

CURRICULUM VITAE

(September 18, 2009)

Ben Shneiderman

Dept of Computer Science, University of Maryland, College Park, MD 20742

Phone: +1-301-405-2680 Fax: +1-301-405-6707 Email: ben@cs.umd.edu

Personal: <http://www.cs.umd.edu/~ben> Lab: <http://www.cs.umd.edu/hcil>

Published papers index, career review, and personal papers at Univ. of Maryland Libraries:
<http://www.lib.umd.edu/archivesum/findingaids/shneiderman/>

1. Personal information

a. Current status

Professor, Computer Science (1989-),

Founding Director, Human-Computer Interaction Laboratory (1983-2000)

Institute for Advanced Computer Studies (1996-)

Center for Automation Research (1983-1996)

Member, Institute for Systems Research (1991-2005).

Member, Institute for Advanced Computer Studies (1987-1991, 1997-)

b. Educational background

Institution	Degrees	Majors
City College of New York	B.S., 1968	Mathematics/Physics
State University of New York at Stony Brook	M.S., 1972	Computer Science
State University of New York at Stony Brook	Ph.D., 1973	Computer Science
University of Guelph, Canada	Honorary Doctorate of Science	1995

c. Employment background

Institution	Dates	Titles
University of Maryland	1983- 2000	Founding Director, Human-Computer Interaction Lab, Institute for Advanced Computer Studies
	1989-	Professor, Department of Computer Science
	1983-89	Associate Professor, Department of Computer Science
	1979-83	Associate Professor
	1976-79	Assistant Professor, Department of Information Systems Management
Indiana University	1973-76	Assistant Professor, Department of Computer Science
State University of NY	1972-73	Instructor, Department of Computer Science

at Stony Brook

State University of NY 1968-72 Instructor, Department of Data Processing
at Farmingdale

2. Research, scholarly, and creative activities

a. Books

(i) Books authored

1. Kreitzberg, C. and Shneiderman, B., *Elements of FORTRAN Style: Techniques for Effective Programming*, Harcourt Brace Jovanovich, Inc., New York (1972), 121 pages.
2. Shneiderman, B., *A Self Study Guide to FORTRAN Programming*, State University of New York Independent Study Program, Empire State College, 86 pages, revised edition (1974).
3. Kreitzberg, C. and Shneiderman, B., *FORTRAN Programming: A Spiral Approach*, Harcourt Brace Jovanovich, New York (1975) 2nd Edition (1982), 437 pages plus Instructor's Guide. Best selling book in this competitive market for several years.
4. Shneiderman, B., *Introduction to Computer Programming*, Indiana University Independent Study Division (1976), 56 pages.
- **5. Shneiderman, B., *Software Psychology: Human Factors in Computer and Information Systems*, Little, Brown and Co., (formerly Winthrop Publ.) Boston, MA (1980), 320 pages. Main selection - June 1980 Library of Computer and Information Sciences and August 1980 McGraw-Hill Computer Professionals Book Club. Russian translation, 1984.
6. Shneiderman, B., *Let's Learn BASIC: A Kids' Introduction to BASIC Programming*, Apple, Atari, Commodore 64, and IBM versions, Little, Brown and Co., Boston, MA, (1984).
- **7. Shneiderman, B., *Designing the User Interface: Strategies for Effective Human-Computer Interaction*, Addison-Wesley Publ. Co., Reading, MA (1987), 448 pages. Japanese version published by Nikkei-McGraw-Hill (1987), 385 pages. Excerpted in Forester, T. (editor), *Computers in the Human Context: Information Technology, Productivity, and People*, MIT Press, Cambridge, MA, (1989), 166-173. Excerpted in *Educational Media International* 26, 2, (June 1989), 101-106.
- *8. Shneiderman, B. and Kearsley, G., *Hypertext Hands-On! An Introduction to a New Way of Organizing and Accessing Information*, Addison-Wesley Publ. Co., Reading, MA, book and hypertext disk using Hyperties (May 1989), 192 pages and two disks.
- **9. Shneiderman, B., *Designing the User Interface: Strategies for Effective Human-Computer Interaction: Second Edition*, Addison-Wesley Publ. Co., Reading, MA (1992), 573 pages. Japanese version appeared October 1993. Extracts printed in: *Computer Science Syllabus* 7, (Fall 1993), 6-9, and 8 (Winter, 1993), 2-5; *The Review: Association of Human Resources*

Professionals 10, 2 (April/May 1994), 12-16. Received Rigo Award from ACM SIG Documentation, 1996.

- **10. Shneiderman, B., *Designing the User Interface: Strategies for Effective Human-Computer Interaction: Third Edition*, Addison-Wesley Publ. Co., Reading, MA (1998), 639 pages. Related book site at <<http://www.awl.com/DTUI>>. German edition, translated by Jurgen Dubau and Arne Willner, MITP-Verlag, Bonn (2002), 701 pages.
- *11. Card, S., Mackinlay, J., and Shneiderman, B., *Readings in Information Visualization: Using Vision to Think*, Morgan Kaufmann Publ., San Francisco, CA (1999), 686 pages.
- ***12. Shneiderman, B., *Leonardo's Laptop: Human Needs and the New Computing Technologies*, MIT Press, Cambridge, MA (October 2002), 256 pages. Book site contains links to numerous reviews and interviews: <http://mitpress.mit.edu/leonardoslaptop> Finalist in the Independent Book Publishers Awards for 2003, Internet/Computers category. **Winner of IEEE 2004 book award for "Distinguished Literary Contribution furthering Public Understanding of the Profession."** Korean edition (August 2005). Chinese edition (2006), Portugese version in preparation (Summer 2006). Revised extracts published in:
 - [1] *ACM Interactions* 9, 5 (Sept-Oct 2002), 40-53.
 - [2] Creativity support tools, *Communications of the ACM* 45, 10 (October 2002), 116-120.
 - [3] Meeting human needs with new digital imaging technologies, *IEEE Multimedia* 9, 4 (Oct-Dec 2002), 8-14.
 - [4] Imagining the New Computing, *User Experience* 1, 3 (Winter 2002), 20-24.
- *13. Bederson, B. and Shneiderman, B., *The Craft of Information Visualization: Readings and Reflections*, Morgan Kaufmann Publ., San Francisco, CA (2003), 410 pages.
- 14. Shneiderman, B. and Plaisant, C., *Designing the User Interface: Strategies for Effective Human-Computer Interaction: Fourth Edition*, Addison-Wesley Publ. Co., Reading, MA (2005), 684 pages. Related book site at <<http://www.awl.com/DTUI>>. Chinese and Spanish versions appeared in 2005. Revised extracts published in:
 - [1] Shneiderman, B., User interface design with speech technologies: A cognitive limitations review, *Intl Journal for Language Data Processing* 28, 2 (2004), 101-109.
 - [2] Shneiderman, B. and Plaisant, C., Chapters 1, 2, 9, and Appendices 1 and 2, in Adams, R. (Compiler), *Natural Computing and Interactive System Design*, Pearson Education, Inc., London (2005), 209-383.
 - [3] Shneiderman, B., Section 3.1-3.3, Managing Design Processes for Successful User Interfaces, in Holziner, A. (Editor), *Proc. 1st Usability Symposium, Austrian Computer Society*, November 8, 2005, Vienna, Austria (2005), 15-27.
- ***15. Shneiderman, B. and Plaisant, C., *Designing the User Interface: Strategies for Effective Human-Computer Interaction: Fifth Edition*, Addison-Wesley Publ. Co., Reading, MA (March 2009), 606 pages. <http://www.pearsonhighered.com/dtui5einfo/>
- 16. Kules, W., Schraefel, M., Shneiderman, B., and Wilson, M., *From Keyword Search to Exploration: Designing Visual Search Interfaces for the Web*, Monograph in Foundations and Trends in Web Science, <http://www.nowpublishers.com/web/> (to appear 2009).

(ii) **Books edited**

1. Shneiderman, B. (Editor), *Database Management Systems* (editor), AFIPS Press, Montvale, NJ (1976), 131 pages.
2. Shneiderman, B. (Editor), *Databases: Improving Usability and Responsiveness*, Academic Press, New York (1978), 431 pages.
3. Badre, A. and Shneiderman, B. (Editor), *Directions in Human/Computer Interaction*, Ablex Publ., Norwood, NJ (1982), 225 pages.
4. Shneiderman, B. (Editor), *Hypertext on Hypertext*, Hyperties disk with 1Mbyte data and graphics incorporating July 1988 CACM, ACM Press, New York, NY (July 1988).
- **5. Shneiderman, B. (Editor), *Sparks of Innovation in Human-Computer Interaction*, Ablex Publishers, Norwood, NJ (1993), 387 pages. Papers included are marked by #.
<http://www.intellectbooks.com/authors/shneider/sparks.htm>

(iii) **Chapters in books**

1. Shneiderman, Ben, "Errors", "Data Type", "Rings", "FIFO-LIFO", sections in *Encyclopedia of Computer Science*, Anthony Ralston, Editor, Petrocelli/Charter Publisher, (1976).
2. Shneiderman, Ben, Human Factors Experiments for Developing Quality Software, *INFOTECH State of the Art Report on Software Reliability*, 1977, 263-276.
3. Shneiderman, Ben, "Human Factors in Computing", 688-690, and "Data Base On-Line", 447-448, Sections of the *Encyclopedia of Computer Science, 2nd Edition*, A. Ralston, Editor (1983).
- *4. Shneiderman, Ben, System message design: Guidelines and experimental results, In *Directions in Human-Computer Interaction*, Badre, A. and Shneiderman, B. (Editors), Ablex Publ. Co., Norwood, NJ, (1982), 55-78.
5. Shneiderman, Ben, Human factors in interactive software, *End User Systems and their Human Factors*, A. Blaser and M. Zoeppritz, Editors, Springer-Verlag, Berlin (1983), 9-29. Keynote address IBM Heidelberg Conference.
6. Shneiderman, Ben, Correct, complete operations and other principles of interaction, Invited paper for the First USA-Japan Conference on Human-Computer Interaction (August 1984), In *Human-Computer Interaction*, (G. Salvendy, Ed.), Elsevier Science Publishers B.V., (North-Holland), (1984), 135-147.
7. Shneiderman, Ben, A model programming environment, In *Advances in Human-Computer Interaction 1*, (R. Hartson, Ed.), Ablex Publ., Norwood, NJ (1985), 105-131.
8. Weiser, M. and Shneiderman, Ben, Human factors of computer programming, In *Handbook of Human Factors* (G. Salvendy, Ed.), John Wiley & Sons, Inc., (1986), 1398-1415, Reprinted in *Tutorial on Software Restructuring*, (R. Arnold, Editor), IEEE EH0244-4 (1986), 67-81.

9. Shneiderman, Ben, Design guidebook for interaction styles: A taxonomy, rule-base, and some opinions, In (B. Shackel, Ed.), *Human Factors for Informatics Usability*, Cambridge University Press (1990), 325-342. Reprinted in Baecker, R. M., Grudin, J., Buxton, W. A. S., and Greenberg, S. (Editors), *Readings in Human-Computer Interaction: Toward the Year 2000, Second Edition*, Morgan Kaufmann Publishers, Inc., San Francisco, CA (1995), 401-410.
10. Shneiderman, Ben, Reflections on authoring, editing, and managing hypertext, In (Barrett, E., Editor), *The Society of Text*, MIT Press, Cambridge, MA (1989), 115-131.
11. Shneiderman, Ben, User interface races, In (B. Laurel, Ed.), *The Art of Human-Computer Interface Design*, Addison-Wesley Publ., Reading, MA (1990), 221-224.
12. Shneiderman, B., Direct manipulation versus agents: Paths to predictable, controllable, and comprehensible interfaces, In Bradshaw, J. (Editor), *Software Agents*, AAAI Press, Menlo Park, CA (1997), 97-106.
13. Shneiderman, B., Universal Usability: A research agenda for human-computer interaction research to empower every citizen. In Earnshaw, R., Guedj, R., Van Dam, A., and Vince, J. (Editors), *Human-Centred Computing, Online Communities, and Virtual Environments*, Springer-Verlag London (2001), 179-189.
14. Shneiderman, B., Supporting creativity with advanced information-abundant user interfaces. In Earnshaw, R., Guedj, R., Van Dam, A., and Vince, J. (Editors), *Human-Centred Computing, Online Communities, and Virtual Environments*, Springer-Verlag London (2001), 469-480.
15. Ceaparu, I., Demner, D., Hung, E., Zhao, H. and Shneiderman, B., "In Web We Trust": Establishing strategic trust among online customers, In Rust, R. and Kannan, P. K. (Editors), *E-Service*, M. E. Sharpe Publishers, Armonk, NY (August 2002), 90-107.
16. Bessiere, K., Ceaparu, I., Lazar, J., Robinson, J., and Shneiderman, B., Social and psychological influences on computer user frustration, In Bucy, E. P. and Newhagen, J. E. (Editors), *Media Access: Social and Psychological Dimensions of New Technology User*, Lawrence Erlbaum Associates, Mahwah, NJ (2004), 91-103.
17. Seo, J. and Shneiderman, B., A knowledge integration framework for information visualization, In Hemmje, M, Niederee, C., and Risse, T. (Editors), *From Integrated Publication and Information Systems to Virtual Information and Knowledge Environments*, Springer Lecture Notes in Computer Science, Berlin (2005), 207-220.
18. Plaisant, C., and Shneiderman, B., Personal role management: Overview and a design study of email for university students, In Czerwinski, M. and Kaptelinin, V. (Editors), *Designing Integrated Digital Work Environments: Beyond the Desktop*, MIT Press, Cambridge, MA (2007), 143-170.
19. Jank W., Shmueli G., Plaisant C., and Shneiderman B., Visualizing Functional Data with an Application to eBays Online Auctions, In *Handbook on Data Visualization*, Eds: Chen, Haerdle, and Unwin, Springer Verlag, Heidelberg, ISBN: 3-540-33036-4 (2008), 873-898.

20. Zhao, H., Plaisant, C., and Shneiderman, B., Listening to choropleth maps: Interactive sonification of geo-referenced data for users with vision impairment, In Lazar, J. (Editor), *Universal Usability: Designing User Interfaces for Diverse Users*, John Wiley & Sons, New York (2007), 141-173.
21. Shneiderman, B., Creativity Support Tools: A Grand Challenge for HCI Researchers, In Redondo, Miguel; Bravo, Crescencio; Ortega, Manuel (Eds.), *Engineering the User Interface: From Research to Practice*, Springer, Berlin (2009), 1-9.
22. Gillam, M., Shneiderman, B., Feied, C., Handler, J., Plaisant, C., Dickason, J., Moody, E., and Smith, M., The healthcare singularity and the age of semantic medicine, *The Fourth Paradigm: The Future of Information Science and Data Intensive Computing* (2009, to appear).

b. Articles in refereed journals

1. Shneiderman, B., Polynomial search, *Software: Practice and Experience* 3, 5 (January - March 1973), 5-8.
- *2. Shneiderman, B., Optimum data base reorganization points, *Communications of the ACM* 16, 6 (June 1973), 362-365.
3. Shneiderman, B., A computer graphics system for polynomials, *The Mathematics Teacher* 67,2 (February 1974), 111-113.
4. Shneiderman, B. and Scheuermann, P., Structured data structures, *Communications of the ACM* 17, 10 (October 1974), 566-574.
5. Shneiderman, B., A model for optimizing indexed file structures, *International Journal of Computer and Information Sciences* 3, 1 (March 1974), 93-103.
6. Shneiderman, B., Experimental testing in programming languages, Stylistic considerations and design techniques, *Proc. National Computer Conference*, AFIPS Press, Montvale, NJ (1975), 653-656.
7. Shapiro, S. C. and Shneiderman, B., Towards a Theory of Encoded Data Structures and Data Translation, *International Journal of Computer and Information Sciences* 5, 1 (1976), 33-43 (March 1976).
8. Shneiderman, B., Exploratory experiments in programmer behavior, *International Journal of Computer and Information Sciences* 5, 2 (June 1976), 123-143.
9. Shneiderman, B., A review of design techniques for programs and data, *Software: Practice and Experience* 5 (1976), 555-567.
10. Goodman, V., Shneiderman, B., Batched searching of sequential and tree structured files, *ACM Transactions on Database Systems* 1, 3 (September 1976), 268-275

11. Report of the Stored Data Definition and Translation Task Group, special issue of *Information Systems* 2, 3 (1977), 95-148 with 6 other authors.
12. Shneiderman, B., Reduced combined indexes for efficient multiple attribute retrieval, *Information Systems* 2, 4 (1977), 149-154.
13. Shneiderman, B., Design, development and utilization perspectives on database management systems, *Information Processing and Management* 13, 1 (1977), 23-33.
- *14. Mayer, R., McKay, D., Heller, P., Shneiderman, B., Experimental investigations of the utility of detailed flowcharts in programming, *Communications of the ACM* 20,6 (June 1977), 373-381, Reprinted in *Human Factors in Software Development*, Bill Curtis, Editor, IEEE EHO 185-9 (1981).
15. Shneiderman, B., Measuring computer program quality and comprehension, *International Journal of Man-Machine Studies* 9 (1977), 465-478.
16. Shneiderman, B., Jump searching: A fast sequential search technique, *Communications of the ACM* 21, 10 (October 1978), 831-834.
17. Shneiderman, B., Teaching programming: A spiral approach to syntax and semantics, *Computers and Education* 1, 3 (1978), 193-197.
18. Brosey, M. K. and Shneiderman, B., Two experimental comparisons of relational and hierarchical database models, *International Journal of Man-Machine Studies* 10 (1978), 625-637.
19. Shneiderman, B., Information policy issues: Selecting the policy framework and defining the schema horizon, *Information and Management* 1 (1978), 207-218. Reprinted in *Best Computer Science Papers of 1980*, Auerbach Publishers.
20. Shneiderman, B., Improving the human factors aspect of database interactions, *ACM Transactions on Database Systems* 3, 4 (December 1978), 417-439. Reprinted in *Database Management in the 1980's*, J. Larson and H. A. Freeman, Editors, IEEE EHO 181-8 (1981).
21. Shneiderman, B., Human factors experiments in designing interactive systems, *IEEE Computer* 12, 12 (December 1979), 9-19. Reprinted in Larson, J. A. (Editor), *Tutorial: End User Facilities in the 1980s*, IEEE Computer Society Press (1982), 16-26.
22. Shneiderman, B., Multi-party grammars and related features for defining interactive systems, *IEEE Systems, Man, and Cybernetics SMC-12*, 2 (March-April 1982), 148-154.
23. Shneiderman, B., A note on human factors issues of natural language interaction with database systems, *Information Systems* 6, 2 (1981), 125-129.
- **24. Mayer, R. and Shneiderman, B., Syntactic/Semantic interactions in programmer behavior: A model and experimental results, *International Journal of Computer and Information Sciences* 7 (June 1979), 219-239. Reprinted in *Human Factors in Software Development*, Bill Curtis,

- Editor, IEEE EHO 185-9, (1981).
25. DiPersio, T., Isbister, D., and Shneiderman, B., An experiment using memorization/reconstruction as a measure of programmer ability, *International Journal of Man-Machine Studies* 13 (1980), 339-354.
 26. Shneiderman, B., Hardware options, evaluation metrics, and a design sequence for interactive information systems, *Information and Management* 3, 1 (1980), 3-18.
 27. Shneiderman, B., The future of interactive systems and the emergence of direct manipulation, *Behaviour and Information Technology* 1, 3 (1982), 237-256. Keynote address - NYU Symposium on User Interfaces - published in *Human Factors and Interactive Computer Systems*, Y. Vassiliou, Ed., Ablex Publ., Norwood, NJ, (1983).
 28. Shneiderman, B., Control flow and data structure documentation: Two experiments, *Communications of the ACM* 25, 1 (January 1982), 55-63.
 29. Shneiderman, B., Designing computer system messages, *Communications of the ACM* 25, 9, (September 1982), 610-611. Reprinted by Datapro.
 30. Shneiderman, B. and Thomas, G., An architecture for automatic relational database system conversion, *ACM Transactions on Database Systems* 7, 2 (June 1982), 235-257.
 31. Shneiderman, B., The psychology of serving the user community: Management strategies for interactive systems, *Journal of Capacity Management* 1, 4, (1983), 328-343.
 32. Hill, R., Jacob, R., Mah, W., and Shneiderman, B., An empirical comparison of two PLATO text editors, *Journal of Computer Based Instruction* 10, 1&2 (Summer 1983), 43-50.
 33. Sykes, F., Tillman, R., and Shneiderman, B., The effect of scope delimiters on program comprehension, *Software: Practice and Experience* 13 (1983), 817-824.
 34. Miara, R., Navarro, J., Musselman, J., and Shneiderman, B., Program indentation and comprehensibility, *Communications of the ACM* 26, 11 (November 1983), 861-867,
 - ##*35. Shneiderman, B., Direct manipulation: A step beyond programming languages, *IEEE Computer* 16, 8, (August 1983), 57-69. Reprinted in:
 - [1] *Nikkei Computer*, November 28, 1983, 155-169 (Japanese).
 - [2] Auerbach Report Series.
 - [3] Baecker, Ronald, and Buxton, William, *Readings in Human-Computer Interaction: A Multidisciplinary Approach*, Morgan-Kaufman Publishers, Los Altos, CA, (1987), 461-467.
 - [4] Glinert, E. (Editor), *IEEE Visual Programming Environments: Paradigms and Systems* (1990), 317-329.
 - [5] Wardrip-Fruin, N. and Montfort, N. (Editors), *The New Media Reader*, MIT Press, Cambridge, MA (2003), 485-498.
 36. Powers, M., Lashley, C., Sanchez, P., and Shneiderman, B., An experimental comparison on tabular and graphic data presentation, *International Journal of Man-Machine Studies* 20, 6 (June

- 1984), 545-566.
37. Shneiderman, B., Response time and display rate in human performance with computers, *ACM Computing Surveys* 16, 3 (September 1984), 265-285. Reprinted: Japanese review journal *BIT*, (1986), and Dutch journal *Management en Organisatie van Automatiseringsmiddelen* 1 (1992).
 38. Shneiderman, B., When children learn programming: Antecedents, concepts and outcomes, *The Computing Teacher* 12, 5 (February 1985), 14-17.
 39. Parton, D., Huffman, K., Pridgen, P., Norman, K., and Shneiderman, B., Learning a menu selection tree: Training methods compared, *Behaviour and Information Technology* 4, 2 (1985), 81-91.
 40. Shneiderman, B., The relationship between COBOL and computer science, *Annals of the History of Computing* 7, 4 (October 1985), 348-352. Reprinted in E. Horowitz, *Programming Languages: A Grand Tour*, 3rd Edition, Computer Science Press, Rockville, MD, (1986), 417-421.
 41. Ewing, J., Mehrabanzad, S., Sheck, S. Ostroff, D., and Shneiderman, B., An experimental comparison of a mouse and arrow-jump keys for an interactive encyclopedia, *International Journal of Man-Machine Studies* 24, 1 (January 1986), 29-45.
 42. Shneiderman, B., Designing menu selection systems, *Journal of the American Society for Information Science* 37, 2 (March 1986), 57-70.
 43. MacArthur, C. and Shneiderman, B., Learning disabled students' difficulties in learning to use a word processor: Implications for instruction and software evaluation, *Journal of Learning Disabilities* 19, 4 (April 1986), 248-253.
 - #44. Koved, L. and Shneiderman, B., Embedded menus: Selecting items in context, *Communications of the ACM* 29, 4 (April 1986), 312-318, also appeared as IBM Research Report RC 11310 (August 13, 1985). Reprinted in Hebrew in *Maaseh-Hoshev*.
 45. Shafer, P., Simon, R., Weldon, L., and Shneiderman, B., Display strategies for program browsing: Concepts and experiment, *IEEE Software* 3, 3 (May 1986), 7-15
 46. Blank, D., Murphy, P., and Shneiderman, B., A comparison of children's reading comprehension and reading rates at three text presentation speeds on a CRT, *Journal of Computer-Based Instruction* 13, 3 (Summer 1986), 84-87
 47. Norman, K., Weldon, L., and Shneiderman, B., Cognitive layouts of windows and multiple screens for user interfaces, *International Journal of Man-Machine Studies* 25 (1986), 229-248
 48. Laverson, A., Norman, K., and Shneiderman, B., An evaluation of jump-ahead techniques in menu selection, *Behaviour and Information Technology* 6, 2 (1987), 97-108.
 - #49. Marchionini, G. and Shneiderman, B., Finding facts vs. browsing knowledge in hypertext systems, *IEEE Computer* 21, 1 (January 1988), 70-80.

50. Ostroff, D. and Shneiderman, B., Selection devices for users of an electronic encyclopedia: An empirical comparison of four possibilities, *Information Processing and Management* 24, 6 (1988), 665-680.
51. Shneiderman, B., We can design better use interfaces: A review of human-computer interaction styles, *Ergonomics* 21 (1988). Also appeared as keynote address in the *Proceedings of the International Ergonomics Association*, Sydney, Australia, August 1-5, 1988, 48-57.
- #52. Brethauer, D., Plaisant, C., Potter, R., and Shneiderman, B., Three evaluations of museum installations of a hypertext system, *Journal of the American Society for Information Science* 40, Special Issue on Hypertext, (May 1989), 172-182.
- #53. Shneiderman, B., A nonanthropomorphic style guide: Overcoming the Humpty Dumpty syndrome, *The Computing Teacher* (October 1988), 9-10.
54. Shneiderman, B. and Carroll, J., Ecological studies of professional programmers, *Communications of the ACM* 31, 11 (November 1988), 1256-1258.
55. Potter, R., Berman, M., and Shneiderman, B., An experimental evaluation of three touch screen strategies within a hypertext database, *International Journal of Human-Computer Interaction*, 1, 1 (October 1989), 41-52.
56. Seabrook, R. and Shneiderman, B., The user interface in a hypertext, multi-window browser, *Interacting with Computers* 1, 3 (1989), 299-337.
57. Furuta, R., Plaisant, C., and Shneiderman, B., A spectrum of automatic hypertext constructions, *Hypermedia* 1, 2 (1989), 179-195.
- #58. Sears, A. and Shneiderman, B., High precision touchscreens: Design strategies and comparison with a mouse, *International Journal for Man-Machine Studies* 34, 4 (April 1991), 593-613.
59. Shneiderman, B., Future directions for Human-Computer Interaction, *International Journal of Human-Computer Interaction* 2, 2 (1990), 41-52.
60. Furuta, R., Plaisant, C., and Shneiderman, B., Automatically transforming regularly structured linear documents into hypertext, *Electronic Publishing* 2, 4 (1989), 211-229.
61. Plaisant, C. and Shneiderman, B., Scheduling home control devices: Design issues and usability evaluation of four touchscreen interfaces, *International Journal for Man-Machine Studies* 36 (1992), 375-393.
62. Faloutsos, C., Lee, R., Plaisant, C., Shneiderman, B., Incorporating string search in a hypertext system: User interface and signature file design issues, *Hypermedia* (1990), 183-200
63. Jones, T. and Shneiderman, B., Evaluating usability for a training-oriented hypertext: Can hyper-activity be good?, *Electronic Publishing* 3, 4 (November 1990), 207-225.

64. Botafogo, R., Rivlin, E., and Shneiderman, B., Structural analysis of hypertexts: Identifying hierarchies and useful metrics, *ACM Transactions on Information Systems* 10, 2 (April 1992), 142-180.
65. Shneiderman, B., Plaisant, C., Botafogo, R., Hopkins, D., and Weiland, W., Designing to facilitate browsing: A look back at the Hyperties workstation browser, *Hypermedia* 3, 2 (1991), 101-117.
66. Shneiderman, B., Tree visualization with tree-maps: A 2-dimensional space filling approach, *ACM Transactions on Graphics* 11, 1 (January 1992), 92-99.
67. Chimera, R. and Shneiderman, B., An exploratory evaluation of three interfaces for browsing large hierarchical tables of contents, *ACM Transactions on Information Systems* 12, 4 (October 1994), 383-406.
68. Sears, A., Revis, D., Swatski, J., Crittenden, R., and Shneiderman, B., Investigating touchscreen typing: The effect of keyboard size on typing speed, *Behaviour & Information Technology* 12, 1 (Jan-Feb 1993), 17-22.
- #69. Shneiderman, B., Touch screens now offer compelling uses, *IEEE Software* 8, 2 (March 1991), 93-94, 107.
70. Weiland, W. and Shneiderman, B., A graphical query interface based on aggregation/generalization hierarchies, *Information Systems* 18, 4 (1993), 215-232.
71. Rivlin, E., Botafogo, R., and Shneiderman, B., Navigating in hyperspace: Designs for a structure-based toolbox, *Communications of the ACM* 37, 2 (Feb. 1994), 87-96.
72. Young, D. and Shneiderman, B., A graphical filter/flow model for boolean queries: An implementation and experiment, *Journal of the American Society for Information Science* 44, 6 (July 1993), 327-339.
73. Karl, L., Pettey, M., and Shneiderman, B., Speech versus mouse commands for word processing applications: An empirical evaluation, *International Journal for Man-Machine Studies* 39, 4 (1993), 667-687.
74. Shneiderman, B., Beyond intelligent machines: Just Do It!, *IEEE Software* 10, 1 (January 1993), 100-103.
75. Shneiderman, B. and Lewis, C., Building HCI partnerships and infrastructure, *Behaviour & Information Technology* 12, 2 (March-April 1993), 130-135.
76. Sears, A. and Shneiderman, B., Split menus: Effectively using selection frequency to organize menus, *ACM Transactions on Computer-Human Interaction* 1, 1 (1994), 27-51.
77. Shneiderman, B., Dynamic queries for visual information seeking, *IEEE Software* 11, 6 (1994), 70-77. Reprinted in Card, S., Mackinlay, J., and Shneiderman, B. (Editors), *Readings in Information Visualization: Using Vision to Think*, Morgan Kaufmann Publishers, San Francisco,

- CA (1999), 236-243.
78. Plaisant, C., Carr, D., and Shneiderman, B., Image-browser taxonomy and guidelines for designers, *IEEE Software* 12, 2 (March 1995), 21-32.
 79. Asahi, T., Turo, D., and Shneiderman, B., Using treemaps to visualize the analytic hierarchy process, *Information Systems Research* 6, 4 (December 1995), 357-375.
 80. Kumar, H., Plaisant, C., and Shneiderman, B., Browsing hierarchical data with multi-level dynamic queries and pruning, *International Journal of Human-Computer Studies* 46, 1 (January 1997), 103-124. Reprinted in Card, S., Mackinlay, J., and Shneiderman, B. (Editors), *Readings in Information Visualization: Using Vision to Think*, Morgan Kaufmann Publishers, San Francisco, CA (1999), 295-305.
 81. Plaisant, C., Vanniamparampil, A., Rose, A., and Shneiderman, B., Low-effort high-payoff user interface re-engineering, *IEEE Software* 14, 4 (July 1997). Reprinted in Japanese, *Nikkei Computer Books*, October 1998, 130-141.
 82. Shneiderman, B., Alavi, M., Norman, K., and Borkowski, E. Y., Windows of opportunity in electronic classrooms, *Communications of the ACM* 38, 11 (November 1995), 19-24.
 83. Preece, J. and Shneiderman, B., Survival of the fittest: The evolution of multimedia user interfaces, *ACM Computing Surveys* 27, 4 (December 1995), 557-559.
 84. Mahajan, R. and Shneiderman, B., Visual and textual consistency checking tools for graphical user interfaces, *IEEE Transactions on Software Engineering* 23, 11 (November 1997), 722-735.
 85. Shneiderman, B., Designing information-abundant websites: issues and recommendations, *International Journal of Human-Computer Studies* 47 (1997), 5-29. Available at <http://ijhcs.open.ac.uk//shneiderman/shneiderman.html>
 86. Kandogan, E. and Shneiderman, B., Elastic Windows: Design, implementation, and evaluation of multi-window operations, *Software: Practice & Experience* 28, 3 (March 1998), 225-248.
 87. Shneiderman, B., The next generation of graphical user interfaces: information visualization and better window management, *Displays* 17 (1997), 125-129.
 88. Plaisant, C., Shneiderman, B., Doan, K., and Bruns, T., Interface and data architecture for query preview in networked information systems, *ACM Trans. on Information Systems*, (July 1999), 320-341.
 89. Tanin, E., Lotem, A., Haddadin, I., Shneiderman, B., Plaisant, C., and Slaughter, L., Evaluation of query previews: User performance and preference, *Behaviour & Information Technology* 19, 6 (Nov-Dec 2000), 393-403.
 90. Shneiderman, B., Relate-Create-Donate: An educational philosophy for the cyber-generation, *Computers & Education* 31, 1 (1998), 25-39.

91. Shneiderman, B., Codex, memex, genex: The pursuit of transformational technologies, *International Journal of Human-Computer Interaction* 10, 2 (1998), 87-106.
92. Greene, S., Marchionini, G., Plaisant, C., and Shneiderman, B., Previews and overviews in digital libraries: Designing surrogates to support visual information-seeking, *Journal of the American Society for Information Science* 51, 3 (March 2000), 380-393.
93. Plaisant, C., Shneiderman, B., and Mushlin, R., An information architecture to support the visualization of personal histories, *Information Processing and Management* 34, 5 (1998), 581-597.
94. Greene, S., Tanin, E., Plaisant, C., Shneiderman, B., Olsen, L., Major, G., and Johns, S., The end of zero-hit queries: Query previews for NASA's Global Change Master Directory, *International Journal of Digital Libraries* 2, No.2+3 (1999), 79-90.
95. Shneiderman, B., Byrd, D., and Croft, B., Sorting out searching: A user-interface framework for text searches, *Communications of the ACM* 41, 4 (April 1998), 95-98.
96. Shneiderman, B., Borkowski, E., Alavi, M., and Norman, K., Emergent patterns of teaching/learning in electronic classrooms, *Educational Technology Research & Development* 46, 4 (1998), 23-42.
97. Zhang, Z., Basili, V., and Shneiderman, B., Perspective-based usability inspection: An empirical validation of efficiency, *Empirical Software Engineering* 4, 1 (March 1999), 43-69.
98. Shneiderman, B., Creating creativity: User interfaces for supporting innovation, *ACM Transactions on Computer-Human Interaction* 7, 1 (March 2000), 114-138. Reprinted in Carroll, J. M. (Editor), *Human-Computer Interaction in the New Millennium*, ACM Press, New York (2002), 235-258.
99. Zaphiris, P., Shneiderman, B., and Norman, K.L, Expandable indexes versus sequential menus for searching hierarchies on the World Wide Web, *Behaviour & Information Technology* 21, 3 (May-June 2002), 201-208.
101. * Shneiderman, B., Universal Usability: Pushing human-computer interaction research to empower every citizen, *Communications of the ACM* 43, 5 (May 2000), 84-91. Reprinted in Bucy, E. P. and Newhagen, J. E. (Editors), *Media Access: Social and Psychological Dimensions of New Technology User*, Lawrence Erlbaum Associates, Mahwah, NJ (2004), 255-266.
102. Hochheiser, H. and Shneiderman, B., Performance benefits of simultaneous over sequential menus as task complexity increases, *International Journal of Human-Computer Interaction* 12, 2 (2000), 173-192.
102. Potter, R., Shneiderman, B., and Bederson, B., Pixel data access for graphical macros, CS-TR-4019, UMIACS-TR-99-27, (August 1999, under revision).
103. North, C. and Shneiderman, B., Snap-Together Visualization: Can users construct and operate coordinated views?, *International Journal of Human-Computer Studies* 53, 5 (November 2000),

715-739.

104. Hochheiser, H. and Shneiderman, B., Using interactive visualizations of WWW log data to characterize access patterns and inform site design, *Journal of the American Society for Information Science and Technology* 52, 4 (February 2001), 331-343.
105. Tanin, E., Shneiderman, B., and H. Xie, Exploration of large online data tables using generalized query previews, *Information Systems* 32, 3 (May 2007), 402-423.
[doi:10.1016/j.is.2005.12.006](https://doi.org/10.1016/j.is.2005.12.006)
106. Shneiderman, B. and Hochheiser, H., Universal usability as a stimulus to advanced interface design, *Behaviour & Information Technology* 20, 5 (Sept-Oct 2001), 367-376.
107. Bederson, B., Shneiderman, B., and Wattenberg, M., Ordered and quantum treemaps: Making effective use of 2D space to display hierarchies, *ACM Transactions on Graphics* 21, 4 (October 2002), 833-854.
108. Shneiderman, B., Inventing discovery tools: Combining information visualization with data mining, *Information Visualization* 1, 1 (2002), 5-12. Also appeared in *Proc. Discovery Science 4th International Conference 2001*.
109. Seo, J. and Shneiderman, B., Interactively exploring hierarchical clustering results, *IEEE Computer* 35, 7 (July 2002), 80-86.
110. Ceaparu, I., Lazar, J., Bessiere, K., Robinson, J., and Shneiderman, B., Determining causes and severity of end-user frustration, *International Journal of Human-Computer Interaction* 17, 3 (2004), 333-356.
111. Bessiere, K., Newhagen, J. E., Robinson, J. P., and Shneiderman, B., A model for computer frustration: The role of instrumental and dispositional factors on incident, session, and post-session frustration and mood, *Computer in Human Behavior*, 22, 6 (printed November 2006, available online April 16, 2004), 941-961. [doi:10.1016/j.chb.2004.03.015](https://doi.org/10.1016/j.chb.2004.03.015)
112. Golub, E. and Shneiderman, B., Dynamic query visualizations on world wide web clients: A DHTML solution for maps and scattergrams, *International Journal of Web Engineering and Technology* 1, 1 (2003), 63-78.
113. Zhao, H. and Shneiderman, B., Image-based highly interactive Web mapping for geo-referenced data publishing, *International Journal of Geographic Information Systems* 19, 4 (2005), 413-428.
114. Seo, J., Bakay, M., Chen, Y.-W., Hilmer, S., Shneiderman, B., and Hoffman, E. P., Interactively optimizing signal/noise ratios in expression profiling: project-specific algorithm selection and detection p-value weighting in Affymetrix microarrays, *Bioinformatics* 20 (2004), 2534-2544. <http://bioinformatics.oupjournals.org/cgi/content/abstract/20/16/2534?etoc>
115. Zhao, P., Seo, J., Wang, Z., Wang, Y., Shneiderman, B., and Hoffman, E. P., In vivo filtering of in vitro MyoD target data: An approach for identification of biologically relevant novel

- downstream targets of transcription factors, *Comptes Rendus Biologies* 326 (2003), 1049-1065.
<http://dx.doi.org/10.1016/j.crv.2003.09.035>
116. * Shneiderman, B., Why not make user interfaces better than 3D reality? *IEEE Computer Graphics & Applications* 23, 6 (November/December 2003), 12-15. Reprinted in Damasio, M. J. (Editor), *New Media Production Issues and Strategies*, Universidade Lusofona de Humanidades e Tecnologias, Lisbon, Portugal (2005), English 12-19, Portuguese 176-183.
 117. Ceaparu, I. and Shneiderman, B., Finding governmental statistical data on the web: A study of categorically-organized links for the FedStats Topics page, *Journal of the American Society of Information Science & Technology* 55, 11 (2004), 1008-1015.
 118. Hochheiser, H. and Shneiderman, B., Dynamic query tools for time series data sets, Timebox widgets for interactive exploration, *Information Visualization* 3, 1 (March 2004), 1-18.
 119. Baehrecke, E. H., Dang, N., Babaria, K., and Shneiderman, B., Visualization and analysis of microarray and gene ontology data with treemaps, *BMC Bioinformatics* 2004, 5:84 (28 Jun 2004) <http://www.biomedcentral.com/1471-2105/5/84>
 120. Kules, B., Kang, H., Plaisant, C., Rose, A., and Shneiderman, B., Immediate usability: a case study of public access design for a community photo library, *Interacting with Computers* 16, 6 (2004), 1171-1193.
 121. Zhao, H., Smith, B. K., Norman, K., Plaisant, C., and Shneiderman, B., Interactive sonification of choropleth maps: Design and evaluation, *IEEE Multimedia* 12, 2 (April-June 2005), 26-35.
 122. Kang, H. and Shneiderman, B., Personal media exploration: A spatial interface to user-designed semantic regions, *Journal of Visual Languages and Computing* 17, 3 (2006), 254-283.
 123. Seo, J. and Shneiderman, B., A rank-by-feature framework for interactive exploration of multidimensional data, *Information Visualization* 4, 2 (June 2005), 99-113.
 124. Lazar, J., Jones, A., and Shneiderman, B., Workplace user frustration with computers: An exploratory investigation of the causes and severity, *Behaviour & Information Technology* 25, 3 (May-June 2006), 239-251.
 125. Lazar, J., Jones, A., Hackley, M., and Shneiderman, B., Severity and impact of computer user frustration: A comparison of student and workplace users, *Interacting with Computers* 18, 2 (2006), 187-207.
 126. Kustanowitz, J. and Shneiderman, B., Hierarchical layouts for photo libraries, *IEEE MultiMedia* 13, 4 (Oct-Dec 2006), 62-72.
 127. Shmueli, G., Jank, W., Aris, A., Plaisant, C., and Shneiderman, B., Exploring auction databases through interactive visualization, *Decision Support Systems* 42, 3 (Dec 2006), 1521-1538. Online March 2006: [doi:10.1016/j.dss.2006.01.001](http://dx.doi.org/10.1016/j.dss.2006.01.001)

128. Seo, J. and Shneiderman, B., Knowledge discovery in high dimensional data: Case studies and a user survey for the rank-by-feature framework, *IEEE Transactions on Visualization and Computer Graphics* 12, 3 (May/June, 2006), 311-322.
129. Perer, A., Shneiderman, B., and Oard, D., Using rhythms of relationships to understand email archives, *Journal of the American Society of Information Science & Technology* 57, 14 (2006), 1936-1948.
130. Kules, B. and Shneiderman, B., Using categorized overviews to support exploratory web search: Two formative studies, Univ. of Maryland Technical Report (June 2005), *Journal of the American Society of Information Science & Technology* (to appear).
131. Shneiderman, B., Fischer, G., Czerwinski, M., Resnick, M., Myers, B. and 13 others, Creativity Support Tools: Report from A U.S. National Science Foundation Sponsored Workshop, *International Journal of Human-Computer Interaction* 20, 2 (2006), 61-77.
132. Bakay, M., Wang, Z., Melcon, g., Schiltz, L., Xuan, J., Zhao, P., Sartorelli, V., Seo, J., Pegoraro, E., Angelini, C., Shneiderman, B., Escolar, D., Chen, Y.-W., Winokur, S. T., Pachman, L. M., Fan, C., Mandler, R., Nevo, Y., Gordon, E., Zhu, Y., Dong, Y., Wang, Y., and Hoffman, E. P., Nuclear envelope dystrophies show a transcriptional fingerprint suggesting disruption of Rb-MyoD pathways in muscle regeneration, *Brain* 129, 4 (April 2006), 996-1013. doi:10.1093/brain/awl023
133. Perer, A. and Shneiderman, B., Balancing systematic and flexible exploration of social networks, *IEEE Symposium on Information Visualization and IEEE Transactions on Visualization and Computer Graphics* 12, 5 (October 2006), 693-700.
134. Shneiderman, B. and Aris, A., Network visualization with semantic substrates, *IEEE Symposium on Information Visualization and IEEE Transactions on Visualization and Computer Graphics* 12, 5 (October 2006), 733-740.
135. Schatz, M. C., Phillippy, A. M., Shneiderman, B., and Salzberg, S. L., Interactive visual analytic tools for genome assembly, *Genome Biology* 8 (2007), **8**:R34.
<http://genomebiology.com/2007/8/3/R34>
136. Hesse, B. and Shneiderman, B., Ehealth research from the user's perspective, *American Journal of Preventive Medicine* 32, 5S (2007), S97-S103.
137. Zhao, H., Shneiderman, B., Plaisant, C., and Lazar, J., Data sonification for users with visual impairments: A case study with geo-referenced data, *ACM Transactions on Computer Human Interaction* 15, 1 (May 2008), Article 4.
138. Kules, B. and Shneiderman, B., Users can change their web search tactics: Design guidelines for categorized overviews, *Information Processing and Management* 44, 2 (2008), 463-484.
139. Jaeger, P. T., Shneiderman, B., Fleischmann, K. R., Preece, J., Qu, Y., and Wu, F. P., Community response grids: E-government, social networks, and effective emergency response, *Telecommunications Policy* 31 (2007), 592-604.

140. Shneiderman, B., Creativity support tools: Accelerating discovery and innovation, *Communications of the ACM* 50, 12 (December 2007), cover story, 20-32.
141. Dao, H. T., Bazinet, A., Berthier, R., and Shneiderman, B., NASDAQ Velocity and Forces: An interactive visualization of activity and change, *Journal of Universal Computer Science* 14, 9 (2008), http://www.jucs.org/jucs_14_9/nasdaq_velocity_and_forces
142. Aris, A. and Shneiderman, B., Designing semantic substrates for visual network exploration, *Information Visualization Journal* 6, 4 (2007), 1-20. doi: 10.1057/palgrave.ivs.9500162
143. Jaeger, P. T., Fleischmann, K. R., Preece, J., Shneiderman, B., Wu, F. P., and Qu, Y., Community response grids: Facilitating community response to biosecurity and bioterror emergencies through information and communication technologies, *Biosecurity and Bioterrorism* 5, 4 (2007), 1-12.
144. Kang, H., Getoor, L., Shneiderman, B., Bilgic, M., and Licamele, L., Interactive entity resolution in relational data: A visual analytic tool and its evaluation, *IEEE Transactions on Visualization and Computer Graphics* 14, 5 (2008), 999-1014.
145. Friedler, S., Peer, N., Tan, Y.-L., and Shneiderman, B., Enabling teachers to explore grade patterns to identify individual needs and promote fairer student assessment, *Computers & Education* 51, 4 (2008), 1467-1485.
146. Lieberman, M. D., Taheri, S., Guo, H., Mir-Rashed, F., Yahav, I., Aris, A., and Shneiderman, B., Visual exploration across biomedical databases, *IEEE/ACM Transactions on Computational Biology and Bioinformatics* (to appear 2009).
147. Perer, A. and Shneiderman, B., The importance of integrating statistics and visualization: Long-term case studies supporting exploratory data analysis of social networks, *IEEE Computer Graphics & Applications* 29, 3 (May/June 2009), 39-51.
148. Aris, A., Shneiderman, B., Qazvinian, V., and Radev, D., Visual overviews for discovering key papers and influences across research fronts, *Journal of the American Society for Information Systems and Technology* (to appear 2009).
149. Preece, J. and Shneiderman, B., The Reader-to-Leader Framework: Motivating technology-mediated social participation, *AIS Transactions on Human-Computer Interaction* 1, 1 (March 2009), 13-32, available at <http://aisel.aisnet.org/thci/vol1/iss1/5/>
150. Wang, D., Deshpande, A., and Shneiderman, B., A temporal sequence search algorithm for personal history event visualization, University of Maryland Technical Report (2009).

c. Reports: List available on request

d. Articles in conference proceedings, and notes

(i) Book chapters from refereed conferences

1. Shneiderman, B., Overcoming the limitations of current programming languages, Keynote address, In *The Role of Language in Problem Solving*, (R. Jernigan, B. W. Hamill, and D. M. Weintraub, Editors), Elsevier Science Publishers B. V. (North-Holland), (1985), 253-275.
2. Shneiderman, B., Human factors issues of manuals, online help, and tutorials, Invited conference address, *Empirical Foundations of Information and Software Science*, (J. C. Agrawal and P. Zunde, Editors), Plenum Press, New York (1985), 107-124.
3. Shneiderman, B., Empirical studies of programmers: The territory, paths, and destinations, Keynote address for workshop. In E. Soloway and R. Iyengar (Editors), *Empirical Studies of Programmers*, Ablex Publishers, Norwood, NJ, (1986), 1-12.
4. Shneiderman, B., User interface design and evaluation for an electronic encyclopedia, In G. Salvendy, Ed., *Cognitive Engineering in the Design of Human-Computer Interaction and Expert Systems*, Elsevier (1987), 207-223.
5. Reisel, J. and Shneiderman, B., Is bigger better? the effects of display size on program reading, In G. Salvendy, S. L. Sauter, and J. J. Hurrell, Jr., Eds., *Social, Ergonomic and Stress Aspects of Work with Computers*, Elsevier (1987), 113-122.
6. Sears, A., Plaisant, C., and Shneiderman, B., A new era for touchscreen applications: High-precision, dragging, and direct manipulation metaphors, In R. H. Hartson and D. Hix, (Editors), *Advances in Human-Computer Interaction: Vol. 3*, Ablex Publishing Co., Norwood, NJ (1992), 1-33.
7. Shneiderman, B., Education by Engagement and Construction: A Strategic Education Initiative for the multimedia renewal of American education, In Barrett, E. (Editor), *Sociomedia: Hypermedia, Multimedia and the Social Construction of Knowledge*, MIT Press, Cambridge, MA, (1992), 13-26.
- #8. Shneiderman, B., Engagement and construction: Educational strategies for the post-TV era, In Tomek, Ivan (Editor), *Computers and Learning*, Springer-Verlag, Berlin, 39-45 (Conference held at Wolfville, Nova Scotia, Canada (June 17-20, 1992)). Reprinted in *Journal of Computers in Higher Education* 2 (4), (Spring 1993), 106-116.
9. Shneiderman, B., Chimera, R., Jog, N, Stimart, R., and White, D., Evaluating spatial and textual style of displays, In MacDonald, L. and Lowe, A. (Editors), *Display Systems: Design and Applications*, John Wiley & Sons, Inc., Chichester, UK (1997), 83-96.

(ii) Refereed conferences

1. Shneiderman, B. and Highland, H. J., Scientific and industrial programming education at the junior college level, *Proceedings of the IFIP World Conference on Computers and Education*, Amsterdam (August, 1970).

2. Shneiderman, B. and Heller, J., A graph theoretical model of data structures, *ACM SIGIR Forum* 7 (Winter, 1972).
3. Buck, J. and Shneiderman, B., An internship in information systems: Combining computer science education with realistic problems, 6th Technical Symposium on Computer Science Education, *ACM SIGCSE Bulletin* 8, 3 (September 1976), 80-83.
4. McKay, D. and Shneiderman, B., Experimental investigations of computer program debugging and modifications, *Proc. 6th Congress of International Ergonomics Association*, (1976).
5. Shneiderman, B., Evaluating introductory programming textbooks: A guide for students, instructors, authors and publishers, 8th Technical Symposium on Computer Science Education, *ACM SIGCSE Bulletin* 9, 3 (August 1977) 56-58.
6. Anderson, A. and Shneiderman, B., Use of peer review in evaluating computer program quality, *Proc. 15th ACM-SIGCPR Conference* (1977).
7. Shneiderman, B., Software Psychology: Applying the results of human factors research in programming, *Proc. 49th SHARE Conference* (1977).
8. Shneiderman, B., A framework for automatic conversion of network database programs under schema transformations, *Proc. 3rd Jerusalem Conference on Information Technology*, J. Moneta (Ed.), North-Holland Publ., Amsterdam (1978), 279-288.
9. Shneiderman, B., Perceptual and cognitive issues in the Syntactic/Semantic Model of programmer behavior, *Proc. Symposium on Human Factors and Computer Science*, Human Factors Society, Santa Monica, CA (1978), 65-77.
10. Fry, J., Smith, D., Taylor, R., Su, S., and Shneiderman, B., Database program conversion: A framework for research, *Proc. 5th Very Large Data Bases Conference* (1979), 299-312.
11. Shneiderman, B., Exploratory experiments with program design tools, *Proc. 19th Annual Technical Symposium of the Washington DC Chapter of the ACM*, (June 1980), 9-11.
12. Shneiderman, B., Natural vs. precise concise languages for human operation of computers: Research issues and experimental approaches, *Proc. 18th Annual Conference of the Association for Computational Linguistics*, (June 1980), 139-142.
13. Thomas, G. and Shneiderman, B., Path expressions for complex queries and automatic database program conversion, *Proc. 6th Very Large Data Bases Conference* (1980), 33-44.
14. Thomas, G. and Shneiderman, B., Automatic database system conversion: A transformation language approach to sub-schema implementation, *Proc. IEEE COMPSAC '80 Conference*, (1980), 80-88
15. Stevens, P. and Shneiderman, B., Exploratory research on training aids for naive users of interactive systems, *Proc. American Society for Information Science 1981*, 65-67.

16. Shneiderman, B., Teaching software psychology experimentation through team projects, *Proc. Human Factors in Computer Systems Conference*, Gaithersburg, MD, (March 1982). Reprinted in *ACM SIGCSE Bulletin 14*, 3, (September 1982), 38-40.
17. Thomas, G. and Shneiderman, B., Automatic database system conversion, *Proc. National Computer Conference AFIPS Press*, Arlington, VA, (1982), 579-587.
18. Shneiderman, B., Human engineering management plan for interactive systems, *IEEE COMPCON '83*, (1983), 230-238.
19. Grantham, C. and Shneiderman, B., Programmer behavior and cognitive activity: An observational study, *Proc. 23rd Annual Technical Symposium of the Washington, DC Chapter of the ACM* (June 1984), B.1.1-9
20. Weldon, L., Mills, C., Koved, L. and Shneiderman, B., The structure of information in online and paper technical manuals, *Proc. 29th Annual Meeting - Human Factors Society* (1985), 1110-1113.
- *21. Shneiderman, B., Seven plus or minus two central issues in human-computer interaction, Keynote address ACM SIGCHI '86, Boston April 13-17, 1986. *Proc. CHI '86: Human Factors in Computing Systems*, ACM, New York (1986), 343-350.
22. Morariu, J. and Shneiderman, B., Design and research on The Interactive Encyclopedia System (TIES), *Proc. 28th Conference of the Association for the Development of Computer-Based Instructional Systems*, (November 1986), 19-21.
- #23. Margono, S. and Shneiderman, B., A study of file manipulation by novices using commands vs. direct manipulation, *26th Annual Technical Symposium*, Washington, DC Chapter of the ACM (June 1987), 154-159.
- #24. Wallace, D., Anderson, N., and Shneiderman, B., Time stress effects on two menu selection systems, *Proc. 31st Annual Meeting - Human Factors Society*, (1987), 727-731. Reprinted in Perlman, G., Green, G. K., and Wogalter, M. S. (Editors), *Human Factors Perspectives on Human-Computer Interaction: Selections from Proceedings of Human Factors and Ergonomics Society Annual Meetings 1983-1994*, Santa Monica, CA (1995), 105-109.
25. Shneiderman, B., User interface design for the Hyperties electronic encyclopedia, *Hypertext '87 Workshop Proceedings*, Raleigh, NC, November 13-15, 1987, 199-204.
- #26. Callahan, J., Hopkins, D., Weiser, M., and Shneiderman, B., An empirical study of pie vs. linear menus, *Proc. ACM CHI'88 Conference*, ACM, New York (May 1988), 95-100.
27. Potter, R., Weldon, L., and Shneiderman, B., Making touch screens effective: An experimental evaluation of three strategies, *ACM CHI'88* (May 1988), 27-32.
- #28. Kreitzberg, C. and Shneiderman, B., Restructuring knowledge for an electronic encyclopedia, *Proc. 10th Congress of the International Ergonomics Association*, Sydney, Australia (August 1988), 615-620.

29. Shneiderman, B., Human-Computer Interaction Laboratory: Lab Review, *Proc. ACM CHI'89 Human Factors in Computer Systems* (April 1989), 309-310.
30. Weiland, W. and Shneiderman, B., Interactive graphics interfaces for hypertext systems, *Proc. 28th Annual Technical Symposium of the Washington, DC Chapter of the ACM* (August 1989).
31. Shneiderman, B., Future directions for human-computer interaction, Invited Closing Address *Proc. Human-Computer Interaction '89* (Boston, September 1989). In Salvendy, G. and Smith, M. J. (Editors), *Designing and Using Human-Computer Interfaces and Knowledge Based Systems*, Elsevier Science Publishers B. V., Amsterdam (1989), 2-17.
32. Sears, A., Kochavy, Y., and Shneiderman, B., Touchscreen field specification for public access database queries: Let your fingers do the walking, *Proc. ACM Computer Science Conference 1990* (1990), 1-9.
- #*33. Shneiderman, B., Human values and the future of technology: A declaration of empowerment, Keynote address, ACM SIGCAS Conference on Computers and the Quality of Life CQL '90 (Sept 1990), Special Issue of *SIGCAS Computers & Society* 20, 3 (October 1990), 1-6. Reprinted in *ACM SIGCHI Bulletin* (January 1991). Translated into Russian for Special issue on Human-Computer Interaction of the *Russian Academy of Sciences Journal of Psychology* 13, 3 (1992), 66-75. Reprinted in *Human Factors in Information Systems: Emerging Theoretical Bases*, Carey, J., Ed., Ablex Publishers, Norwood, NJ (1995), 355-366. Reprinted in Special 30th anniversary issue of *ACM SIGCAS Computers & Society* 29, 3 (September 1999), 5-9.
34. Plaisant, C. and Shneiderman, B., Scheduling home control devices, *Proc. ACM CHI'91 Human Factors in Computer Systems* (April 1991), 459-460. Accompanied by a videotape that is part of the *ACM SIGGRAPH Video Review 63/64*.
35. Lifshitz, J. and Shneiderman, B., Multi-window browsing strategies for hypertext traversal, *Proc. 30th Annual Technical Symposium of the Washington, DC Chapter of the ACM* (June 1991), 121-131.
- #36. Keil-Slawik, R., Plaisant, C., and Shneiderman, B. Remote direct manipulation: A case study of a tele-pathology workstation, In Bullinger, H.-J. (Editor), *Human Aspects of Computing: Design and Use of Interactive Systems and Information Management*, Elsevier, Amsterdam, The Netherlands, (*Proc. HCI 91 International*, Stuttgart, Germany), (1991), 1006-1011.
37. Botafogo, R. and Shneiderman, B., Identifying aggregates in hypertext structures, *Proc. ACM Hypertext '91* (December 1991), 63-74.
- #38. Johnson, B. and Shneiderman, B., Tree-maps: A space filling approach to the visualization of hierarchical information structures, *Proc. IEEE Visualization '91* (October 1991), 284-291. Reprinted in Card, S., Mackinlay, J. and Shneiderman, B. (Editors), *Readings in Information Visualization: Using Vision to Think*, Morgan Kaufmann Publishers, San Francisco, CA (1999), 152-159.
39. Shneiderman, B., Visual user interfaces for information exploration, Keynote address, *Proc.*

- American Society for Information Science Conference*, Washington, DC (October 1991), 379-384.
- #40. Ahlberg, Christopher, Williamson, Christopher, and Shneiderman, Ben, Dynamic queries for information exploration: An implementation and evaluation, *Proc. ACM CHI'92: Human Factors in Computing Systems* (1992), 619-626.
- #41. Williamson, Christopher, and Shneiderman, Ben, 1992. The Dynamic HomeFinder: Evaluating dynamic queries in a real-estate information exploration system, *Proc. ACM SIGIR'92 Conference*, Copenhagen, Denmark, (June 1992), 338-346. Reprinted in Shneiderman, B. (Editor), *Sparks of Innovation in Human-Computer Interaction*, Ablex Publishers, Norwood, NJ, (1993), 295-307. Reprinted in Gupta, A. and Mumick, I. S. (Editors), *Materialized Views: Techniques, Implementations, and Applications*, MIT Press, Cambridge, MA, 1999, 125-139.
42. Shneiderman, Ben, Education by Engagement and Construction: Experiences in the AT&T Teaching Theater, Keynote Address, *ED-MEDIA '93*, Orlando, FL (June 1993), In Maurer, Hermann (Editor), *Educational Multimedia and Hypermedia Annual, 1993*, Association for the Advancement of Computing in Education, Charlottesville, VA, 471-479.
43. Liao, H. S., Osada, M., and Shneiderman, B., Browsing Unix directories with dynamic queries: An evaluation of three information display techniques, *9th Japanese Symposium on Human Interface* (October 1993), 95-98.
44. Osada, M., Liao, H., and Shneiderman, B., AlphaSlider: Development and evaluation of text retrieval method using sliders, *9th Japanese Symposium on Human Interface* (October 1993), 91-94.
- *45. Ahlberg, C. and Shneiderman, B., Visual Information Seeking: Tight coupling of dynamic query filters with starfield displays, *Proc. of ACM CHI94 Conference* (April 1994), 313-317 + color plates. Reprinted in Baecker, R. M., Grudin, J., Buxton, W. A. S., and Greenberg, S. (Editors), *Readings in Human-Computer Interaction: Toward the Year 2000, Second Edition*, Morgan Kaufmann Publishers, Inc., San Francisco, CA (1995), 450-456. Reprinted in Card, S., Mackinlay, J. and Shneiderman, B. (Editors), *Readings in Information Visualization: Using Vision to Think*, Morgan Kaufmann Publishers, San Francisco, CA (1999), 244-250.
46. Ahlberg, C. and Shneiderman, B., AlphaSlider: A compact and rapid selector, *Proc. of ACM CHI94 Conference*, (April 1994), 365-371.
47. Jain, V. and Shneiderman, B., Data structures for dynamic queries: An analytical and experimental evaluation, In Catarci, T., Costabile, M., Levialdi, S., and Santucci, G. (Editors), *Proc. Advanced Visual Interfaces Conference '94*, ACM Press, New York (1994), 1-11.
48. Jog, N. and Shneiderman, B., Information visualization with smooth zooming on a starfield display (March 1995), *Proc. Visual Databases 3*, Lausanne, 1-10.
49. Shneiderman, B., Rosenfeld, A., Marchionini, G., Holliday, W. G., Ricart, G., Faloutsos, C., and Dick, J. P., QUEST - Query Environment for Science Teaching, *Proc. of Digital Libraries '94*, Texas A&M Univ., College Station, TX 77843, <http://atg1.WUSTL.edu/DL94> (June 1994), 74-

- 79.
50. Shneiderman, B. and Plaisant, C., The Future of Graphic User Interfaces: Personal Role Managers, In *People and Computers IX*, Cambridge University Press (1994), 3-8, Conference Keynote address.
 51. Slaughter, L., Norman, K., and Shneiderman, B., Assessing Users' Subjective Satisfaction with the Information System for Youth Services (ISYS), *Proc. Third Annual Middle Atlantic Human Factors Conference*, Blacksburg, VA (March 1995), 164-170.
 52. Plaisant, C. and Shneiderman, B., Organization overviews and role management: Inspiration for future desktop environments, *Proc. IEEE 4th Workshop on Enabling Technologies: Infrastructure for Collaborative Enterprises*, IEEE, Los Alamitos, CA (1995), 14-22.
 53. Rose, A., Plaisant, C., and Shneiderman, B., Using ethnographic methods in user interface re-engineering, *Proc. DIS'95 : Symposium on Designing Interactive Systems*, ACM Press, New York (August 1995), 115-122.
 54. Mahajan, R. and Shneiderman, B., A family of user interface consistency checking tools: Design and development of SHERLOCK, *Proc. of the NASA 20th Annual Software Engineering Workshop SEL 95-004*, (December 1995), 169-188.
 - *55. North, C., Shneiderman, B., and Plaisant, C., User controlled overviews of an image library: A case study of the Visible Human, *Proc. 1st ACM International Conference on Digital Libraries* (March 1996), 74-82. Reprinted in Card, S., Mackinlay, J., and Shneiderman, B. (Editors), *Readings in Information Visualization: Using Vision to Think*, Morgan Kaufmann Publishers, San Francisco, CA (1999), 570-578.
 56. Kandogan, E. and Shneiderman, B., Elastic windows: Improved spatial layout and rapid multiple window operations, *Proc. Workshop on Advanced Visual Interfaces '96*, ACM Press, New York, NY (May 1996), 29-38.
 57. Doan, K., Plaisant, C., and Shneiderman, B., Query previews for networked information services, *Proc. Advances in Digital Libraries Conference*, IEEE Computer Society, Los Alamitos, CA (May 1996), 120-129.
 58. Plaisant, C., Rose, A., Milash, B., Widoff, S., and Shneiderman, B., LifeLines: Visualizing personal histories, *Proc. ACM CHI96 Conference*, ACM, New York (April 1996), 221-227, 518. Reprinted in Card, S., Mackinlay, J., and Shneiderman, B. (Editors), *Readings in Information Visualization: Using Vision to Think*, Morgan Kaufmann Publishers, San Francisco, CA (1999), 287-294.
 59. Shneiderman, B. and Rose, A., Social Impact Statements: Engaging public participation in information technology design, *Proc. CQL'96, ACM SIGCAS Symposium on Computers and the Quality of Life* (Feb. 1996), 90-96. Also appears in Friedman, B. (Editor), *Human Values and the Design of Computer Technology*, CSLI Publications and Cambridge Univ. Press (1997), 117-133.

60. Shneiderman, B., The eyes have it: A task by data type taxonomy of information visualizations, *Proc. IEEE Symposium on Visual Languages '96*, IEEE, Los Alamitos, CA (September 1996), 336-343.
61. Shneiderman, B., Direct manipulation for comprehensible, predictable, and controllable user interfaces, *Proc. ACM International Workshop on Intelligent User Interfaces '97*, ACM, New York, NY (1997), 33-39.
62. Kandogan, E. and Shneiderman, B., Elastic windows: Evaluation of multi-window operations, *Proc. ACM CHI97 Conference*, ACM, New York (1997), 250-257.
63. Kandogan, E. and Shneiderman, B., Elastic windows World Wide Web browser, *Proc. ACM UIST 97*, ACM, New York (October 1997), 169-177.
64. Slaughter, L., Shneiderman, B., and Marchionini, G., Comprehension and object recognition capabilities for presentations of simultaneous video key frame surrogates, In Peters, C. and Thanos, C. (Editors), *Research and Advanced Technology for Digital Libraries*, First European Research Conference on Digital Libraries, Springer, Berlin (September 1997), 41-54.
65. Tanin, E., Beigel, R., and Shneiderman, B., Design and evaluation of incremental data structures and algorithms for dynamic query interfaces, *IEEE Symposium on Information Visualization '97*, IEEE Press, Los Alamitos, CA (October 1997), 81-86.
66. Li, J., Plaisant, C., and Shneiderman, B., Data object and label placement for information abundant visualizations, *Proc. Conference on New Paradigms in Information Visualization*, ACM, New York (November 1998), 41-48.
67. Zhang, Z., Basili, V., and Shneiderman, B., An empirical study of perspective-based usability inspection. *Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting*, Santa Monica, CA (1998), 1346-1350.
68. Plaisant, C., Mushlin, R., Snyder, A., Li, J., Heller, D., and Shneiderman, B., LifeLines: Using visualization to enhance navigation and analysis of patient records, *Proc. Annual Symposium of the American Medical Informatics Association*, Hanley & Belfus, Inc., Philadelphia, PA (1998), 76-80.
69. Harris, C., Allen, R. B., Plaisant, C., and Shneiderman, B., Temporal visualization for legal case histories, *ASIS'99 Proc. 62nd Annual Meeting of the American Society for Information Science*, Information Today, Medford, NJ (October, 1999), 271-279.
70. Hochheiser, H. and Shneiderman, B., Understanding patterns of user visits to web sites: Interactive starfield visualizations of WWW log data, *ASIS'99 Proc. 62nd Annual Meeting of the American Society for Information Science*, Information Today, Medford, NJ (October, 1999), 331-344.
71. Tse, T., Vegh, S., Marchionini, G., and Shneiderman, B., An exploratory study of video browsing user interface designs and research methodologies: Effectiveness in information seeking tasks, *ASIS'99 Proc. 62nd Annual Meeting of the American Society for Information*

- Science, Information Today*, Medford, NJ (October, 1999), 681-692.
72. Shneiderman, B., Feldman, D., Rose, A., and Ferre, X. A., Visualizing digital library search results with categorical and hierarchical axes, *Proc. 5th ACM International Conference on Digital Libraries*, ACM, New York (June 2000), 57-66.
 73. Plaisant, C., Rose, A., Rubloff, G., Salter, R., and Shneiderman, B., The design of history mechanisms and their use in collaborative educational simulations, *Proc. Computer Supported Collaborative Learning Conference* (December 1999), 348-359, available at <http://sl.stanford.edu/CSCL99/>.
 74. North, C. and Shneiderman, B., A user interface for coordinating visualizations based on relational schemata, *Proc. Advanced Visual Interfaces 2000*, ACM, New York (May 2000), 128-135.
 75. Shneiderman, B., User interfaces for creativity support tools, *Proc. 3rd Conference on Creativity & Cognition*, ACM, New York (October 1999), 17-22.
 76. Fredrikson, A., North, C., Plaisant, C., Shneiderman, B., Temporal, geographical and categorical aggregations viewed through coordinated displays: A case study with highway incident data, *Proc. 1999 Workshop on New Paradigms in Information Visualization and Manipulation*, ACM New York (November 1999), 26-34.
 77. Shneiderman, B., Supporting creativity with powerful composition tools for artifacts and performances, *Proc. 33rd Hawaii International Conference On System Sciences (HICSS)* (January 2000), CD-ROM available from IEEE Computer Society.
<http://dlib.computer.org/conferen/hicss/0493/pdf/04937005.pdf>
 78. Kang, H. and Shneiderman, B. and Visualization methods for personal photo collections: Browsing and searching in the PhotoFinder, *Proc. IEEE Conference on Multimedia and Expo* (July 2000).
 79. Shneiderman, B. and Kang, H., Direct annotation: A drag-and-drop strategy for labeling photos, *Proc. International Conference on Information Visualization 2000*, Available from IEEE, Los Alamitos, CA (July 2000), 88-95.
 80. Gandhi, R., Kumar, G., Bederson, B., and Shneiderman, B., Domain name based visualization of web histories in a zoomable user interface, *Proc. 11th International Workshop on Database and Expert Systems Applications, Includes WebVis 2000: Second International Workshop on Web-Based Information Visualization*, IEEE Computer Society, Los Alamitos, CA (2000), 591-598.
 81. Hochheiser, H. and Shneiderman, B., Coordinating overviews and detail views of WWW log data, *Proc. 2000 Workshop on New Paradigms in Information Visualization and Manipulation*, ACM New York (November 2000).
 82. Tanin, E., Plaisant, C., and Shneiderman, B., Browsing large online data sets with query previews, *Proc. 2000 Workshop on New Paradigms in Information Visualization and Manipulation*, ACM New York (November 2000).

83. Marchionini, G., Hert, C., Liddy, L., and Shneiderman, B., Extending user understanding of federal statistics in tables, *Proc. ACM Conference on Universal Usability*, ACM, New York (November 2000), 132-138.
84. Christian, K., Kules, B., Shneiderman, B., and Youssef, A., A comparison of voice controlled and mouse controlled web browsing, *Proc. 4th International ACM Conference on Assistive Technologies (ASSETS)*, ACM Press, New York (2000), 72-79.
85. Dang, G., North, C., and Shneiderman, B., Dynamic queries and brushing on choropleth maps, *Proc. International Conference on Information Visualization 2001*, Available from IEEE Press (2001), 757-764.
86. Hochheiser, H. and Shneiderman, B., Visual specification of queries for finding patterns in time-series data, Department of Computer Science Technical Report CS-TR- , University of Maryland, College Park, MD (March 2001). Short version under the title Interactive exploration of time-series data appears in *Proc. Discovery Science 4th International Conference 2001*, Editors (Jantke, K. P. and Shinohara, A.), Springer-Verlag, Berlin, 441-446.
87. Shneiderman, B. and Wattenberg, M., Ordered treemap layouts, *Proc. IEEE Information Visualization* (October 2001), 73-78.
88. Konishi, Makoto, Plaisant, C., and Shneiderman, B., Enabling commuters to find the best route: an interface for analyzing driving history logs, *Proc. Interact 2001*, IFIP, IOS Press (2001), 799-800.
89. Tang, L. and Shneiderman, B., Dynamic aggregation to support pattern discovery: A case study with web logs, Department of Computer Science Technical Report CS-TR- , University of Maryland, College Park, MD (March 2001). Short version appears in *Proc. Discovery Science: 4th International Conference 2001*, Editors (Jantke, K. P. and Shinohara, A.), Springer-Verlag, Berlin, 464-469.
90. Shneiderman, B., Inventing discovery tools: Combining information visualization with data mining, *Proc. Discovery Science 4th International Conference 2001*, Editors (Jantke, K. P. and Shinohara, A.), Springer-Verlag, Berlin, 17-28. Also printed in *Information Visualization 1*, 1 (March 2002), 5-12.
91. Ceaparu, I. and Shneiderman, B., Improving web-based civic information access: A case study of the 50 US states, *Proc. 2002 International Symposium on Technology and Society (ISTAS'02)*, Available from IEEE (2002), 275-285.
92. Keogh, E., Hochheiser H., and Shneiderman., B., An augmented visual query mechanism for finding patterns in time series data, *Proc. Fifth International Conference on Flexible Query Answering Systems*, Springer-Verlag, Berlin (2002).
93. Marchionini, G., Haas, S., Plaisant, C., Shneiderman, B., and Hert, C., Toward a Statistical Knowledge Network, *Proc. 2003 National Conference on Digital Government Research* (2003), <http://www.dgrc.org/dgo2003/>

94. Kang, H., Plaisant, C., and Shneiderman, B., New approaches to help users get started with visual interfaces: Multi-layered interfaces and integrated initial guidance, *Proc. 2003 National Conference on Digital Government Research* (2003), <http://www.dgrc.org/dgo2003/>.
95. Kules, W. and Shneiderman, B., Designing a metadata-driven visual information browser for federal statistics, *Proc. 2003 National Conference on Digital Government Research* (2003), <http://www.dgrc.org/dgo2003/>.
96. Zhao, H., Plaisant, C., and Shneiderman, B., Improving accessibility and usability of geo-referenced statistical data, *Proc. 2003 National Conference on Digital Government Research* (2003), <http://www.dgrc.org/dgo2003/>
97. Kules, W., Shneiderman, B., and Plaisant, C., Data exploration with paired hierarchical visualizations: Initial designs of PairTrees, *Proc. 2003 National Conference on Digital Government Research* (2003), <http://www.dgrc.org/dgo2003/>.
98. Norman, K., Zhao, H., Shneiderman, B., and Golub, E., Dynamic query choropleth maps for information seeking and decision making, *Proc. Human-Computer Interaction International 2003: Volume 2 Theory and Practice*, Lawrence Erlbaum Associates, Mahwah, NJ (June 2003), 1263-1267.
99. Plaisant, C., Kang, H., and Shneiderman, B., Helping users get started with visual interfaces: multi-layered interfaces, integrated initial guidance and video demonstrations, *Proc. Human-Computer Interaction International 2003: Volume 4 Universal Access in HCI*, Lawrence Erlbaum Associates, Mahwah, NJ (June 2003), 790-794.
100. Seo, J., Bakay, M., Zhao, P., Chen, Y.-W., Clarkson, P., Shneiderman, B., and Hoffman, E. P., Interactive color mosaic and dendrogram displays for signal/noise optimization in microarray data analysis, *Proc. IEEE International Conference on Multimedia and Expo* (July 2003), III-461-462. (<http://www.icme2003.com>)
101. Hochheiser, H., Baehrecke, E. H., Mount, S. M., and Shneiderman, B., Dynamic querying for pattern identification in microarray and genomic data, *Proc. IEEE International Conference on Multimedia and Expo*, (2003), (<http://www.icme2003.com>)
102. Shneiderman, B., Promoting universal usability with multi-layer interface design, *ACM Conference on Universal Usability*, ACM Press, New York (2003), 1-8.
103. Zhao, H., Plaisant, C., Shneiderman, B., and Duraiswami, R., Sonification of georeferenced data for auditory information seeking: design principle and pilot study, *Proc. International Conference on Auditory Displays* (2004).
http://www.icad.org/websiteV2.0/Conferences/ICAD2004/papers/zhao_etal.pdf
104. Chintalapani, G., Plaisant, C., and Shneiderman, B., Extending the utility of treemaps with flexible hierarchy, *Proc. International Conference on Information Visualization*, IEEE Press, Piscataway, NJ (2004), 335-344.

105. Seo, J. and Shneiderman, B., A rank-by-feature framework for unsupervised multidimensional data exploration using low dimensional projections, *Proc. IEEE Information Visualization Symposium*, IEEE Press, Piscataway, NJ (October 2004), 65-72.
106. Kules, W. and Shneiderman, B., Categorized graphical overviews for web search results: An exploratory study using U. S. government agencies as a meaningful and stable structure, *Proc. 3rd Pre-ICIS Annual Workshop on HCI Research in MIS*, Organized by AIS SIGHCI (December 2004), 20-23. http://business.wm.edu/scott.mccoy/hci04_proceedings_only.pdf
107. Buono, P., Aris, A., Plaisant, C., Khella, A., and Shneiderman, B., Interactive pattern search in time series, *Proc. SPIE Conference on Visual Data Analysis*, SPIE, Washington, DC (January 2005), 175-186.
108. ** Kustanowitz, J. and Shneiderman, B., Meaningful presentations of photo libraries: Rationale and applications of bi-level radial quantum layouts, *Proc. ACM/IEEE Joint Conference on Digital Libraries*, (June 2005), 188-196. **Winner Best Student Paper Award.**
109. Plaisant, C. and Shneiderman, B., Show Me! Guidelines for producing recorded demonstrations, *Proc. Conf. on Visual Languages/Human-Centric Computing*, IEEE Press, Los Alamitos, CA (Sept 2005), 171-178.
110. Aris, A., Shneiderman, B., Plaisant, C., Shmueli, G., and Jank, W., Representing unevenly-spaced time series data for visualization and interactive exploration, *Proc. Interact 2005*, Springer, Berlin (2005), 835-846.
111. Shneiderman, B. and Bederson, B., Maintaining concentration to achieve task completion, *Proc. Conference on Designing User Experiences*, ACM Press, New York (November 2005).
112. Fails, J., Karlson, A., Shahamat, L., and Shneiderman, B., A visual interface for multivariate temporal data: Finding patterns of events across multiple histories, *IEEE Symposium on Visual Analytics Science and Technology*, IEEE Press, Piscataway, NJ (October 2006), 167-174.
113. Bilgic, M., Licamele, L., Getoor, L., and Shneiderman, B., D-Dupe: Entity resolution in networks, *IEEE Symposium on Visual Analytics Science and Technology*, IEEE Press, Piscataway, NJ (October 2006), 43-50.
114. Kules, B., Kustanowitz, J., and Shneiderman, B., Categorizing web search results into meaningful and stable categories using fast-feature techniques, *Proc. ACM/IEEE Joint Conference on Digital Libraries*, (June 2006), 211-219.
115. Shneiderman, B. and Plaisant, C., Strategies for evaluating information visualization tools: Multi-dimensional In-depth Long-term Case Studies, In *Proc. Beyond time and errors: novel evaluation methods for Information Visualization, Workshop of the Advanced Visual Interfaces Conference*, Available in ACM Digital Library (2006), 1-7.
116. Buono, P., Plaisant, C., Simeone, A., Aris, A., Shneiderman, B., Shmueli, G., Wolfgang Jank, W., Similarity-based forecasting with simultaneous previews: A river plot interface for

- time series forecasting, *Proc. 11th International Conference Information Visualisation*, IEEE Press, Piscataway, NJ (July 2007), 191-196.
117. Wu, P. F., Preece, J., Shneiderman, B., Jaeger, P. T., and Qu, Y., Community response grids for older adults: Motivations, usability, and sociability, *Proc. 13th Americas Conference on Information Systems* (August 2007).
 118. Perer, A. and Shneiderman, B., Systematic yet flexible discovery: Guiding domain experts during exploratory data analysis, *Proc. ACM Conference on Intelligent User Interfaces*, ACM, New York (January 2008), 109-118.
 119. Namata, G., Statts, B., Getoor, L., and Shneiderman, B., A dual-view approach to interactive network visualization, *Proc. ACM Conference on Information & Knowledge Management*, ACM, New York (2007), 939-942.
 120. Don, A., Zheleva, E., Gregory, M., Tarkan, S., Auvil, L, Clement, T., Shneiderman, B., and Plaisant, C., Discovering interesting usage patterns in text collections: Integrating text mining with visualization, *Proc. ACM Conference on Information & Knowledge Management*, ACM, New York (2007), 213-222.
 121. Perer, A. and Shneiderman, B., Integrating statistics and visualization: Case studies of gaining clarity during exploratory data analysis, *Proc. ACM CHI2008 Conference*, ACM, New York (April 2008), 265-274.
 122. Wang, T., Plaisant, C., Quinn, A., Stanchak, R., Shneiderman, B., and Murphy, S., Aligning temporal data by sentinel events: Discovering patterns in electronic health records, *Proc. ACM CHI2008 Human Factors in Computing Systems Conference*, ACM, New York (April 2008), 457-466.
 123. Wu, F. P., Qu, Y., Preece, J., Fleischmann, K., Golbeck, J., Jaeger, P., and Shneiderman, B., Community Response Grid (CRG) for a university campus: Design requirements and implications, *Proc. 5th International Conference on Information Systems for Crisis Response and Management (ISCRM'08)* (May 2008), 34-43.
 124. Plaisant, C., Lam, S., Shneiderman, B., Smith, M. S., Roseman, D., Marchand, G., Gillam, M., Feied, C., Handler, J., and Rappaport, H., Searching Electronic Health Records for temporal patterns in patient histories: A case study with Microsoft Amalga, *Proc. American Medical Informatics Association 2008*, Washington, DC (November 2008).
 125. Aris, A. and Shneiderman, B., Node Aggregation for reducing complexity in Network Visualizations with Semantic Substrates, University of Maryland Dept of Computer Science Technical Report (April 2008).
 126. Shneiderman, B., Extreme Visualization: Squeezing a billion records into a million pixels, *Proc. ACM SIGMOD 2008 International Conference on the Management of Data*, ACM, New York (June 2008), 3-12 .

127. Jong, C.-H., Rajkumar, P., Siddiquie, B., Clement, T., Plaisant, C., and Shneiderman, B., Interactive exploration of versions across multiple documents, *Proc. Digital Humanities 2009 Conference* (2009), 154-156.
128. Smith, M., Shneiderman, B., Milic-Frayling, N., Mendes-Rodrigues, E., Barash, V., Dunne, C., Capone, T., Perer, A., and Gleave, E., Analyzing (social media) networks with NodeXL, *Proc. Communities & Technologies Conference* (2009).
129. Filippova, D. and Shneiderman, B., Interactive exploration of multivariate categorical data with CateRank, Technical Report, University of Maryland (2009).
130. Wang, T. D., Plaisant, C., Shneiderman, B., Spring, N., Roseman, D., Marchand, G., Mukherjee, V., and Smith, M. Temporal summaries: Supporting temporal categorical searching, aggregation and comparison, *IEEE Information Visualization Symposium and IEEE Transactions on Visualization and Computer Graphics* (to appear, 2009).
131. Peer, N. and Shneiderman, B., Detecting precursors and sequelae of sentinel events: A visual data mining approach, Technical Report, University of Maryland (2009).
132. Dunne, C. and Shneiderman, B., Improving graph drawing readability by incorporating readability metrics: A software tool for network analysts, Technical Report, University of Maryland (2009).
133. Wongsuphasawat, K. and Shneiderman, B., Finding comparable patient histories: A temporal categorical similarity measure with an interactive visualization, *Proc. IEEE Visual Analytics Science & Technology* (2009).
134. Bonsignore, E. M., Dunne, C., Rotman, D., Smith, M., Capone, T., Hansen, D. L., and Shneiderman, B., First steps to NetViz Nirvana: Evaluating social network analysis with NodeXL, *Proc. IEEE International Symposium on Social Intelligence and Networking (SIN-09)* (2009).
135. Hansen, D. L., Rotman, D., Bonsignore, E. M., Milic-Frayling, N., Mendes-Rodrigues, E., Smith, M., and Shneiderman, B., Do you know the way to SNA?: A process model for analyzing and visualizing social media data, Technical Report, University of Maryland (2009).
136. Freire, M., Golbeck, J., Plaisant, G., and Shneiderman, B., ManyNets: An Interface for Multiple Network Analysis and Visualization, Technical Report, University of Maryland (2009).
137. Zalinger, J., Freier, N., Freire, M, Oard, D., and Shneiderman, B., Reading Ben Shneiderman's Email: Identifying Narrative Elements in Email Archives, Technical Report, University of Maryland (2009).
138. Wongsuphasawat, K., Plaisant, C., and Shneiderman, B., Event Sequence Queries by Examples or by Filters: Design and Empirical Evaluation, Technical Report, University of Maryland (2009).

(iii) **Notes and Awards**

May 2008 - Distinguished Faculty Award from Board of Visitors of the University of Maryland College of Computing, Mathematics, and Physical Sciences.

*** December 2007 - Special issue in honor of Ben Shneiderman's 60th Birthday, *International Journal of Human-Computer Interaction* Vol. 23, Issue 3, Edited by C. Plaisant and C. North.
<http://www.leaonline.com/toc/ijhc/23/3>

June 13-15, 2007 - General Chair, Creativity & Cognition Conference, Washington, DC
<http://www.cs.umd.edu/hcil/CC2007>

*** March 7, 2006 - **US patent 7,010,751**, Methods for the Electronic Annotation, Retrieval, and Use of Electronic Images. Sold Summer 2007.

June 13-14, 2005 - Co-Chair, National Science Foundation sponsored workshop on Creativity Support Tools, Washington, DC <http://www.cs.umd.edu/hcil/CST/>

*February-March 2003 - Erskine Fellowship recipient for sabbatical visits to Univ. of Waikato (Hamilton, NZ) and Univ of Canterbury (Christchurch, NZ).

***November 2001 – Testimony before House subcommittee on National ID Cards
http://www.house.gov/reform/gefmir/hearings/2001hearings/1116_nationa_id/1116_witnesses.htm
<http://www.acm.org/usacm/National.htm>

***May 2001 – ACM SIGCAS Making a Difference Award
<http://www.acm.org/sigcas/awards/difference.htm>

***April 2001 – ACM SIGCHI Lifetime Achievement Award and CHI Academy.
<http://www1.acm.org/sigchi/documents/awards.html>
<http://www.cs.umd.edu/~ben/CHI-award.htm>

***February 2001 – Fellow of the American Association for the Advancement of Science
http://www.aaas.org/about/aaas_fellows/AAAS_Intro_AFellows.html

November 2000 – Founding General Chair for ACM Conference on Universal Usability (Washington, DC) <http://www.acm.org/sigchi/cuu/>

May 1998 - General Co-Chair, ACM Policy '98 Conference (Washington, DC)
www.acm.org/policy98

***March 1997 - Association for Computing Machinery Fellow.
<http://www.acm.org/awards/fellows/>

***June 1995 - Honorary Doctorate of Science, University of Guelph, Ontario, Canada.

June 1995 - Co-Chair for Conference on Society and the Future of Computing (Durango, CO)

***1983-2000 – Founding Director, Human-Computer Interaction Laboratory.
<http://www.cs.umd.edu/hcil>

1985-91, 97 - current, Member, University of Maryland Institute for Advanced Computer Studies. <http://www.umiacs.umd.edu/>
1991-2006, University of Maryland Institute for Systems Research. www.isr.umd.edu
June 1986 - Program Chairman for Conference on Empirical Studies of Programmers.
July 1982 - July 1986 - Consultant with IBM Federal Systems Division.
August 1978 - Program Chairman International Conference on Databases: Improving Usability and Responsiveness, Technion, Haifa, Israel.
July 1978 - IBM Systems Research Institute, Course 56 - Designing Effective Person/Computer Interfaces.
November 1977 - Member of NSF Sponsored U.S. Delegation to Moscow and Novosibirsk, USSR.
Summer 1975 - Summer Faculty Research Fellowship, Indiana University.
Summer 1973 - Taught Summer Session, Computer Science Department, University of British Columbia, Vancouver, Canada.
Summer 1969 - Research in the Department of Applied Mathematics, Weizmann Institute of Science, Rehovoth, Israel. Advisor: Amir Pnueli.

Corporate Advisory Boards:

November 2006 - current, Technical Advisory Board for Groxis www.grokker.com
October 2002- current, Technical Advisory Board for HiveGroup www.hivegroup.com ,
San Mateo, CA
January 2001-June 2006, Technical Advisory Board for ILOG www.ilog.com , Paris, France
August 2000 – Dec 2005, Technical Advisory Board for Clockwise3d www.clockwise3d.com ,
Tel Aviv, Israel
March 2000 – Dec 2000, Member Advisory Board for TheDotComGroup, Reston, VA
March 2000 – June 2002, Computer Science Advisor, www.Smartmoney.com New York, NY
1996-2001, Member, Board of Directors, Spotfire Inc., www.spotfire.com Somerville, MA

Government Advisory Boards:

May 2006 – current, Member, Board of Scientific Counselors – National Library of Medicine Lister Hill Center
May 2006 – October 2008, Member, National Academies Committee on Technical and Privacy Dimensions of Information for Terrorism Prevention and Other National Goals
June 2006 – June 2008, Member, President’s Council of Advisors on Science and Technology, Networking and Information Technology Technical Advisory Group (TAG).

Professional Advisory Boards

2008- current, SEMVAST Advisory Board.
2007 - current, State of the USA Product Advisory Group.
2007 - current, Web Science Research Initiative Advisory Committee.
2005 - 2007, Member, IEEE Von Neumann Medal Award Committee.

Consulting for industrial corporations (AT&T, Apple, GE, CDC, IBM, Intel, Bell Labs, Microsoft, Honeywell, etc.), government agencies (Library of Congress, NASA, Office of Technology Assessment, Dept. of Energy, etc.), international agencies (Int’l Atomic Energy Agency, World Bank), university research groups (CCNY, NYU, VPI), and publishers (Ablex (series editor), Harcourt Brace Jovanovich, Addison-Wesley, Prentice-Hall, McGraw-Hill, Van

Nostrand Reinhold (Consulting Editor, University Series in Computer Science), etc.).

Data Structures: Description, Manipulation and Evaluation, Ph.D. Thesis, State University of New York at Stony Brook, May, 1973.

e. Talks and Unrefereed Publications

(i) **Invited talks:** (approximately 40 per year), see list at:

<http://www.lib.umd.edu/archivesum/findingaids/shneiderman/biolectures.jsp>

(ii) **Technical Reports (Unpublished)**

1. Norman, K., Schwartz, J., and Shneiderman, B., Memory for menus: Effects of study mode, Computer Science Center Technical Report 1412, University of Maryland, College Park, MD.
2. Schwartz, J., Norman, K., and Shneiderman, B., Performance on content-free menus as a function of study mode, Department of Computer Science Technical Report CS-TR-1477, University of Maryland, College Park, MD.
3. Chin, J., Norman, K., and Shneiderman, B., Subjective user evaluation of CF Pascal programming tools, Department of Computer Science Technical Report CS-TR-1880, University of Maryland, College Park, MD.
4. Hobbs, J. D. and Shneiderman, B., Design, implementation, and evaluation of automatic spelling correction for UNIX commands, Department of Computer Science Technical Report CS-TR-2243, University of Maryland, College Park, MD, (May 1989), CAR-TR-440.
5. Kuah, B.-T. and Shneiderman, B., Providing advisory notices for UNIX command users: Design, implementation, and empirical evaluations, Department of Computer Science Technical Report CS-TR-3007, CAR-TR-651, University of Maryland, College Park, MD, (November 1992).
6. Kumar, H., Plaisant, C., Teittinen, M., and Shneiderman, B., Visual information management for network configuration, Department of Computer Science Technical Report CS-TR-3288, College Park, MD (April 1994).
7. Lane, C., Kuester, S., and Shneiderman, B., User interfaces for a complex robotic task: A comparison of tiled vs. overlapped windows, CS-TR-3784. ISR-TR-97-55, (January 1997).
8. North, C. and Shneiderman, B., A taxonomy of multiple window coordinations, University of Maryland Department of Computer Science Technical Report CS-TR-3854, UMIACS-TR-9783 (October 1997).
9. Babaria, K., Giacoppo, S., Kuter, U., and Shneiderman, B., Menu search in hand-held devices: A pilot study of font size and menu style (August 2002).
10. Kustanowitz, J. and Shneiderman, B., Motivating annotation for digital photographs: lowering barriers while raising incentives, Univ. of Maryland Technical Report, (February

2005).

(iii) **Unrefereed publications**

1. Shneiderman, B., Computer Science Education and Social Relevance, *ACM SIGCSE Bulletin (Special Interest Group on Computer Science Education)* 3, 1.
- **2. Nassi, I. and Shneiderman, B., Flowchart Techniques for Structured Programming, *SIGPLAN Notices* 8, 8 (August, 1973). This paper is widely cited and the technique is heavily used in industry and teaching, influencing dozens of software packages.
3. Shneiderman, B., Bibliography on Data Base Structures, *ACM SIGBDP Database* 6, 1 (Spring, 1974), and *SIGIR Forum* 8, 2 (Summer, 1973).
4. Shneiderman, B., Opportunities for Data Base Reorganization, *FDT...Bulletin of the ACM SIGMOD* 6, 4 (1974), 1-8.
5. Shneiderman, B., Cognitive Psychology and Programming Language Design, *SIGPLAN Notices* 10, 7 (July 1975), 46-47.
6. Shneiderman, B., Applying the Results of Human Factors Experiments: Programming Languages and Data Base Query Languages, *Proc. Symposium on the Role of Human Factors in Computers*, R.E. Granda and J.M. Finkelman, Editors, The Human Factors Society, (November 1976), 51-58.
7. Shneiderman, B., Human Factors Issues in Database Usage, *Proc. 10th Annual Conference of Society for Management Information Systems* (1978).
8. Shneiderman, B., Group Processes in Programming, *Datamation* 26, 1 (January 1980), 138-141.
9. Shneiderman, B., Human Factors Experiments for Refining Interactive Systems Designs, *Proc. IEEE COMPCON '80 Conference*, (1980), 123-124.
10. Shneiderman, B., Human Factors in Computing: An Optimist's View, *Proc. ACM Southeast Regional Conference* (1981), Atlanta, GA, Keynote Address.
11. Shneiderman, B., Putting the Human Factor into Systems Development, *Proc. 19th Annual Conference of the ACM Special Interest Group on Computer Personnel Research*, (1981), 1-13, Keynote Address. Reprinted in *Datamation* 28, 14, (April 1982), 125-126.
12. Shneiderman, B., Fighting for the user, *ASIS Bulletin* 9, 2, (December 1982), 27-29. Reprinted as Keynote Address for *Proceedings 5th International Conference on Computer Capacity Management*.
13. Shneiderman, B., Human-computer interaction research at the University of Maryland, *ACM SIGCHI Bulletin* 17, 3, (January 1986), 27-32.
14. MacArthur, C. and Shneiderman, B., Remedial-reading students' difficulties in learning to use a

- word processor: Implications for design, *ACM SIGCHI Bulletin* 17, 3, (January 1986), 41-46.
15. Iseki, O. and Shneiderman, B., Applying direct manipulation concepts: Direct Manipulation Disk Operating System (DMDOS), *ACM SIGSOFT Software Engineering Notes* 11, 2, (April 1986), 22-26.
 16. Shneiderman, B., Beyond artificial intelligence: Overcoming the obstacle of animism, Proceedings of Workshop on Long-term Social Implications of Artificial Intelligence, US Office of Technology Assessment (1989).
 17. Mitchell, J. and Shneiderman, B., Dynamic vs. static menus: An experimental comparison, *ACM SIGCHI Bulletin* 20, 4 (1989), 33-36.
 18. Shneiderman, B., Intelligent Interfaces: From fantasy to fact, *Proc. IFIP XI World Computer Congress* (August 1989), North-Holland.
 19. Shneiderman, B., My Star Wars Plan: A Strategic Education Initiative, Guest Editorial, *The Computing Teacher*, (May 1989), 5.
 - #20. Shneiderman, B., Protecting rights in user interface designs, *ACM SIGCHI Bulletin*, (October 1990), 18-19. Reprinted in *American Programmer*, (March 1991), 2-5.
 - #21. Plaisant, C., Battaglia, J., and Shneiderman, B., Scheduling home-control devices: A case study of the transition from the research project to a product, *Human Factors in Practice*, Human Factors Society Computer Systems Technical Group (December 1990), 7-12.
 22. Shneiderman, B., Information Resources on Human-Computer Interfaces, *American Programmer* (March 1991), 30-37.
 23. Shneiderman, B., Kreitzberg, C., and Berk, E., Editing to structure a reader's experience, In E. Berk and J. Devlin, Eds., *Handbook of Hypertext/Hypermedia*, McGraw-Hill Publishers, New York, NY (1991), 143-164.
 24. Shneiderman, B., Socially Responsible Computing I: A call to action following the L. A. Riots, *ACM SIGCHI Bulletin* 24, 3 (July 1992), 14-15.
 25. Shneiderman, B., Socially Responsible Computing II: First steps on the path to positive contributions, *ACM SIGCHI Bulletin* 24, 3 (July 1992), 16-17. Reprinted in revised form as a Viewpoint, *Communications of the ACM* 36, 1 (January 1993), 15-16.
 - #26. Chimera, R. and Shneiderman, B., User interface consistency: An evaluation of original and revised interfaces for a videodisk library, In *Sparks of Innovation in Human-Computer Interaction* (B. Shneiderman, editor), Ablex Publishers, Norwood, NJ (1993), 259-271.
 - #27. Shneiderman, B., Declaration in Apple vs. Microsoft/Hewlett-Packard, In *Sparks of Innovation in Human-Computer Interaction* (B. Shneiderman, editor), Ablex Publishers, Norwood, NJ (1993), 355-361.

- #28. Shneiderman, B., