Charles Lee Isbell, Jr.
isbell@ai.mit.edu
http://www.ai.mit.edu/~isbell/isbell.html

545 Tech Square, #719
Cambridge MA 02139
(617) 253 - 8793

50 Craigie Street #21
Somerville MA 02143
(617) 625-3705

Research Interests:

My research centers around learning and, in particular, unsupervised learning. For my doctoral work, I have developed a novel algorithm for inferring hierarchical structure from large collections of electronically-available text. This structure is used to group related documents for the purposes of effective querying. It is done in an unsupervised way, using principles from statistics and information theory. The principles used here should apply to problems in non-textual domains and have implications for completely different tasks as well, such as data visualization.

Education:

Massachusetts Institute of Technology September 1990 - June 1998
Department: Electrical Engineering & Computer Science
Degrees: Master of Science, December 1992
Doctor of Philosophy, June 1998

Georgia Institute of Technology September 1986 - June 1990
Department: School of Information and Computer Science
Degree: Bachelor of Science, June 1990
Certificates: Engineering Psychology, History, Spanish

Professional Experience:

AT&T Labs/Research (Bell Laboratories) June, 1991 - present

Member Technical Staff/Consultant
Worked with the knowledge representation group, extending CLASSIC, a large knowledge base system. Developed mechanisms for allowing users to dynamically increase CLASSIC's expressive power. Developed extensions for making it easier to identify and automatically explain important features about large, complex knowledge bases. Developed demonstration applications for visualizing the use of CLASSIC for configuration tasks. Developed tools for moving weakly-structured databases into CLASSIC's model for knowledge bases.

Worked with the human-computer interface group on several projects for organizing, visualizing, and structuring large sets of electronic documents. This includes Ishmail, an electronic mail reader for users who receive large amounts of email.

Georgia Institute of Technology

Lab Instructor,
Computer Organization & Programming September 1988 - June 1990
Worked with undergraduates in a required sophomore level programming and organization class. Responsibilities entailed preparing and presenting weekly lectures, developing assignments and exams as well as grading and providing individual assistance.

Teaching Assistant,
Data Structures January 1988 - December 1988
Assisted professor of sophomore level data structures and programming class. Responsibilities entailed grading and providing individual assistance.

International Business Machines Corp Summers 1986 - 1989

Programmer
Worked over several summers performing a variety of programming tasks, test design, and documentation design.

Publications:

Deborah McGuinness, Charles Isbell, Matt Parker, Peter Patel-Schneider, Lori Resnick, and Chris Welty. A Description Logic-Based Configurator for the Web. **To appear in:** *Proceedings of the AAAI-98,* 1998.

Parry Husbands and Charles Isbell. Interactive Supercomputing with PPMatlab. **To appear in:** *Proceedings of the Second IMA Conference on Parallel Computation*, Oxford, 1998.

Parry Husbands and Charles Isbell. The Parallel Problems Server: A Client-Server Model for Large Scale Scientific Computation. **To appear in:** *Proceedings of VECPAR'98*, Portugal 1998.

Charles Isbell and Paul Viola. Restructuring Sparse High Dimensional Data for Effective Retrieval. MIT AI Lab Memo 1639 (**Also in submission to:** *Advances in Neural Information Processing Systems*, 1998).

Charles Isbell. Sparse Multi-Level Representations for Text Retrieval. Ph.D. thesis, 1998.

Parry Husbands and Charles Isbell. The Parallel Problems Server. In*Proceedings of the 1998 MIT Workshop on High Performance Computing in Science and Engineering*, MIT/LCS Technical Report 737. Cambridge 1997.

Jeremy De Bonet, Charles Isbell, and Paul Viola. MIMIC: Finding Optima by Estimating Probability Densities. In *Advances in Neural Information Processing*

Systems, volume 9, Denver 1996.

Alex Borgida, Charles Isbell, and Deborah McGuinness. Reasoning with Black Boxes: Handling Test Concepts in CLASSIC. In *Proceedings of Workshop on Description Logics*. Cambridge, 1996.

Deborah McGuinness, Lori Resnick, and Charles Isbell. Description Logic in Practice: A CLASSIC Application. In *Proceedings of the International Joint Conference on Artificial Intelligence*, 1995.

Jonathan Helfman and Charles Isbell. *Ishmail: Immediate Information.* AT&T Labs Technical Report, 1995.

Jonathan Helfman and Charles Isbell. *Ishmail User's Guide.* AT&T Labs Technical Report, 1995.

Jonathan Helfman and Charles Isbell. *Ishmail Programmer's Guide.* AT&T Labs Technical Report, 1995.

L. Resnick, A. Borgida, R. J. Brachman, D. McGuinness, P. Patel-Schneider, C. Isbell, and K. Zalondek. CLASSIC Description and Reference Manual for the Common Lisp Implementation: Version 2.3. AI Principles Research Department, AT&T Bell Laboratories. 1995.

Charles Isbell. Explorations of the Practical Issues of Using Temporal Difference Learning Methods for Prediction-Control Tasks. AI Technical Report 1424, 1993.

Patents:

Jonathan Helfman and Charles Isbell. **In submission:** Ishmail: User Interface for Electronic Mail.

In Preparation:

Oded Maron and Charles Isbell. Pointwise Diverse Density: Fast Learning from Multiple-Instance Examples. **To be submitted to:** *Advances in Neural Information Processing Systems*, 1998.

Parry Husbands and Charles Isbell. The PPMatlab User's Guide and the Parallel Problems Server Programmer's Guide. AI Memo/LCS Memo, 1998.

Charles Isbell and Paul Viola. Finding Optima by Successive Estimation of Probability Densities. AI Memo, 1998.

Academic and Professional Committees:

Member, *Joint Coalition to Diversify Computing*, sponsored by the Computing Research Association, the Association for Computing Machinery, and The Association of Computer and Information Science and Engineering Departments at Minority Institutions, 1995-present

Organizer, *Affiance Seminar* Faculty Lecture Series, 1995

Member, *Student Committee on Curriculum Changes for the Computer Science Graduate Program at MIT*, 1995

Panelist, *Workshop on Increasing the Participation of Minorities in the Computing Disciplines*, sponsored by the National Science Foundation, 1995

Undergraduate representative, *Search Committee for Dean of College of Computing*, Georgia Institute of Technology, 1989

Selected Honors:

AT&T Cooperative Research Fellowship, 1990-1998

National Science Foundation Fellowship, 1990-1994

Student representative (*most outstanding student*) of Georgia Institute of Technology, Academic Recognition Day, State of Georgia, 1990

INROADS/Atlanta Intern of the Year, 1989, 1990