David L. Thomson
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25 years of experience in the speech software business covering a broad range of development, network engineering, and business development. Managed R&D teams responsible for over a dozen large-scale voice activated services. A demonstrated ability to meet tight deadlines, anticipate and plan for field problems, engage developers, persuade customers, and find creative solutions. A solid speech technology background with 10 patents, 30 papers published, strong presentation skills, and management experience.

Experience

SVP Speech Technology, SpinVox, UK, www.spinvox.com (now part of Nuance) **2009-present**

- Used multivariate error analysis to improve recognition confidence estimates by 4%.
- Built statistical human behavior models to improve perceived ASR transcription accuracy.
- Developed classification algorithms that reduce need for human intervention by 8%.
- Built SLMs and application software for a speech-to-text demo with a potential customer.
- Gave technical marketing presentations to U.S. telecom carriers, enterprises, and platform vendors.

CTO, SpeechPhone, Lake Forest, CA, www.speechphone.com **2004 – 2009**

Managing development for intelligent VoIP telecommunication services and innovative speech services.

- Design user interface, write natural language grammars, and conduct live user trials for new services.
- Collect and analyze data from the field to tune grammars, ASR parameters, and call flows.
- Evaluate and select speech technology platforms.
- Dual role as telecommunications network operations director: administer VoIP gateway and SIP softswitch.
- Set up call center & monitoring systems for tracking bugs, customer trouble tickets, and network integrity.
- Manage SpeechPhone's intellectual property portfolio.

CTO, Fonix Corporation, Salt Lake City, UT, www.fonix.com **2002 – 2004**

Technical planning and strategy development for network-based and embedded/handheld speech systems.

- Worked with ASR technology for voice activated handset and games applications.
- Formed a joint technology development project with Oracle Corporation.
- Built Fonix's first VoIP-based voice dialing prototype.
- Managed the corporate intellectual property portfolio and new patent applications.
- Designed an improved development and testing process.

CTO, Lucent Speech Solutions, www.lucent.com; **Mgr., AT&T Bell Labs,** www.att.com **1984 – 2002**

Spent 18 years at AT&T/Lucent as a developer (1984), technical manager (1990), and Lucent Speech Solutions CTO (1999). Responsible for building voice activated systems that have handled over 10 billion calls. Led teams of 10-18 ASR & TTS software developers for 12 years. Managed product development, including algorithm/software research, customer/partner negotiation, staffing, budgeting, user interface design, testing, customer and sales support, deployment, and field support. Assisted in patent generation, assertion, and defense. Helped coordinate development between Bell Labs Research and two internal speech technology product centers. Served as Lucent's representative on the VoiceXML Forum board of directors. Helped write and pitch the speech business plan in a spin-off attempt. Managed the team responsible for over a dozen large-scale trials and live services, including:

- Voice call routing services for Spanish Telefonica, BT, and AT&T, handling several million calls per day.
- A voice-activated corporate calling card service used by over 800 companies.
- A voice activated service used by AOL MovieFone (777-FILM) to provide show times and sell theater tickets.
- Helped develop a wiretap-resistant phone used in the Pentagon War Room and in Desert Storm.

Other experience: Chairman of the VoiceXML Forum Tools Committee, recently renamed the AVIOS Advanced Dialog Forum (2001-present); taught computer classes at College of DuPage (1986-1987); wrote software to statistically diagnose manufacturing failures at IBM (summer 1983).

Primary languages: C/C++, UNIX/Linux shell, JScript, VoiceXML, HTML, R, Flash, Perl, SQL, Z-80.

