Jordan R. Cohen

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FUNCTIONAL SUMMARY

Practical Applications of Technology

- As independent SPELAMODE consultant
    - Co-founder of Semantic Machines, exploring machine learning in the space of intelligent assistants (November, 2014)
    - Named an expert witness in 5 cases
    - Created a research organization at Cisco and a support group for Audience
    - Solved speech recognition signal processing issues for Audience and Telenav.
    - Testified as expert witness for Vlingo (Nuance vs Vlingo, Boston, 2011),
    - Retained for Intellectual Property search and analysis by several firms
    - Serve as CTO of Kextil and as Chief Scientist of Speech Morphing
- As Principal Investigator for GALE at SRI
    - Applied speech and language technology to military applications ($12M annual budget with 14 sub-contractors).
    - Advised the SRI Commercialization Board speech technology applications to mobile devices.
- As CTO of Voice Signal
    - Developed and managed intellectual property program, including patent production, pursuit, litigation, and strategy, which created more than 40 patents in 3 years.
    - Co-authored 13 granted patents, several more pending.
- As a staff member at the Institute for Defense Analyses
    - Designed, funded, and co-chaired two summer workshops in the application of speech recognition techniques to realistic environments at CAIP/Rutgers in Summers, 1993 and 1994. (DARPA funded, 30 researchers for 6 weeks). Program continues annually at Johns Hopkins.
    - Developed Vocal Tract Length Normalization, now used in all major speech systems.
- While a staff member at IBM
    - Developed the first successful auditory front end for a large scale speech recognition system.

Speech, Signals, and Algorithm Development in Department of Defense and related industries

- 24 years experience at NSA and IDA
    - Areas of expertise: Hillclimbing, Dynamic Programming, Signal Processing, Probabilistic Analysis, Speech and Language Technology
    - Two Letters of Commendation and NSA Special Achievement Award
    - Four awards for development and application of novel cryptanalytic techniques at IDA

Corporate Advice and Governance

- Reviewed papers and proposals for DARPA, NSF, IEEE, Eurospeech, European Union Framework 6
- Serve on the Industrial Advisory Committee, IDIAP (Swiss Government Research Institute)
- Serve on the Industrial Advisory Board of Sensory, Santa Clara, CA
- Serve on the Technical Advisory Board, Center of Excellence in Human Language Technology, JHU
- Former consultant advisor to Yap (now part of Amazon), a speech recognition company in Charlotte, NC
- Past member of Board of Directors at the International Computer Science Institute, Berkeley, CA
- Served as advisor to CLSP (Center for Speech and Language Processing, JHU) and CAIP at Rutgers

EMPLOYMENT DETAILS

2009- **SPELAMODE** (SPEech, LAnguage, and MObile DEvices) **Consulting**, Kure Beach NC
Title: Founder and Technologist
- Designated Expert Witness in 5 cases
- With Patti Price, created a research organization for Cisco in Speech and Language Technology.
- Created robust signal processing solutions for Audience to enhance Speech Recognition performance.

- Resolved performance problems in Telenav speech processing systems.
- Participated in the design of the audio system for the RIM7 as a consultant for DASH
- Advised and managed Automatic Speech Recognition portion of a potential multi-million dollar proposal for Basis Technologies.
- Currently serving as Chief Scientist of Voice Morphing, a California start-up, and co-CTO of Kextil, engaged in voice-centric interfaces for the field service industry.
- Continuing with legal prior art and expert witness work for various customers in speech recognition and human interfaces, including successful defense against patent infringement in Nuance vs Vlingo in Boston, 2011.
- Co-CTO of Kextil, providing voice interfaces for the Field Services industry
- Co-founder of Semantic Machines in Boston, Massachusetts in 2014. Serve as Vice President and technical contributor.

2006-2009   **SRI International**, Menlo Park CA
Title: Senior Scientist
- Principal Investigator for GALE, Global Autonomous Language Exploitation, DARPA program.
- Created new business opportunities, including BALTIC, a virtual institute for language innovation which required negotiations with the staff of the House Armed Services Committee and various representatives.
- Technical Advisor to the STAR laboratory for speech and language processing.
- Advisor to the SRI Commercialization Board on embedded speech systems.
- Created new algorithms for machine translation.

2000 - 2006   **Voice Signal Technology**, Woburn MA
Title: Chief Technology Officer
- Recruited technical members of core technology team.
- Guided speech, language, and user interface technology and business development in cell phones and other mobile devices. Tracked emerging opportunities.
- Presented Voice Signal technology and marketing strategy at conferences and in popular articles.

1999 - 2000   **Dragon Systems**, Newton, MA
Title: Director of Business Relations
- Developed business opportunities in Audio Mining.
- Identified and negotiated government contracts, including $6M of research from DARPA.

