

PAUL C. DAVIS

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AREAS OF SPECIALIZATION

Natural Language Processing; Machine Translation, focusing on statistical MT; Information Extraction; Computational Pragmatics, including dialogue systems and question answering; Machine Learning.

EDUCATION

Ph.D., Linguistics, Ohio State University, June 2002. Specializing in Computational Linguistics.
Dissertation: *Stone Soup Translation: The Linked Automata Model*.

M.A., Linguistics, University of Wisconsin-Madison, 1996.

B.S., Business Economics, Miami University, 1988, Cum Laude. Minor in International Business.
Attended Miami University European Center in Luxembourg, 1986-1987.

Related Computer Science coursework: Natural Language Processing, Data Structures and Algorithms, Artificial Intelligence, Seminar in Machine Learning (University of Wisconsin-Madison); Computer Architecture, Operating Systems, Programming Languages (Ohio State University).

PROFESSIONAL EXPERIENCE

2004–Present Principal Staff Research Engineer

NLP GROUP, HUMAN INTERFACE LABORATORY, MOTOROLA, SCHAUMBURG, ILLINOIS.

Led research focus area in statistical and symbolic natural language processing. Designed and implemented distributed, multiple-user interaction system supporting multiple modalities such as GUI, voice, and text. Directed development of system for automatic translation of natural language text.

2002–2004 Senior Staff Research Engineer

NLP GROUP, HUMAN INTERFACE LABORATORY, MOTOROLA, SCHAUMBURG, ILLINOIS.

Specialized in the design, feature enhancements, optimization, and porting of multilingual dialogue systems, parsers, and related software in a variety of computing environments and device architectures.

1996–2002 Research Assistant

DEPARTMENT OF LINGUISTICS, OHIO STATE UNIVERSITY, COLUMBUS, OHIO.

Computational linguistics projects including the following major projects:

- 2001-2002** Design and implementation of a finite-state probabilistic machine translation (MT) system, sponsored by a Motorola University Partnerships in Research Grant.

A new MT approach was designed and implemented, involving the linking of automata in order to more directly model word-order differences than possible via transducers. The project involved the creation of linked automata, including algorithms for training, translation, and generalization; the development of probabilistic versions of the models; methods for the extraction of partial results; and the design of a specialized finite-state library. Techniques for word alignment and word alignment evaluation were also created, along with a graphical word alignment tool.

1998-2001 Development and implementation of a natural language dialogue system, sponsored by a Motorola University Partnerships in Research Grant.

The project focused on the implementation of a theory of question-answering. Research included the design of presuppositional operators for a human/machine hotel reservation system, the integration of the operators with a syntactic parser, and the development of a specialized domain ontology, a planning module, and a template-based generator.

1997-1998 Computational analysis of political texts, in conjunction with the Mershon Center for International Security and Public Policy.

This project involved information extraction from texts of speeches by key political figures in the Middle East. Processing included parsing the texts and resolving contextual information, development of a specialized lexicon, integration with a parser, and the design of semantic representations for database storage.

1997 Parsing of languages with flexible constituent ordering.

A parser was designed to efficiently handle semi-free word-order languages in a constraint-based environment. The system successfully implemented a German grammar fragment in HPSG which efficiently processed all allowable word orders.

1999, 2000 (Summer) Software Programming Intern

NLP GROUP, HUMAN INTERFACE LABORATORY, MOTOROLA, SCHAUMBURG, ILLINOIS.

Ported a natural language dialogue system from Lisp to C++. Continued the design of dialogue system components, created cross-platform communication interfaces, and created a demonstration system.

1997 (Summer) Research Assistant

LINGUISTICS DEPARTMENT, EBERHARD KARLS UNIVERSITÄT, TÜBINGEN, GERMANY.

Developed strategies and tools for syntactic annotation of English Treebank for the Verbmobil project. Tools developed were implemented in Perl and included an automated lexicon and summarization tool.

1994-1996 Editorial Assistant

ADVANCING THE CONSUMER INTEREST, MADISON, WISCONSIN.

Edited and prepared manuscripts for an academic journal focusing on consumer law, policy, and research.

1992-1993 Reforestation Agent

DEVELOPMENT CORPORATION OF CHUQUISACA / U.S. PEACE CORPS, CULPINA, BOLIVIA.

Initiated rural reforestation project; secured external agency assistance; administered coursework.

1988-1992 Assistant Office Manager / Paralegal

BLACKBURN & MICHELMAN, P.C., PHILADELPHIA, PENNSYLVANIA.

Managed computing resources; analyzed damages and supervised legal assistants.

PROGRAMMING LANGUAGES / ENVIRONMENTS / WEB TECHNOLOGIES

C++, Perl, Lisp, Prolog / Windows, Unix, Linux (Pentium, ARM), Symbian, Telematics environments / JavaScript, Ajax, XSLT, XPath, XML Schema, XForms

NATURAL LANGUAGES

Spanish, German, French, Quechua