Daniel E. Rose
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Education

Ph.D., Cognitive Science and Computer Science, University of California, San Diego, 1991.
Dissertation: *A Symbolic and Connectionist Approach to Legal Information Retrieval.*

M.S., Computer Science, University of California, San Diego, 1986.

B.A. *cum laude,* Philosophy, Harvard University, 1984.
Honors thesis: *Beliefs and Mental Representations.*

Experience

Consultant
(2014-present)

- Providing technical and strategic consulting services, specializing in search engine technology.

Chief Scientist, Search
A9.com (2010-2013)

- Provided expert consulting to A9 and Amazon.com search leadership. Tasks included analysis of search trends, technology assessment, strategic planning.

- Worked with internal and external legal counsel on intellectual property issues. Served on patent committee, advised legal department on search technology, gave depositions and provided expert testimony for litigation.

- Supervised Fundamental Data Structures and Algorithms for Search team; developed performance improvements including new technique for posting list compression that improved on best known method by 50%.

- Initiated multiple strategic projects ranging from understanding query intent to effectively blending product and non-product search results.

- Created project to overhaul the way search relevance functions were designed by introducing new machine learning techniques.

Director, Search Relevance
A9.com (2007-2009)

- Supervised team responsible for relevance ranking, search assistance, and other features of search engine used on Amazon.com and other e-commerce sites.

- Led complete overhaul of spelling correction service, providing dramatic increases in both recall and precision. Current system is competitive with or outperforms top search engines.

- Developed project to systematically assess relevance of search results, combining existing techniques with a novel crowdsourcing approach.

Director, Search Presentation, Assistance, and Interaction Group
Yahoo! Inc. (2003-2006)

- Supervised applied research teams working on technologies for improving the web search experience, including spelling correction, related query suggestions, improved document summarization, and experimental interfaces.

- Led investigative task forces formulating strategic improvements for different products, and for search user experience. Worked directly on implementing recommendations; results included product changes, new prototypes, and several patent filings.

- Organized and coordinated weekly forum for nurturing innovation within business unit; worked with engineering and product executives to bring selected ideas to market.

- Conducted study of user goals in web search; developed taxonomy of search goals; presented results in frequently cited paper at international WWW conference.

Senior Director, Advanced Development
AltaVista / Overture Services, Inc. (2002-2003)

- Initiated and supervised a variety of projects in many aspects of web search. Analyzed effects of user interface attributes on user behavior. Investigated methods for improving relevance of search results.

- Served as technical lead for Advanced Development team. Worked with CEO to refine process for realizing ideas as staffed projects.

- Developed relevance-evaluation framework and associated tools in close collaboration with Chief Scientist.

Text Analysis Architect / Manager, Text Analysis Group
Xigo, Inc. (1999-2001)

- Designed proprietary text analysis system providing search, information filtering, and text classification for use in financial information service, using streaming real-time news feeds.

- Supervised team of software engineers implementing text analysis system. Managed features, requirements, and schedule for production releases. Implemented many components of the system, particularly the information filtering mechanism.

- Participated in strategic engineering and marketing decisions concerning uses of the text analysis technology. Interacted with participants in all phases of the product process inside and outside the company, including investors, customers, and data vendors.

Senior Technical Advisor, User Experience Engineering
Apple Computer, Inc. (1998-1999)

- Investigated opportunities to differentiate the Macintosh operating system and other Apple products by more effectively exploiting Apple technologies. Evaluated technology components to determine their feasibility and potential benefits.

- Designed and implemented AppleScript Speech Listener, which enables the use of speech recognition technology to control scriptable applications.

- Developed prototypes of advanced user experience capabilities, particularly in the areas of speech interaction and information access.

Chief Technical Officer
Knowledgen Corp. (1997-1998)

- Created technical strategy for pre-funded startup developing knowledge management software.

- Designed software architecture for proposed product. Supervised development of interaction design mockup. Developed preliminary prototype used to illustrate system functionality.

- Successfully worked to secure initial development funding from two large customers.

Senior Scientist / Manager, Information Access Research
Apple Computer, Inc. (1991-1997)

- Directed research group investigating experimental systems for retrieving, organizing, browsing, summarizing, and visualizing information.

- Supervised development and productization of the "V-Twin" Information Access Toolkit that provided desktop search functionality for the Macintosh. Worked with engineering, marketing, and evangelism; briefed corporate customers and software developers.

- Developed experimental system for asynchronous group communication in networked computing environments.

- Implemented prototype of new "Piles" file system interface that supports automatic assistance for sorting, filing, and summarizing documents.

Selected Publications & Presentations

1. A. A. Stepanov and D. E. Rose, *From Mathematics to Generic Programming*. Addison-Wesley, 2015.

2.	D. E. Rose, "CloudSearch and the Democratization of Information Retrieval," invited talk at the *International Conference on Research and Development in Information Retrieval (SIGIR),* August 15, 2012.

