David B. Skalak

Work address	**Home address**
IBM	217 Highgate Road
Cornell Theory Center, Rhodes Hall 606	Ithaca, NY 14850-1435
Cornell University	607 257-5510
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Education

1997 — **University of Massachusetts**, Amherst, MA
Ph.D., Computer Science
Dissertation title: "Prototype Selection for Composite Nearest Neighbor Classifiers," supervised by Professor Edwina Rissland

1989 — **University of Massachusetts**, Amherst, MA
M.S., Computer Science

1982 — **Harvard Law School**, Cambridge, MA
J.D.
Third-year thesis: "A Mathematical Model of Limited Liability for Shareholders"

1979 — **Dartmouth College**, Hanover, NH
M.A., Mathematics

1977 — **University of Southampton**, Southampton, England
Fulbright Fellow, Computational Hydrodynamics Research Group

1976 — **Union College**, Schenectady, NY
B.S., *Summa Cum Laude*, Mathematics, American literature

1975 — **University of St. Andrews**, St. Andrews, Scotland
Pure mathematics, English literature

Professional Experience

1997—present — **IBM**, Ithaca, NY
Senior Data Mining Analyst, Data Mining and Analytics Group
Data mining consulting engagements performed in the insurance, transportation and computer industries. Knowledge discovery methods applied to commercial problems including target marketing, cross-selling, product link analysis, temporal purchase patterns, customer attrition, customer segmentation, and segment migration. Taught multi-day Introduction to Data Mining workshops.

1989—1994 **University of Massachusetts** Amherst, MA
Staff Associate Research Scientist, Department of Computer Science

1986—1989 **University of Massachusetts** Amherst, MA
Research Assistant to Professor Edwina L. Rissland

1985—1986 **Private law practice** New York, NY
Attorney, consulting in the area of securities law to Stein, Zauderer, Ellenhorn, Frischer & Sharp
Experience included establishing hedge fund for special situations arbitrageur, public offering, advising broker/dealers, and S.E.C. filings.

1982—1985 **Christy & Viener** New York, NY
Associate, corporate, banking, and tax law
Wide commercial and transactional experience included providing for letters of credit to support industrial revenue bonds, documenting bank loan participations, and advising self-regulatory organizations.

1980—1982 **Harvard Law School** Cambridge, MA
Research Assistant to Professor Steven Shavell in law and economics
Experience included modeling rules for legal cost assessment in litigation.

1977—1979 **Dartmouth College** Hanover, NH
Teaching Assistant, Department of Mathematics

Honors

Fulbright Fellow, United Kingdom

University Fellowship, University of Massachusetts

General Electric Company Graduate Fellowship, University of Massachusetts

Dartmouth College Fellow

University of St. Andrews Exchange Scholar

Phi Beta Kappa, Union College

Eliphalet Nott Scholar, Union College

Resch Prize for Greatest Potential in Pure Mathematics, Union College

IBM Vice President's Team Marketing Excellence Award

IBM Marketing Momentum Team Award

Professional Activities

Editorial Board Member

Journal of Computational Intelligence in Finance, 1997–1999

Journal and Conference Referee

Pattern Recognition and Machine Intelligence; Journal of Artificial Intelligence Research; Data Mining and Knowledge Discovery; Artificial Intelligence and Law; Machine Learning Journal; Artificial Intelligence Review; International Journal of Expert Systems: Research and Applications; Journal of Computational Intelligence in Finance; IEEE Transactions on Systems, Man, and Cybernetics; IEEE/ACM Transactions on Networking; IEEE International Conference on Tools with Artificial Intelligence

Program Committees

International Association of Science and Technology for Development (IASTED) International Conference on Law and Technology, 2000
IASTED International Conference on Law and Technology, 1999

Publications

Journal Articles

Instance Sampling for Boosted and Standalone Nearest Neighbor Classifiers.
Submitted to *Data Mining and Knowledge Discovery*, re-review pending.

BankXX: Supporting Legal Arguments through Heuristic Retrieval.
Edwina L. Rissland, David B. Skalak and M. Timur Friedman.
Journal of Artificial Intelligence and Law, vol. 4, 1–71, 1996.

