

# David Goddeau

Voice: (617) 926-8504

Email: [dg3@alum.mit.edu](mailto:dg3@alum.mit.edu)

WWW: <http://www.phasedance.com>

## Degrees

<b>Massachusetts Institute of Technology</b>	<b>Cambridge, MA</b>
<b>Ph.D. in Computer Science</b>	<b>1993</b>
Thesis research under V. Zue on "An LR Parser-Based Probabilistic Language Model for Spoken Language Systems". Minor program in Molecular Biology.	
<b>M.S. in Computer Science</b>	<b>1984</b>
<b>B.S. in Computer Science</b>	<b>1979</b>

## Employment

<b>Hewlett Packard (CRL) Cambridge, MA</b>	<b>Jan. 2003 to present</b>
Research scientist in Hewlett Packard's Cambridge Research Lab. developing new applications in bio-informatics to home monitoring. Architect and developer for BioStream, a J2EE-based system for collecting, analysing, storing and visualizing ECG data from wireless sensing devices. Assumed responsibility along with 2 colleagues, for Talisman patient monitoring system including wireless ECG device, communications relay device, automation and monitoring software. Completed system development and brought to clinical trial with hospital partner. Data analysis projects include work in comparative genomics, protein mass spectrometry, and search techniques on large sequence or time-series data.	
<b>Compaq Computer Corp (CRL) Cambridge, MA</b>	<b>Jun. 1996 to Feb. 2000</b>
Research lead for SpeechBot ( <a href="http://www.compaq.com/speechbot">www.compaq.com/speechbot</a> ), the first search site for streaming spoken audio on the Web, launched Dec.99. Project leader for Speech Recognition Project at Compaq Computer Corp. investigating new applications for large vocabulary speech recognition. Developed and implemented Web-based conversational systems technology at CRL, including natural language parsing and generation, semantic interpretation, discourse and dialog modeling, response planning, and Web-based architecture.	
<b>MIT Laboratory for Computer Science, Cambridge, MA</b>	<b>Jan. 1989 to Jun. 1996</b>
Graduate Student, then Research Scientist with Spoken Language Systems Group. Conceived and developed the GALAXY architecture for distributed spoken-language access to on-line information and services. GALAXY represents an advance over current spoken language architectures in that it is distributed, multi-domain, and extensible. Implemented initial version of protocols, X-based client program, and several prototype knowledge servers. Worked with other group members to integrate speech recognition and language understanding technologies. Initial demonstration of prototype system at ARPA HLS meeting 1994 and the 1995 World Economic Forum in Davos.	
Other accomplishments include: development of semantic representation language and support library for SLS language understanding and generation systems, development of fast-match and search algorithms for the SUMMIT speech recognition system, development of semantic interpretation tool for construction of conversational system back ends, participated in SLS for ARPA evaluation (ATIS) of speech and language technology, particularly in the area of statistical language modeling for speech recognition.	

**Hewlett Packard Labs., Palo Alto, CA****Jan. 1985 to Jan. 1987**

Member of Technical Staff at HP-Labs in Palo Alto. Associated with Natural Language Group developing a system to parse and interpret English sentences with emphasis on database query. Developed and implemented linguistic treatment of constituent coordination. Designed and implemented several system modules including, inheritance language for representing linguistic feature hierarchies, lexical rule module, semantic disambiguation module, and module to translate semantic expressions into relational database queries.

**Consulting**

Independent consultant specializing in product and system development.

**Knumi Inc. Boston MA****Nov. 2001 - Nov. 2002**

Hired as consultant to define and develop a J2EE architecture for creating and delivery spoken dialog applications for sales force support. Key features of the system were: abstract data model and integration layer, dialog description language for rapid application development, output rendering layer supporting VoiceXML, and SALT. The system was implemented and used internally to develop sales force applications for Knumi clients, and was eventually sold to a Knumi customer.

**SpeechWorks Intl. Boston, MA****Apr. 2000 - Jun. 2001**

Worked as independent consultant and FTE on the company's strategy surrounding the VoiceXML spoken dialog mark-up language. Designed and produced the OpenVXI Open Source VoiceXML interpreter and a working integration with SpeechWorks products. Supported users with software updates and feature enhancements. Developed a framework for server-side speech application development for VoiceXML and managed the production of a demonstration application using this framework. Developed, wrote, and taught a 1-day course on VoiceXML at SpeechWorks Institute. Assisted marketing and sales with VoiceXML and related technologies.

**Proconics International, Woburn, MA****Sep. 1981 to Jun. 1989**

Designed and implemented control software for a robot designed to transfer wafers in semiconductor fabrication facility. Produced prototype system for initial delivery and provided support for permanent software staff. Developed specification and communication interface for software package to automate diffusion areas in semiconductor manufacturing. System scheduled jobs and tracked equipment and material status in diffusion area.

**Mytrix Systems, Cambridge MA****Sep. 1983 to Jan. 1985**

Consulting work on UNIX and operating systems for several clients. Ported UNIX operating system to a mc68000 based personal computer. Added system extensions to support client's application. Profiled BSD4.2 system and analyzed data to predict performance on a multiprocessor system.

**Teaching****Speechworks Institute, Cambridge, MA****Dec 2001**

Developed a 1-day course on VoiceXML at SpeechWorks Institute. Course covered VoiceXML basics and included student exercises on OpenVXI platform.

**ArsDigita University, Cambridge, MA****Jan 2001**

Designed, developed and taught an intensive 1-month course on Object-Oriented Programming in Java. Course covered basics of OOP as well as advanced topics in network, multi-threaded and GUI programming. Students completed several programming projects as part of the course.

**Massachusetts Institute of Technology, Cambridge, MA Spring 1982, to Spring 1988**

Recitation instructor [4 semesters] for undergraduate core course on Computer Architecture. Responsibilities included presenting new material, reviewing lecture material, and problem set and quiz problem generation. Also worked on course development including the addition of a laboratory and revision of course notes.

**Lowell Institute School, Cambridge, MA****Feb. 1977 to Dec. 1981**

Laboratory teaching assistant for introductory digital electronics course meeting one night per week. Most students were technicians continuing education.

**Publications**

- Eberman, B., Carter, J., Meyer, D., Goddeau, D. "Building VoiceXML Browsers with OpenVXI", *Proceedings of the eleventh international conference on World Wide Web* Honolulu, Hawaii, 2002, pp 713-717
- Goddeau D., and Pineau, J. "Fast Re-inforcement Learning of Dialog Strategies", *Proc. ICASSP 2000*, Istanbul, Turkey, June 2000.
- Van Thong, J-M, Goddeau, D., Litvinova, A., Logan, B., Moreno, P., and Swain, M. "SpeechBot: a Speech Recognition based Audio Indexing System for the Web", *International Conference on Computer-Assisted Information Retrieval, Recherche d'Informations Assistee par Ordinateur (RIA0)*, Paris, April 2000, pp 106-115
- Ghosh, D., and Goddeau D., "Automatic grammar Induction from Semantic Parsing", *Proc. ICSLP 98* Sydney, Australia, Dec 1998.
- Goddeau, D., Goldenthal, W., and Weikart, C., "Deploying Speech Applications over the Web", *Proc. Eurospeech 97*, Rhodes, Greece, 1997.
- Goddeau, D., Meng, H., Polifroni, J., Seneff, S., and Busayapongchai, S. "A Form-Based Dialog Manager for Spoken Language Applications" *Proc. ICSLP 96*, pp 701-705, Philadelphia PA, Oct, 1996.
- Meng, H., Busayapongchai, S., Glass, J., Goddeau, D., Hetherington, L., Hurley, E., Pao, C., Polifroni, J., Seneff, S., and Zue, V. "WHEELS: A Conversational System in the Automobile Classifieds Domain" *Proc. ICSLP 96*, Philadelphia PA, Oct, 1996.
- Seneff, S., Goddeau, D., Pao, C., and Polifroni, J., "Multimodal discourse modelling in a multi-user multi-domain environment", *Proc. ICSLP 96*, Philadelphia PA, Oct, 1996.
- Glass, J., Goddeau, D., Hetherington, L., McCandless, M., Pao, C., Phillips, M., Polifroni, J., Seneff, S., and Zue, V. "The MIT ATIS System: December 1994 Progress Report" *Proc. ARPA Spoken Language Workshop*, Austin, Texas, Jan. 1995.
- Seneff, S., Zue, V., Polifroni, J., Pao, C., Hetherington, L., Goddeau, D., Glass, J., "The Preliminary Development of a Displayless PEGASUS System" *Proc. ARPA Spoken Language Workshop*, Austin, Texas, Jan. 1995.
- Goddeau, D., Brill, E., Glass, J., Pao, C., Phillips, M., Polifroni, J., Seneff, S., and Zue, V. "GALAXY: A Human-Language Interface to On-line Travel Information" *Proceedings of the International Conference on Spoken Language Processing*, Yokohama, Japan, Sept. 1994.
- Phillips, M. and Goddeau, D. "Fast Match for Segment-based Large Vocabulary Continuous Speech Recognition", *Proceedings of the International Conference on Spoken Language Processing*, Yokohama, Japan, Sept. 1994.

- Zue, V., Seneff, S., Polifroni, J., Phillips, M., Pao, C., Goddeau, D., Glass, J., and Brill, E. "Pegasus: A Spoken Language Interface for On-Line Air Travel Planning", *Proc. ARPA Human Language Technology Workshop*, Princeton, NJ, March 1994.
- Zue, V., Seneff, S., Polifroni, J., Phillips, M., Pao, C., Goddeau, D., Glass, J., and Brill, E. "The MIT ATIS System: December 1993 Progress Report", *Proc. ARPA Spoken Language Technology Workshop*, Princeton, NJ, March 1994.
- Goddeau, D., *An LR Parser-Based Probabilistic Language Model for Spoken Language Systems*, Ph.D. Thesis, MIT, Feb 1993.
- Goddeau, D., "Using Probabilistic Shift-Reduce Parsing in Speech Recognition Systems", *Proc. ICSLP 92*, Banff, Alberta, Canada, October, 1992.
- Goddeau, D., and Zue, V. "Integrating Probabilistic LR Parsing into Speech Understanding Systems" *Proc. ICASSP 92*, San Francisco, CA, March, 1992.
- Zue, V., Glass, J., Goddeau, D., Goodine, D., Hirshman, L., Phillips, M., Polifroni, J., Seneff, S. "The MIT ATIS System: February 1992 Progress Report" *Proc. Fifth DARPA Speech and Natural Language Workshop*, Harriman, NY, Feb 1992.
- Zue, V., Glass, J., Goddeau, D., Goodine, D., Hirshman, L., Leung, H., Phillips, M., Polifroni, J., Seneff, S. "Spoken Language Systems for Human/Machine Interfaces", *Proc. RIAO-91*, Barcelona, Spain, April, 1991.
- Seneff, S., Glass, J., Goddeau, D., Goodine, D., Hirshman, L., Leung, H., Phillips, M., Polifroni, J., Zue, V. "Development and Preliminary Evaluation of the MIT ATIS System" *Proc. Fourth DARPA Speech and Natural Language Workshop*, Asilomar, CA, Feb 1991.
- Zue, V., Glass, J., Goddeau, D., Goodine, D., Leung, H., McCandless, M., Phillips, M., Polifroni, J., Seneff, S., Whitney, D. "Recent Progress on the MIT VOYAGER Spoken Language System" *Proc. ICSLP 90*, Kobe, Japan, November 1990.
- Proudian, D. and Goddeau, D., *Constituent Coordination in HPSG*. Center for the Study of Language and Information, CLSI-87-97, May 1987.

## Theses Supervised

- Chang, Angel. "Part-of-speech Based Language Models for Speech Recognition", M.Eng. MIT 2000
- Ghosh, D. "Semantic Parsing Based Grammar Induction", M.Eng. MIT 1998
- Serridge, B. "A Parametric Analysis of the SUMMIT Speech Recognition System", B.S. MIT 1995

## Patents

- "Cardiac Diagnostic System Combining Cardiologist Knowledge and Machine Learning"  
Co-Inventors: Pedro J. Moreno and Beth T. Logan  
Status: Pending (2004)
- "Computer Method and System for Reading and Analyzing ECG Signals"  
Co-Inventors: Beth T. Logan and Pedro J. Moreno  
Status: Pending (2004)

“Method And System For Guiding Scheduling Decisions In Clusters Of Computers Using Dynamic Job Profiling”

Co-Inventors: Leonidas Kontothanasis, Richard Flower and Rivka Ladin

Status: Pending (2004)

“Content-based Synchronization Method for Datastreams”

Co-Inventors: Leonidas Kontothanasis and JM Van Thong

Status: Pending (2004)

“Apparatus for Aligning Circular Objects”

Status: US Patent No. 4,765,793, Issued Aug. 23, 1988.

## Talks

“Conversation Access to the Information Superhighway”, (with V. Zue), 4th. WWW Conference. Boston MA, Dec. 1995.

“GALAXY: Spoken Language Access to On-Line Information”, DEC CRL, April 1995.

“GALAXY: Spoken Language Access to On-Line Information”, Language Technology and the Information Highway meeting, Santorini, Greece, Sept 1994.

GALAXY demonstration, ARPA HLT Conference March 1994,

“Probabilistic Language Modelling for Spoken Language Systems”, Speech Group at University of Aalborg, Denmark, Sept 1993.

“Probabilistic Language Modelling for Spoken Language Systems”, Speech Group at Cambridge University, Cambridge, UK, June 1993.