3.	A. A. Stepanov, A. R. Gangolli, D. E. Rose, R. J. Ernst, P. Oberoi, "SIMD-Based Decoding of Posting Lists," *Conference on Information and Knowledge Management (CIKM*) in Glasgow, Scotland, pp. 317-326, 2011.

4.	D. E. Rose, "Lessons and Challenges from Product Search," talk at the *International Conference on Research and Development in Information Retrieval (SIGIR)* in Geneva, Switzerland, August 2010.

5.	D. E. Rose and O. Alonso, "Crowdsourcing for Relevance Evaluation," *SIGIR Forum*, Vol. 42, No. 2, 2008.

6.	D. E. Rose, D. Orr, R. G. P. Kantamneni, "Summary Attributes and Perceived Search Quality," *Proceedings of 2007 International Conference on the World Wide Web*, pp. 1201-1202.

7.	D. E. Rose, "Reconciling Information-Seeking Behavior with Search User Interfaces for the Web," *Journal of the American Society of Information Science and Technology,* Vol. 57, No. 6, pp. 797-799, 2006.

8.	D. E. Rose, "Why Is Web Search So Hard... to Evaluate," *Journal of Web Engineering*, Vol. 3, Nos. 3-4, pp. 171-181, 2004.

9.	D. E. Rose and D. Levinson, "Understanding User Goals in Web Search," *Proceedings of the Thirteenth International World Wide Web Conference,* 2004.

10.	D. E. Rose, "Beyond Search: The Information Access Research Group at Apple," *SIGCHI Bulletin*, Vol.30, No.2, April 1998.

11.	D. E. Rose and J. J. Bornstein, "Information Rendezvous," *Interacting With Computers,* Vol. 10, pp. 213-224, 1998.

12.	D. E. Rose and C. Stevens, "V-Twin: A Lightweight Engine for Interactive Use," *Proceedings of the Fifth Text Retrieval Conference (TREC-5),* 1997.

13.	D. E. Rose, *A Symbolic and Connectionist Approach to Legal Information Retrieval,* Lawrence Erlbaum Associates, 1994.

14.	D. E. Rose et al., "Content Awareness in a File System Interface: Implementing the 'Pile' Metaphor for Organizing Information," *Proceedings of the Sixteenth International Conference on Research and Development in Information Retrieval*, pp. 260-269, 1993.

15.	D. E. Rose and R. K. Belew, "Towards a Direct Manipulation Interface for Conceptual Information Retrieval Systems," in M. Dillon, ed., *Interfaces for Information Retrieval*, pp. 39-54, Greenwood Press, 1991.

16.   D. E. Rose and R. K. Belew, "Legal Information Retrieval: A Hybrid Approach," *Proceedings of the Second International Conference on AI and Law*, 1989.

Issued Patents

- "Topically organized interface with realistic dialogue" (U.S. Patent 5721845)
- "System for directing relevance-ranked data objects to computer users" (U.S. Patent 5724567)
- "Document summary computer system user interface" (U.S. Patent 5838323)
- "System and method for enhancing a user interface with a computer based training tool" (U.S. Patent 5864844)
- "Interactive document summarization" (U.S. Patents 5867164, 7882450, 7886235)
- "System and method for improving the ranking of information retrieval results for short queries" (U.S. Patent 5870740)
- "System for ranking the relevance of information objects accessed by computer users" (U.S. Patents 6202058, RE41899)
- "Method and apparatus for organizing information in a computer system" (U.S. Patents 6243724, 6613101, 7849035, 7991720)
- "Logical division of files into multiple articles for search and retrieval" (U.S. Patent 6256622)
- "Auto-summary of document content" (U.S. Patent 6424362)
- "Realtime indexing and search in large, rapidly changing document collections (U.S. Patent 7634466)
- "Using community annotations as anchortext" (U.S. Patent 7647306)
- "Methods for navigating collections of information in varying levels of detail" (U.S. Patent 7693912)
- "Identification and automatic propagation of geo-location associations to un-located documents" (U.S. Patent 7792870)
- "Topic-focused search result summaries" (U.S. Patent 7921092)
- "Search engine with augmented relevance ranking by community participation" (U.S. Patent 8086605, 8521734)
- "Recent content rank adjustment with inverted decay" (U.S. Patent 8346799)
- "Trust propagation through both explicit and implicit social networks" (U.S. Patent 8442978)
- "Behavior-driven multilingual stemming" (U.S. Patent 8793120)
- "Behavioral word segmentation for use in processing search queries" (U.S. Patent 8825620)
- "Freshness and seasonality-based content determinations (U.S. Patent 9081857)
- "Decoding of variable-length data with group formats" (U.S. Patent 9195675)
- "Encoding of variable-length data with unary formats" (U.S. Patent 9336225)
- "Dynamic search suggestion and category specific completion" (U.S. Patent 9405841)