Arguments and Cases: An Inevitable Intertwining.
David B. Skalak and Edwina L. Rissland.
Journal of Artificial Intelligence and Law, vol. 1, no. 1, 3–46, 1992.

CABARET: Rule Interpretation in a Hybrid Architecture.
Edwina L. Rissland and David B. Skalak.
International Journal of Man-Machine Studies, vol. 34, no. 6, 839–887, 1991.

Ph.D. Dissertation

Prototype Selection for Composite Nearest Neighbor Classifiers.
Available as Dept. of Computer Science Technical Report 96-89,
University of Massachusetts, Amherst, MA.

Book Chapters

Using Heuristic Search to Retrieve Cases that Support Arguments.
Edwina L. Rissland, David B. Skalak and M. Timur Friedman.
Case-Based Reasoning: Experiences, Lessons, and Future Directions, D. Leake (Ed.), 1996. Menlo Park: AAAI Press.

Using Case-Based Reasoning to Extend the Expertise of Expert Systems.
David B. Skalak and Edwina L. Rissland.
Expert Systems in Law, A. Martino (Ed.), 1992. Amsterdam: Elsevier.

Conference Publications

Prototype and Feature Selection by Sampling and Random Mutation Hill Climbing Algorithms.
Proceedings of the Eleventh International Conference on Machine Learning, 293–301, New Brunswick, NJ, 1994. Morgan Kaufmann.

Heuristic Harvesting of Information for Case-Based Argument.
Edwina L. Rissland, David B. Skalak, and M.Timur Friedman.
Proceedings of the Twelfth National Conference on Artificial Intelligence, 36–43, Seattle, WA, 1994. AAAI Press/MIT Press.

Case Retrieval through Multiple Indexing and Heuristic Search.
Edwina L. Rissland, David B. Skalak, M. Timur Friedman.
Proceedings of the Thirteenth International Joint Conference on Artificial Intelligence, 902–908, Chambery, France 1993. Morgan Kaufmann.

Trading Rules and Trading Cases in a Hybrid Architecture.
Proceedings of the Second International Conference on Artificial Intelligence Applications on Wall Street, 1993. NY, NY. Software Engineering Press.

Case-Based Diagnostic Analysis in a Blackboard Architecture.
Edwina L. Rissland, Jody J. Daniels, Zachary B. Rubinstein, David B. Skalak.
Proceedings of the Eleventh National Conference on Artificial Intelligence, 66–72, Washington, DC, 1993. AAAI Press/MIT Press.

Representing Cases as Knowledge Sources that Apply Local Similarity Metrics.
Proceedings of the Fourteenth Annual Conference of the Cognitive Science Society, 325–330, Bloomington, IN 1992. Lawrence Erlbaum.

Argument Moves in a Rule-Guided Domain.
David B. Skalak and Edwina L. Rissland.
Proceedings of the Third International Conference on Artificial Intelligence and Law, 1–11, Oxford, England 1991. Association for Computing Machinery.

An Internal Contradiction of Case-Based Reasoning.
Proceedings of the Twelfth Annual Conference of the Cognitive Science Society, 109–116, Cambridge, MA 1990. Lawrence Erlbaum.

Inductive Learning in a Mixed Paradigm Setting.
David B. Skalak and Edwina L. Rissland.
Proceedings of the Eighth National Conference on Artificial Intelligence, 840–847, Boston, MA 1990. AAAI Press/MIT Press.

Combining Case-Based and Rule-Based Reasoning: A Heuristic Approach.
Edwina L. Rissland and David B. Skalak.
Proceedings of the Eleventh International Joint Conference on Artificial Intelligence, 524–530, Detroit, MI 1989. Morgan Kaufmann.

Taking Advantage of Models for Legal Classification.
Proceedings of the Second International Conference on Artificial Intelligence and Law, 234–241, Vancouver, BC 1989. Association for Computing Machinery.

Interpreting Statutory Predicates.
Edwina L. Rissland and David B. Skalak.
Proceedings of the Second International Conference on Artificial Intelligence and Law, 46–53, Vancouver, BC 1989. Association for Computing Machinery.

Case-Based Reasoning in a Rule-Governed Domain.
Edwina L. Rissland and David B. Skalak.
Proceedings of the Fifth IEEE Conference on Artificial Intelligence Applications, 45–53, Miami, FL 1989. IEEE Computer Society Press.

Workshop Publications

The Sources of Increased Accuracy for Two Proposed Boosting Algorithms.
Proceedings of the 1996 AAAI Workshop on Integrating Multiple Learned Models, Portland, OR 1996. AAAI Press.

Using a Genetic Algorithm to Learn Prototypes for Case Retrieval and Classification.
Proceedings of the 1993 AAAI Case-Based Reasoning Workshop, 64–69, Washington, DC 1993. AAAI Press.

Diagnostic Case Retrieval Guided by Evaluation and Feedback.
Edwina L. Rissland, Jody J. Daniels, Zachary B. Rubinstein, David B. Skalak.
Proceedings of the 1993 AAAI Case-Based Reasoning Workshop, 135–140, Washington, DC 1993. AAAI Press.

Using Heuristic Search to Retrieve Cases that Support Arguments.
Edwina L. Rissland, David B. Skalak, M. Timur Friedman.
Proceedings of the 1993 AAAI Case-Based Reasoning Workshop, 5–11, Washington, DC 1993. AAAI Press.

A Blackboard-based Architecture for CBR: An Initial Report.
E. Rissland, C. Basu, J. Daniels, J. McCarthy, Z. Rubinstein and D. Skalak.
Proceedings of the Third Case-Based Reasoning Workshop, 93–108, Washington, DC 1991. Morgan Kaufmann.

Learning Legal Rules from Legal Cases: An Experiment.
Workshop Notes from the AAAI-90 AI and Legal Reasoning Workshop, the Eighth National Conference on Artificial Intelligence, (pages not numbered), Boston, MA 1990.

Opportunities for Learning With and Within CBR.
Edwina L. Rissland and David B. Skalak.
Working Notes, 1990 AAAI Spring Symposium Series, Case-Based Reasoning, Palo Alto, CA 1990. AAAI.

Options for Controlling Mixed Paradigm Systems.
Proceedings of the Second Case-Based Reasoning Workshop, 318–323, Pensacola Beach, FL 1989. Morgan Kaufmann.

Rules and Cases, Cases and Rules, and the Law.
Proceedings of the 1988 AAAI Case-Based Reasoning Workshop, The Seventh National Conference on Artificial Intelligence, 126–131, St. Paul, MN 1988. AAAI.

Book Reviews

Review: A Symbolic and Connectionist Approach to Legal Information Retrieval.
Daniel E. Rose.
Artificial Intelligence and Law, 3:151–157, 1995. Amsterdam: Kluwer Academic.

Other Publications

Prototype Selection for Composite Nearest Neighbor Classifiers.
Dissertation Proposal. Dept. of Computer Science Technical Report 95-74.
University of Massachusetts, Amherst, MA 1995.

A Mathematical Model of Limited Liability for Shareholders.
Third-year thesis, Harvard Law School, Cambridge, MA. Supervised by Professor Steven Shavell.

Invited Talks and Workshop Teaching

Invited Talks

Introduction to Intelligent Miner for Data
Data Mining, Cornell University course ILRST 612, Ithaca, NY 1999.

Prototype Selection for Composite Nearest Neighbor Classifiers
Statistics Research Department, Bell Labs, Murray Hill, NJ 1998.

CABARET: Combining Rule-Based Reasoning and Case-Based Reasoning
Apple Computer, Cupertino, CA 1992.
GTE Laboratories, Waltham, MA 1992.

IBM Data Mining Workshops

Introduction to Business Discovery Solutions (Maui, HI 1997; Austin, TX 1997)
Intelligent Miner for Data Workshop: Introduction to Data Mining (Boulder, CO, 1998; Dallas, TX 1998; Gaithersburg, MD 1998; San Francisco, CA 1998; New York, NY 1998; Chicago, IL 1998; New York, NY 1999)

Professional Affiliations

Member, New York State Bar
Member, American Association for Artificial Intelligence