria, R.; Boguraev, B.; & Pustejovsky,J.	Dictionary/Lexicon	341-365
Scha, R.; Bruce, B. C.; & Polanyi,L.	Discourse Understanding	365-379
Tennant, H.	Ellipsis	445-446
Novak, V.	Fuzzy Logic: Applications to Natural Language	515-521
Woods, W. A.	Grammar, Augmented Transition Network	552-563
Bruce, B., & Moser, M. G.	Grammar, Case	563-570
Gazdar, G.	Grammar, Generalized Phrase Structure	570-573
Joshi, A. K.	Grammar, Phrase Structure	573-580
Burton, R.	Grammar, Semantic	580-583
Bateman, J. A.	Grammar, Systemic	583-592
Mallery, J. C.; Hurwitz, R.; & Duffy,G.	Hermeneutics	596-611
Hill, J. C.	Language Acquisition	761-772
Fass, D., & Pustejovsky, J.	Lexical Decomposition	806-812
Pustejovsky, J.	Lexical Semantics	812-819

Volume 2:

Nagao, M.	Machine Translation	898-902
Klavans, J. L., & Tzoukermann, E.	Morphology	963-972
McDonald, D. D.	Natural-Language Generation	983-997
Carbonell, J. G., & Hayes, P. J.	Natural-Language Understanding	997-1016
Petrick, S.	Parsing	1099-1109
Small, S. L.	Parsing, Word-Expert	1109-1116
Wilks, Y., & Fass, D.	Preference Semantics	1183-1194
Cruse, D. A.	Presupposition	1194-1201
Dyer, M. G.; Cullingford, R. E.; & Alvarado, S. J.	Scripts	1443-1460
Sowa, J. F.	Semantic Networks	1493-1511
Devlin, K. J.	Situation Theory and Situation Semantics	1541-1547
Briscoe, E. J.	Speech Recognition	1553-1559
Norvig, P.	Story Analysis	1568-1576
Alterman, R.	Text Summarization	1579-1587
Sparck Jones, K.	Thesaurus	1605-1613
Knight, K.	Unification	1630-1636

Additional articles from the 1st edition (1987):

Coelho, H.	Grammar, Definite Clause	339-342
Berwick, R.	Grammar, Transformational	353-361
Newmeyer, F. J.	Linguistics, Competence and Performance	503-508
Wilks, Y.	Machine Translation	564-571
Tennant, H.	Menu-Based Natural Language	594-597
Koskenniemi, K.	Morphology	619-620
Bates, M.	Natural-Language Interfaces	655-660
Riesbeck, C. K.	Parsing, Expectation-Driven	696-701
Keyser, S. J.	Phonemes	744-746
Webber, B.	Question Answering	814-822
Smith, B. C.	Self-Reference	1005-1010
Hirst, G.	Semantics	1024-1029

Woods, W.	Semantics, Procedural	1029-1031
Allen, J. F.	Speech Acts	1062-1065
Allen, J.	Speech Recognition	1065-1070
Allen, J.	Speech Synthesis	1070-1076
Briscoe, E. J.	Speech Understanding	1076-1083
Lehnert, W. G.	Story Analysis	1090-1099

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[22] Machine Translation

Globalink, Inc
9302 Lee Highway
Fairfax, VA, 22031, USA
Tel: +1 703 273 5600
Fax: +1 703 273 3866

Archers Translation Services
203-205 Desborough Road
High Wycombe, Bucks., HP11 2QL, UK
Tel: +44 494 537755
Fax: +44 494 474001

Gesellschaft f|r multilinguale Systeme (GMS)
Balanstr. 57
81541 Munich, Germany
http://www.gmsmuc.de

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[23] What are the major accomplishments of the field

Note: This section is in a very preliminary stage.

Overall:

Chomsky (1957) Syntactic Structures
Weizenbaum (1966), ELIZA
Woods (1967), Procedural semantics
Thorne et al. and Woods (1968-70), ATNs
Winograd (1970), Shrdlu
Colby, Weber & Hilf, 1971; Colby, 1975, PARRY
Wilks (1972), Preference semantics
Woods et al. (1972), LSNLIS / Lunar
Charniak (1972), Frames and demons
Wilks (1973), Stanford machine translation project
Montague (1973) IL semantics (Montague Grammar) in PTQ
Grosz (1977), Focus in task-oriented dialogues
Marcus (1977), Deterministic parsing
Davey (1978)
Cohen, Phil (1979), Planning speech acts
Allen (1980), Understanding speech acts
McDonald (1980), MUMBLE
Heim/Kamp (1981) Discourse Representation Theory
McKeown (1982), TEXT
Appelt (1982), KAMP (Integration of Functional Grammar with Discourse Plans)
Shieber (1984) Noncontextfreeness of NL syntax proven
Pollack (1986), Plan inference
Mann & Thompson (1987), Rhetorical Structure Theory

Conceptual Dependency:

Schank (1969), Conceptual Dependency
Schank, Riesbeck, Rieger, Goldman (1975), MARGIE
Cullingford (1979), SAM
Wilensky (1979), PAM
DeJong (1980), FRUMP
Lebowitz (1980), IPP

Dyer (1982), BORIS
Lytinen (1986), MOPTRANS
Hovy (1986), PAULINE
Ram (1989), AQUA
Dehn (1989), AUTHOR/STARSHIP
Martin (1986) Direct Memory Access Parsing (DMAP)
Fitzgerald (1995) Indexed Concept Parsing

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[24] Publishers

24.1. MIT Press
http://www-mitpress.mit.edu/

24.2. Elsevier
http://www.elsevier.nl/

24.3. Kluwer
http://www.wkap.nl

24.4. Addison Wesley
http://www.aw.com/

24.5. Cambridge University Press
http://www.cup.cam.ac.uk/

24.6. CSLI, Stanford
http://www-csli.stanford.edu/publications/

24.7. Springer Verlag
http://www.springer.de/

24.8. University of Chicago Press
http://www.press.uchicago.edu/

24.9. Academic Press
http://www.apnet.com/

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[25] Credits

Large parts of the answers to Q. 10, 11, 14, and 20 come from Mark Kantrowitz's comp.ai FAQ. Q.2 is due to Hans Uszkoreit, Q.21 comes from William Rapaport and Stuart Shapiro. Jan Daciuk compiled most of Q. 24.

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