

## **CURRICULUM VITAE**

Vasant Dhar  
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### **Work History**

- Professor and Head of Information Systems Area, Stern School of Business, New York University.
- Director, Center for Digital Economy Research, Stern School of business, New York University.
- Principal, Morgan Stanley and Company, 1995-1997. Founded and managed the Data Mining group, focusing on automated trading models, salesforce management, and customer profiling in the asset gathering business. Also advised the Venture Capital group on emerging technologies in data mining and warehousing.
- Associate Professor and Ph.d Program Coordinator, Department of Information Systems, Stern School of Business, New York University, 1983 - 1994.
- Visiting Scientist, Artificial Intelligence Laboratory, Microelectronics Computer Corporation (MCC), Austin, Texas, August 1988-January 1989. Worked on intelligent search algorithms for solving combinatorial problems.
- Project Leader, Intelligent Systems Laboratory, Robotics Institute, Carnegie-Mellon University, January 1982 - August 1983. Worked on building computer-based systems to support planning and logistics in manufacturing.

### **Current Research**

My longstanding research has been on building robust automated decision making systems from large databases. I have explored this line of research primarily in financial markets, where my algorithms have been employed by investment advisors. More recently, I have applied predictive modeling to interpret user-generated content on the Internet. One of my recent articles presents evidence that user-generated content has predictive value in the music industry. Another recent article presents a model of the "efficiency" of sponsored search markets based on financial markets.

Another stream of my more recent research analyzes the relationship between information technologies and industry/business transformation. I am answering the following types of questions: What is unique about information technologies that drive industry transformation and determine a firm's success with investments in them? Why is it that some organizations succeed with their IT investments while others fail in the emerging digital economy? And how should firms converge on optimal data governance policies that value data as an asset as well as a liability?

### **University degrees**

- Ph.D in Artificial Intelligence, University of Pittsburgh, June 1984;

- M.Phil, University of Pittsburgh, August 1982;
- B.Tech in Chemical Engineering, Indian Institute of Technology, Delhi, May 1978.

### Grants and Awards

- Principal Investigator, A Risk-Based Cost/Benefit Analysis of Data, Center for Digital Economy Research (CedER) project funded by the **IBM Corporation**, 2009-2010
- Co-Principal Investigator, The Economics of User-Generated Content in Online Social Media, NYU-Poly Seed Grant, 2009-2010.
- Principal Investigator, A Risk-Based Cost/Benefit Analysis of Data, Center for Digital Economy Research (CedER) project funded by the **IBM Corporation**, 2008-2009.
- Principal Investigator, What Distinguishes Successful Startups in the Internet Economy, funded by the **Berkeley Center for Entrepreneurial Studies**, January 2007.
- Principal Investigator, An Analysis of Non-parametric Search Methods for Predicting Bond Yields, awarded by **Moody's Investors Service**, 2004.
- Principal Investigator, Pattern Discovery With Very Large Databases, three year grant awarded by **The National Science Foundation**, 1994 -1997.
- Principal Investigator, A Methodology for Understanding the Scope of Reengineering Projects, funded by the **IBM corporation**, March 1992 -- August 1993.
- Principal Investigator, REMAP: A New Approach for Large Systems Development and maintenance, three year grant funded by the **National Science Foundation**, August 1988 -- July 1991.
- Principal Investigator, A Knowledge-Based Approach for Assessing Inherent Risk, two year grant funded by the **Peat Marwick International Research Foundation**, June 1985 -- June 1987.
- Principal Investigator, Knowledge-Based Support for Back-Office Processing in Banking (automation of large volumes of forms containing free-form text data), funded by **Chemical Bank**, New York, July 1985 - April 1986.
- Principal Investigator, The Robotics Institute, Carnegie Mellon University for the ROME Project: Knowledge-Based Support for Information Systems Planning, funded by **Digital Equipment Corporation**, January 1982 - August 1983.

### Publications

#### Books

"Seven Methods for Transforming Corporate data Into Business Intelligence", by Vasant Dhar and Roger Stein, published by Prentice-Hall (1997), currently in its second printing. It provides a vocabulary for expressing business requirements, and demonstrates the application of major Artificial Intelligence techniques to data-intensive business problems. The book contains seven real-world case studies that illustrate how to formulate problems in a way that leverages the strengths of each of the techniques, and conditions under which it makes sense to apply each of them.

Intelligent Decision Support Methods: The Science of Knowledge Work, Prentice-Hall, NJ, 1997 (academic version of the above).

### **CURRENT WORKING PAPERS**

- Dhar, Sundararajan, Umayrov, Oesteicher-Singer., Demand Prediction Using Economic Networks, February 2009.
- Dhar, V., and Ghose, A., Sponsored Search and Market Efficiency, CeDER Working paper, August 2009.

### **REFEREED ACADEMIC JOURNAL ARTICLES**

1. Dhar, Vasant & Elaine Chang (2009) "Does Chatter Matter? The Impact of User-Generated Content on Music Sales," *Journal of Interactive Marketing*, November 2009.
2. Dhar, Vasant., (2008) "Outliers and Prediction in Financial Markets," under review, *Data Mining and Knowledge Discovery*.
3. Dhar, Vasant & Arun Sundararajan (2007) "Information Technologies in Business: A Blueprint for Education and Research," *Information Systems Research*, Volume 18, Number 2, June 2007.
4. Dhar, V., and Chou, D., A Comparison of Nonlinear Methods for Predicting Earnings Surprises and Returns, *IEEE Transactions on Neural Networks*, Volume 14, Issue 4, July 2001.
5. Dhar, V., Chou, D., and Provost (2000)., Discovering Interesting Patterns in Investment Decision Making with GLOWER – A Genetic Learning Algorithm Overlaid With Entropy Reduction, *Data Mining and Knowledge Discovery*, October 2000.
6. Dhar, V., Data Mining in Finance: Using Counterfactuals to Generate Knowledge from Organizational Information Systems, *Information Systems*, Volume 23, No. 7, 1998..
7. Benaroch, M., and Dhar, V., Controlling the Complexity of Investment Decisions Using Qualitative Reasoning Techniques, *Decision Support Systems*, Vol. 15, December 1995.
8. Ramesh, B., and Dhar, V., Representing and Maintaining Process Knowledge for Large Scale Systems Development, *IEEE Expert*, Vol. 9, No. 4, April 1994.
9. Dhar, V., and Tuzhilin, A., Abstract Driven Pattern Discovery in Databases, *IEEE Transactions on Knowledge and Data Engineering*, Vol. 5, No. 6, December 1993.
10. Croker, A., and Dhar, V., A Knowledge Representation for Constraint Satisfaction Problems, *IEEE Transactions on Knowledge and Data Engineering*, Vol. 5, No. 5, October 1993.
11. Ramesh, B., and Dhar, V., Process Knowledge-Based Group Support for Requirements Engineering, *IEEE Transactions on Software Engineering*, Vol. 18, No. 6, June 1992.
12. Dhar, V., and Jarke, M., On Modeling Process, *Decision Support Systems*, Vol. 8, Fall 1992.
13. Chen, H., and Dhar, V., Cognitive Process as a Basis for Intelligent Retrieval Systems Design, *Information Processing and Management*, Vol. 27, No. 3, 1991.
14. Dhar, V., and Ranganathan, N., Integer Programming vs. Expert Systems: An Experimental Comparison, *Communications of the ACM*, Vol. 33, No. 3, March 1990.

15. Chen, H., and Dhar, V., User Misconceptions of Information Retrieval Systems, *International Journal of Man-Machine Studies*, Vol. 32, pp. 673-692, 1990.
16. Dhar, V., A Truth Maintenance System for Supporting Constraint-Based Reasoning, *Decision Support Systems*, Vol. 5, Fall 1989.
17. Peters, J., Lewis, B., and Dhar, V., Assessing Inherent Risk During Audit Planning: The Development of a Knowledge-Based Model, *Accounting, Organizations, and Society*, Vol. 14, No. 4, pp. 359-378, 1989.
18. Dhar, V., Lewis, B., and Peters, J., A Knowledge-Based Model of Inherent Risk, *AI Magazine*, Vol. 9, No. 3, Fall 1988.
19. Dhar, V., and Jarke, M., Learning and Dependency-directed Reasoning in Systems Maintenance Support, *IEEE Transactions on Software Engineering*, Vol. 14, No. 2, February 1988.
20. Dhar, V., and Croker, A., Knowledge-Based Systems in Business: Issues and a Solution, *IEEE Expert*, Vol. 3, No. 1, February 1988.
21. Dhar, V., and Pople, H., Rule-Based Versus Structure-Based Models in Explaining and Generating Expert Behavior, *Communications of the ACM*, Vol. 30, No. 6, June 1987.
22. Dhar, V., On the Plausibility and Scope of Expert Systems in Management, *Journal of Management Information Systems*, Vol. 3, No. 3, Summer 1987.
23. Dhar, V., Non-chronological Backtracking Employing Knowledge Used in Heuristic Search, *Computational Intelligence: An International Journal*, Vol. 2, No. 3, 1986.