1985 – 1999+   **Institute for Defense Analyses CCR**, Princeton NJ - continuing relationship as adjunct
Title: Member of the Technical Staff
- Developed novel signal processing and speech algorithms.
- Developed cryptanalytic techniques and applications.
- Assisted DARPA in bringing speech technology to use in government applications, including founding Summer Workshops in Speech Recognition (now JHU CLSP summer program in speech and language).
- Chair of Arpa workshop in Spoken Language Technology, Barton Creek, TX.
- Received four special awards for development and application of novel cryptanalytic techniques.

1982 - 1985   **International Business Machines**, Yorktown Heights NH
Title: Member of the Technical Staff
- Developed practical applications for discrete recognition.
- Wrote front end for TANGORA, the IBM Recognizer (auditory model)

1974 - 1982   **National Security Agency**, Fort Meade MD
Title: Research Engineer
- Developed novel statistical processes for signal analysis.
- Created new applications of mathematical search algorithms.
- Certified as Cryptanalytic Mathematician and Engineer.

1970-1974 US **Air Force**, Served at Chanute Air Force Base and at Fort Meade MD and at NSA (from 1971)
Final Rank: Captain

EDUCATION

1975 - 1982	University of Connecticut Storrs, CT	PhD, Linguistics (PhD Dissertation not-in-residence)
1968 - 1970	University of Illinois Urbana, IL	MSEE, Electrical Engineering
1964 - 1968	University of Massachusetts Amherst	BSEE, Electrical Engineering

MEMBERSHIPS

Member, Acoustical Society of America
Member, ISCA
Senior Life Member, IEEE

CASES IN WHICH I WAS NAMED AS AN EXPERT:

a. Sorenson Communications and Caption Call in Civil Action No 3:14-CV-66-BBC. Wrote invalidity report for Sorenson/Caption Call. Settled by summary judgment. I was deposed in this case.

b. Motorola Mobility vs Apple, Consolidated Cases 1:10-cv-23580-RNS and 1:12-cv-20271-RNS. Wrote and submitted invalidity report for Apple. Settled.

c. Schwarts, et al. v. The Village Center Community Development District, et al. Case 5:12-CV0177-MMH-TBS. This is a suit under the American Disabilities Act, and I am defending Village Center et al. The initial expert report has been written and submitted to the court.

d. Allvoice Developments US, LLC v. Microsoft Corp., Case 2:10-cv-02102-RAJ – Settled by Summary Judgment of Non-Infringement. 2010 – 2013. I wrote the invalidity report on behalf of Microsoft, and it was delivered to the court prior to the summary judgment. I was deposed in this case.

e. Nuance Communications, Inc v. Vlingo Corp, Case 09-11414-RWZ – settled by jury trial. I wrote both the non-infringement and invalidity reports, and testified during trial on the behalf of Vlingo. The jury found Vlingo not guilty of infringement on all 30 counts by unanimous decision. I was deposed in this case.

f. Nuance Communications Inc. v. Voice Signal Technologies, Inc, Case 1:07-CV-10363. 1994 – 1996. I was deposed as the CTO of Voice Signal in this case. The case was dismissed when Nuance bought Voice Signal. I was deposed in this case.

REFEREED PUBLICATIONS

H. Hermansky, J. R. Cohen, and R. M. Stern, "Perceptual Properties of Current Speech Recognition Technology", Proceedings of the IEEE, September, 2013, Vol 101 No 9, p. 1968.

M Gilbert, A Acero, J Cohen, H Bourlard, SF Chang, M Etoh, "Media Search in Mobile Devices", Signal Processing Magazine, IEEE 28 (4), 2011, 12-13

B Erol, J Cohen, M Etoh, HW Hon, J Luo, J Schalkwyk, "Mobile media search", ICASSP, 2009, 9, 4897-4900

J Wilpon, ME Gilbert, J Cohen, " The Business of Speech Technologies", Springer Handbook of Speech Processing, 2008, p. 681-704

M Harper, A Acero, S Bangalore, J Carbonell, J Cohen, B Cuthill, C Espy… Report on the NSF-sponsored Human Language Technology Workshop on Industrial Centers , 2007/6/22, pdf available from umd.edu

Jordan Cohen[1], Terri Kamm[2], and Andreas G. Andreou, "Vocal tract normalization in speech recognition: Compensating for systematic speaker variability", J. Acoust. Soc. Am. Volume 97, Issue 5, pp. 3246-3247 (1995)

J. Cohen, J Flanagan, "A Welcome to the Special Edition on Robust Speech Recognition, A Summer workshop - 1993", IEEE Trans on Speech and Audio Processing, 2, 4, 551-553.

J. Cohen, "Application of an auditory model to speech recognition", JASA, 85, June 1989

J. Cohen, "Segmenting speech using dynamic programming", JASA, 69, 1980

J. Cohen, T. Crystal, A. House and E. Neuburg, "Weighty voices and shaky evidence", JASA, 68, 1980

Many popular short articles and presentations
More than 20 Classified Publications
Co-author of more than 13 Patents granted
Clearance: TSSI

PATENTS:

8,019,324	Extendable voice commands
September 13, 2011	Roth; Daniel L., Reiner; Chris, Furnari; Mark, Cohen; Jordan

7,873,390	Provider-activated software for mobile communication devices
January 18, 2011	Cohen; Jordan, Roth; Daniel L.

7,809,574	Word recognition using choice lists
October 5, 2010	Roth; Daniel L., Cohen; Jordan R., Johnston; David F. , Porter; Edward W.

7,797,157	Automatic speech recognition channel normalization based on measured statistics from initial portions of speech utterances
September 14, 2010	Zlokarnik; Igor, Gillick; Laurence S., Cohen; Jordan

7,716,058	Speech recognition using automatic recognition turn off
May 11, 2010	Roth; Daniel L., Cohen; Jordan R., Johnston; David F.

7,634,403	Word recognition using word transformation commands
December 15, 2009	Roth; Daniel L., Cohen; Jordan R., Johnston; David F.

7,577,569	Combined speech recognition and text-to-speech generation
August 18, 2009	Roth; Daniel L., Cohen; Jordan R., Johnston; David F., Grabherr; Manfred G., Porter; Edward W.

7,562,019	Automated testing of voice recognition software
July 14, 2009	Cohen; Jordan, Barton; William, Ploumis; John, Ely; Douglas J.

7,526,431	Speech recognition using ambiguous or phone key spelling and/or filtering
April 28, 2009	Roth; Daniel L., Cohen; Jordan R., Johnston; David F.

7,505,911	Combined speech recognition and sound recording
March 17, 2009	Roth; Daniel L., Cohen; Jordan R., Johnston; David F., Porter; Edward W.

7,444,286	Speech recognition using re-utterance recognition
October 28, 2008	Roth; Daniel L., Cohen; Jordan R.

7,313,526	Speech recognition using selectable recognition modes
December 25, 2007	Roth; Daniel L., Cohen; Jordan R., Johnston; David F., Grabherr; Manfred G.

7,225,130	Methods, systems, and programming for performing speech recognition
May 29, 200	Roth; Daniel L., Cohen; Jordan R., Johnston; David F., Grabherr; Manfred G.

8,880,396	Spectrum reconstruction for automatic speech recognition
Nov 4, 2014	Cohen: Jordan, Laroche:Jean

SELECTED INFORMAL PRESENTATIONS AND ARTICLES

"Simple Speech Morphing: A Story" presented to the Boston chapter of AVIOS and Brandeis University, October 17, 2013.

"OUCH (Outing Unfortunate Characteristics of HiddenMarkovModels) or What's Wrong with Speech Recognition and What Can We Do About it?", Johns Hopkins University, Sep 14, 2012 (see http://www.clsp.jhu.edu/seminars/1335/)

"Embedded speech recognition applications in mobile phones: Status, trends and challenges", in Proceedings of the International Conference on Acoustic Speech and Signal Processing 2008, April, 2008, p. 5352 – 5355

"The GALE Project: a description and an update", in Proceedings of the IEEE Workshop on Automatic Speech Recognition and Understanding, 9-13 December, 2007

"The summers of our discontent." *Proceedings of the International Conference on Spoken Language Processing.* 1996.

 "Handheld Multimodal Interfaces Technology, Markets, and Opportunities" Johns Hopkins, Baltimore, 2005

"Is Embedded Speech Recognition Disruptive Technology?" in Information Quarterly, Volume 3, Number 5, 2004, p. 14-17

"Practical Manipulation of Local Data – An Update", At Wireless Internet Data and Enterprise Applications, UCLA, Los Angeles, CA, September 2003

"Putting Speech Technologies in your Hands", LangTech 2003, Paris, 24-5 November 2003

"Voice Signal Overview: The Case for Embedded Speech Recognition", VOX 2002, Kelsey Group, San Francisco, CA (July, 2002)

"Speech recognition in the real world: An Embedded Viewpoint" Center for Language and Speech Processing Workshop at Johns Hopkins, July 26, 2001

"Some musings on systematic variability and speech recognition", J. Acoust. Soc. Am. Volume 105, Issue 2, pp. 1158-1158 (1999)

"The Challenge of Spoken Language Systems: Research Directions for the Nineties", Co-author, IEEE Transactions on Speech and Audio Processing, Vol 3, No. 1 1-20 Jan 1995.

"The hub and spoke paradigm for CSR evaluation" (co-author), Proceedings of the 1994 Human Language Technology Workshop, Plainsboro, NJ, March, 1994

 "Robust speech processing", Jordan Cohen, Chair "The Summers of our Discontent", a talk In Speech and Natural Language: Proceedings of a Workshop Held at Harriman, New York, February 23-26, 1992

 "A Pitch measurement algorithm for speech" Acoustics, Speech, and Signal Processing, IEEE International Conference on ICASSP '82.