Education

1986	Post-graduate work	IIT	GPA=4.0/4.0
1984	MSEE	Brigham Young Univ.	GPA=3.96/4.0 (cumulative)
1983	BSEE	Brigham Young Univ.	Summa Cum Laude
1981	Associate in Engineering	BYU-Idaho	GPA=4.0/4.0

Awards and Other Information

- Co-led a team of 22 that won the 1997 Lucent Bell Labs President's Gold Award (1 of 4).
- 1994 Eta Kappa Nu Outstanding Young Electrical Engineer of the year - Honorable Mention (1 of 3).
- 1992 Eta Kappa Nu Outstanding Young Electrical Engineer - Finalist (1 of 6).
- College of Engineering Valedictorian at both Ricks College (1981) and BYU (1984).
- 1981 Ricks College Outstanding Student.
- Languages: American Sign Language and Swedish.
- Spent two years in Sweden as a missionary for the Church of Jesus Christ of Latter-day Saints.
- Security clearance: Top Secret (1987-1994).
- Eagle scout

Patents Issued

- 4,803,730 "Fast Significant Sample Detection for a Pitch Detector"
- 4,890,328 "Voice Synthesis Utilizing Multi-Level Filter Excitation"
- 4,972,490 "Distance Measurement Control of a Multiple Detector System"
- 5,007,093 "Adaptive Threshold Voiced Detector"
- 5,023,910 "Vector Quantization in a Harmonic Speech Coding Arrangement"
- 5,046,100 "Adaptive Multivariate Estimating Apparatus"
- 5,179,626 "Harmonic Speech Coding Arrangement Where ... Sinusoids for Synthesis"
- 6,055,499 "Use of Periodicity And Jitter For Automatic Speech Recognition"
- 6,606,595 "HMM Based Echo Model For Noise Cancellation Avoiding The Problem Of False Triggers"
- 6,744,885 "ASR Talkoff Suppressor"

Four additional patent applications are pending.

Papers

D. L. Thomson, "Crossing Speech Technology Thresholds" (keynote address), *Proc. AVIOS 2009*, Oct. 14, Tel Aviv, Israel, 2009.

David Thomson, Deborah Dahl, and Moshe Yudkowsky, "Submitted for Your Approval" (Tools, Multimodal, Videogames), *Speech Technology Magazine*, p. 32, Feb. 6, 2009.

D. L. Thomson, "Twenty Applications for End-to-End Speech Architectures," *Proc. SpeechTEK*, Sep. 31 – Oct. 2, New York, NY, 2003.

D. L. Thomson, "VoiceXML Development and Runtime Tools," *Proc. AVIOS 2003*, Mar. 31 – Apr. 2, San Jose, CA, 2003.

D. L. Thomson and R. Chengalvarayan, "Use of Voicing Features in HMM-Based Speech Recognition," *Speech Communication*, Vol. 37, Nos. 3-4, pp. 197-211, July 2002.

D. L. Thomson, "Critical System Considerations in Speech Deployment," *Proc. AVIOS 2002*, Apr. 7-10, San Jose, CA, 2002.

D. L. Thomson and J. P. Olive, "Three Hot Markets for Text-to-Speech Synthesis," *Proc. AVIOS 2001*, p. 311-318, Apr. 3-5,

San Jose, CA, 2001.

D. L. Thomson and John M. Hibel, “The Business of Voice Hosting,” *Proc. AVIOS 2000*, p. 142-147, May 22-24, San Jose, CA, 2000.

D. L. Thomson, “VoiceXML: Which Do You Want First, the Good News or the Bad News?” *Proc. Euro-Communications (Speech Technology Track),* Advanstar Communications Ltd., London, Nov. 1, 2000.

R. Chengalvarayan and D.L. Thomson, "HMM-Based Echo and Announcement Modeling Approaches for Noise Suppression Avoiding the Problem of False Triggers," *Proc. ICSLP-2000*, October 2000.

R. Chengalvarayan and D.L. Thomson, "Discriminatively Derived HMM-Based Announcement Modeling Approach for Noise Control Avoiding the Problem of False Alarms," *Proc. ICSLP-2000*, October 2000.

R. Chengalvarayan, D. L. Thomson, A. Setlur, and R. Ketchum, "HMM-based Echo Model for Noise Cancellation Avoiding the Problem of False Triggers," *Proc. The IEEE International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS)*, Honolulu, Hawaii, USA, November, 2000.

Daniel S. Furman, Michael J. Cosky, David L. Thomson, Stephen A. O’Brien, and Eric E. Sumner, Jr., “Speech-Based Services*,” Bell Labs Technical Journal*, vol. 4, no. 2, pp. 88-97, April-June 1999.