#### **TRADE JOURNAL ARTICLES**

24. Dhar, V., and Stein, R., Finding Robust and Usable Patterns with Data Mining: Examples from Finance, *PCAI* September/October, 1998.
25. Dhar, V., and Stein, R., Neural Networks in Finance: The Importance of Methodology over Technology, *PCAI*, July/August 1998.
26. Stein, R., and Dhar, V., Satisfying Customers: Intelligently Scheduling High Volume Service Requests, *AI Expert*, December 1994.

#### **REFEREED PROCEEDINGS ARTICLES**

27. Mc Macskassy, S, Hirsh, H., Provost, F., Sankaranarayanan, R., Dhar, Vasant., Intelligent Information Triage, The 24th Annual International Conference on Research and Development in Information Retrieval (SIGIR), September 2001.
28. Dhar, V., and Sundarajan, A., Customer Interaction Patterns in Electronic Commerce: Maximizing Information Liquidity for Adaptive Decision Making, European Conference of Information Systems, Vienna, Austria, July 2000.
29. Madhavan, R., Dhar, V., and Weigend, A., The Value of Transparency: An Empirical Comparison of GARCH, Rule-Based, and Neural Net Trading Models, *Neural Networks in Capital Markets*, December 1997.
30. Johar, H., and Dhar, V., Dependency Based Coordination for Consistent Solutions in Distributed Work, *Information and Knowledge Management, CIKM-92*, Baltimore, MD, November, 1992.
31. Benaroch, M., and Dhar, V., Qualitative Synthesis of System Configurations Based on Desired Behavior, *9th Canadian Conference on Artificial Intelligence*, Vancouver, Canada, IEEE Press, May 1992.

32. Ramesh, B., and Dhar, V., Process Knowledge-Based Modification in Systems Development, *AAAI-92 Stanford Spring Symposium*, Stanford, CA, March 1992.
33. Benaroch, M., and Dhar, V., A Knowledge-Based Approach to Solving Hedge Design Problems, *First International Conference on Wall Street Applications*, New York, NY, October 1991.
34. Ramesh, B., and Dhar, V., Process Knowledge-based Modification in Systems Development, working paper, Naval Postgraduate School, Monterey, CA, October 1991. Also appears in *AAAI-92 Stanford Spring Symposium*.
35. Ramesh, B., and V. Dhar, Representation and Maintenance of Process Knowledge for Large Scale Systems Development, *Sixth Knowledge Based Software Engineering Conference*, Rome Laboratory, Syracuse, NY, September 1991.
36. Ramesh, B., and V. Dhar, Capturing and Reasoning with Process Knowledge in Large Scale Systems Design and Maintenance, *Workshop on Design Synthesis*, S. Howell, ed., Silver Springs, MD, September 1991.
37. Benaroch, M., and Dhar, V., An Intelligent System for Financial Hedging, *Seventh IEEE Conference on Artificial Intelligence Applications*, Miami, FL, February 1991.
38. Chen, H., and Dhar, V., Online Query Refinement in IRS: A Process Model of Searcher/System Interaction, *13th International Conference on Research and Development in Information Retrieval*, Brussels, Belgium, September 5-7, 1990.
39. Rossi, F., Dhar, V., and Petrie, C., On the Equivalence of Constraint Satisfaction Problems, *Eleventh European Conference on Artificial Intelligence*, Stockholm, Sweden, August 1990.
40. Chen, H., and Dhar, V., A Knowledge-based Approach to the Design of Document-based Retrieval Systems, *Seventh International Conference on Office Information Systems*, MIT, Cambridge, MA, April 1990.
41. Ramesh, B., and Dhar, V., Knowledge-Based Support for Systems Design and Maintenance, Workshop on Automated Systems Design, *Eleventh International Joint Conference on Artificial Intelligence*, Detroit, MI, August 1989.
42. Dhar, V., Ramesh, B., and Jarke, M., The REMAP Project: An Environment for Supporting Requirements Analysis and Maintenance, *Artificial Intelligence and Software Engineering*, AAAI Spring Symposium, March 1989.
43. Chen, H., and Dhar, V., Reducing Indeterminism in Consultation: A Cognitive Model of User/Librarian Interactions, *American Association of Artificial Intelligence (AAAI)*, Seattle, WA, July 1987.
44. Dhar, V., and Ranganathan, P., Automating Review of Forms for International Trade Transactions: A Natural Language Processing Approach, *Third International Conference on Office Information Systems*, Carl Hewitt. ed., Providence, RI, October 1986.
45. Orlikowski, W., and Dhar, V., Imposing Structure on Linear Programming Problems: An Empirical Analysis of Expert/Novice Models, *American Association for Artificial Intelligence (AAAI)*, Philadelphia, PA, August 1986.
46. Dhar, V., and Jarke, M., Using Teleological Design Knowledge for Large Systems Development and Maintenance, *Sixth International Workshop on Expert Systems*, Avignon, France, April 1986.
47. Dhar, V., On the Plausibility and Scope of Expert Systems in Management, *Nineteenth Hawaii International Conference on Systems Sciences (HICSS)*, Honolulu, HI, January 1986.

48. Dhar, V., and Jarke, M., Learning from Prototypes, *Sixth International Conference on Information Systems (ICIS)*, Indianapolis, IN, December 1985.
49. Dhar, V., and Quayle, C., An Approach to Dependency Directed Backtracking Using Domain-Specific Knowledge, *Ninth International Joint Conference on Artificial Intelligence (IJCAI)*, Los Angeles, CA, July 1985.
50. Dhar, V., and Davis, J., A Process Model of Information Requirements Analysis for Planning Management Information Systems, *American Institute of Decision Sciences*, Boston, MA, November 1981.

#### **TECHNICAL REPORTS**

51. Stein, R., and Dhar, V., Maximization of Organizational Uptime Using an Interactive Genetic-Fuzzy Scheduling and Support System, *CRIS Working Paper IS-93-27*, December 1994.
52. Dhar, V., A Value-chain Based Process Model to Support Business Process Reengineering, IBM Technical Report 17221 (#77966), February 1992.
53. Ramesh, B., and Dhar, V., Process Knowledge-based Group Support for Requirements Engineering, working paper, Naval Postgraduate School, Monterey, CA, June 1991.
54. Ramesh, B., and V. Dhar, Role of Process Knowledge in Group Decision Support, working paper, Naval Postgraduate School, Monterey, CA, December 1991.
55. Rossi, F., Dhar, V., and Petrie, C., On the Equivalence of Binary and Non-Binary Constraints, MCC Technical Report, 1989.
56. Dhar, V., Adding the Knowledge Component to Spreadsheet Systems: A Knowledge-based Architecture for the Formulation and Maintenance of Planning Models, in *Expertensysteme im Untemehmen (Expert Systems in Business)*, H. Krallman, ed., Erich Schmidt Verlag, Berlin, West Germany, 1986.
57. Kosy, D., and Dhar, V., Knowledge-Based Systems for Long Range Planning, Technical Report, The Robotics Institute, Carnegie-Mellon University, Pittsburgh, PA, December 1983

#### **BOOK CHAPTERS**

58. Dhar, V., and Sundararajan., Managing IT in a Downturn, *Financial Times, February 6, 2009*. Appears in *Managing in a Downturn: Leading Business Thinkers on How to Grow When Markets Don't*, Financial Times Prentice Hall, Great Britain, 2009
59. Dhar, V., The Role of Machine Learning in Organizational Learning, in *Managerial and Organizational Cognition*, Teresa Lant and Zur Shapira (eds), Lawrence Erlbaum Associates, 1999.
60. Stein, R., Schocken, S., and Dhar V., A Practical Methodology for Applying Neural Networks to Business Decision Problems," *Encyclopedia of Computer Science and Technology*, Vol. 38, Marcel Dekker, January 1998.
61. Dhar, V., Duliba, K., and Kauffman, R., Re-Engineering Trading and Treasury Operations in International Financial Services, in *Global Information Systems and Technology*, C. Deans and K. Karwan, eds., Idea Group Publishing, Middletown, PA, 1994.

62. Ramesh, B., and Dhar, V., Group Support and Change Propagation in Requirements Engineering, in *Development Assistance for Interactive Database Applications*, M. Jarke, ed., Heidelberg, Germany, Springer Verlag, 1991.
63. Dhar, V., and Olson, M., Assumptions Underlying Systems that Support for Work Group Collaboration, *Technological Support for Work Group Collaboration*, Lawrence Erlbaum and Associates, New York, May 1987.

#### **PRESS INTERVIEWS & ARTICLES**

February 2009, Plugging into Transformation, Financial Times, Feb 6, 2009.

April 2007, Reuters interview of Algorithmic Trading.

February 2007, Bloomberg Magazine, article on Artificial Intelligence in trading

December 2006, Implications of the supreme court ruling requiring all businesses to maintain all email and other records. The link for this interview, which was aired on the NBC Nightly news, is on the CeDER website

May 2006, CNBC interview on the impact of mobile devices on worker productivity

May 2006, Financial Times interview on IT in business that was reported in the FT

#### **RECENT INVITED PRESENTATIONS**

- IBM Seminar Series, August 6, 2009: A Risk Adjusted Model for Customer Data Policy.
- University College London, Workshop of Advances in Computational Finance and Machine Learning, July 21, 2009. Title of talk: Machine Learning Based Prediction in Financial Markets.
- University of Texas, McCombs School of Business, Research Seminar Series, Information Technologies in Business: A Blueprint for Education and Research, April 2008.
- Does Chatter Matter? Presented at the Third Workshop on Statistical Challenges in Electronic Commerce, New York, May 2008.
- UC Irvine Research Seminar Series "Does Chatter Matter: The Impact of User-Generated Content on Music Sales, February 7, 2008.
- Marketing Science Institute Conference "Does Chatter Matter: The Impact of User-Generated Content on Music Sales, February 8, 2008, Palm Springs CA.
- IBM Deans Roundtable, "21st Century Skills for the Globally Integrated Enterprise," represented Dean Cooley, October 26, 2007.
- IBM/New York Software Industry Association Roundtable on IT and Globalization, October 14, 2007.
- Stevens Institute of Technology Research Seminar Series "Does Chatter Matter: The Impact of User-Generated Content on Music Sales, October 8, 2007.
- University of Maryland "Have the Major Transformations in Financial Services Already Happened?" presented at the University of Maryland conference in "Business Transformation through IT," April 27, 2007.
- InfoSys Financial Services Summit "Have the Major Transformations in Financial Services Already Happened?" presented at the University of Maryland conference in "Business Transformation through IT," April 25, 2007.

- What do Business Schools Deans Say about IT in Business Education? Harvard Business School Workshop, May 2006.
- Is High Frequency Trading Worthwhile? Calyon Financial Research Series, February 2006.

#### ***RECENT PROFESSIONAL ACTIVITIES***

- Track chair, "Data And Web Mining," International Conference on Information Systems, 2009.
- Program Committee, International Conference on Data Mining (ICDM-09), 2009.
- Program Committee IEEE Symposium Series on Computational Intelligence 2009.
- Program committee, SIGMOD-2008, premier international database conference, Seattle, July 2008.
- Chairman and Host, Third Workshop on IT in Business Education, held at the Stern School of Business, May 9, 2008.
- Program Committee, CiFER 2008.
- Panel, ICIS December 2006, Does IT Matter in Business Education
- Panel, ICIS December 2004, What is the Core Question? Goal: to stimulate discussion and get engagement from IS community on key IT curriculum challenges in business education.
- Program Committee, CiFER 2003, Hong Kong, July 2003.
- Expert Panel, NSF Information and Data Management special initiative on Machine Learning and Data Mining, July 2003.
- Program Co-Chair, Seventh International Conference on Knowledge Discovery Data Mining and, Industrial Track, San Francisco, August 2001.
- Program Co-Chair, First International Symposium on Intelligent Commerce, Stern School of Business, New York, April, 2001.
- Program Committee, SIAM International Conference on Data Mining, Chicago, April 2001.
- Program Committee, International Conference on Computational Finance, Hong Kong, 2002.