D. L. Thomson, “Learning from Mistakes in Speech Services,” *Procedings of Voice Europe* ’99, London, November 1999.

D. L. Thomson and J. J. Wisowaty, “User Confusion in Natural Language Services,” keynote address, *ESCA Workshop on Interactive Dialog Systems*, Irsee, Germany, June, 1999.

D. L. Thomson and R. Chengalvarayan, “Use of Periodicity and Jitter as Speech Recognition Features,” *Proc. ICASSP ‘98*, vol. 1, pp21-24, May 1998.

D. L. Thomson, “Speech Technology Trends in the Public Telephone Network,” *Speech Technology in the Public Telephone Network Environment*, IBC UK Conferences, Ltd., Day One, Section 5, 24-25 Feb, 1998.

D. L. Thomson, “Ten Case Studies on How Field Conditions Affect Speech Recognition Accuracy,” *Proc. IEEE Workshop on Speech Recognition and Understanding (ASRU’97),* Santa Barbara, December, 1997.

D. L. Thomson, “Looking For Trouble: Planning for the Unexpected in Speech Recognition Services,” *IEC Annual Review of Communications,* vol. 50, pp. 1089-1093, International Engineering Consortium (IEC), 1997. (Reprinted in *Telecommunications Engineering and Operations: Network Challenges, Business Issues, and Current Developments*, pp. 327-335, IEC, 1997.)

D. L. Thomson, “Speech Recognition Trends in the Telephone Network,” *Proc. ISS'97*, Vol. I & II (CDROM), Session 9, pp. 355-359, Toronto, Sept. 1997. Abstract printed in *XVI World Telecom. Congress Abstracts,* p. 113, Sept. 1997.

B.H. Juang, R.J. Perdue, Jr., and D.L. Thomson, “Deployable Automatic Speech Recognition Systems: Advances and Challenges,” *AT&T Technical Journal*, Vol. 74, No. 2, March/April 1995, pp. 45-56.

L. R. Rabiner, J. G. Wilpon, D. B. Roe, R. J. Perdue, and D. L. Thomson, “Applications of Voice Processing Technology in Telecommunications,” (abstract*) 1993 NATO Advanced Study Institute*, Bubion, Granada, Spain, June 28-July 10, 1993.

D. L. Thomson, J. G. Wilpon, R. A. Sukkar, and D. P. Prezas, “Automatic Speech Recognition in the Spanish Telephone network,” *Proceedings of Eurospeech '91*, vol. 2, pp. 957-960, September, 1991.

T.E. Jacobs, D. Prezas, D.L. Thomson, and J.G. Wilpon, “Designing Speech Recognition Systems to Accommodate User Behavior,” (abstract) *ASA Special Session on Speech Communication*, 1990.

D. L. Thomson, Chairman's Introduction, Speech coding session, *Official Proceedings of Speech Tech '88*, vol. 2, No. 1, p. 316, April 26-28, 1988.

D. L. Thomson, “Parametric Models of the Magnitude/Phase Spectrum for Harmonic Speech Coding,” *Proc. ICASSP (Int. Conf. Acoust., Speech, and Signal Proc.),* vol. 1, pp. 378,381, April 1988.

D. L. Thomson, “A Multivariate Voicing Decision Rule Adapts to Noise, Distortion, and Spectral Shaping,” *ICASSP*, vol. 1, pp. 197-200, April 1987.

E. C. Bronson, D. A. Carlone, W. B. Kleijn, K. M. O'Dell, J. Picone, and D. L. Thomson, “Harmonic Coding of Speech at 4.8 kb/s,” *ICASSP*, vol. 4, pp. 2213-2216, April 1987.

D. L. Thomson and D. P. Prezas, “Selective Modeling of the LPC Residual During Unvoiced Frames: White Noise or Pulse Excitation,” *ICASSP*, April 1986, pp. 3087-3090.

D. P. Prezas, J. Picone, and D. L. Thomson, “Fast and Accurate Pitch Detection Using Pattern Recognition and Adaptive Time-Domain Analysis,” *ICASSP*, April 1986, pp. 109-112.

D. L. Thomson, *Averaging Random Latency Evoked Potentials Using Deconvolution*, BYU master's thesis, 1985.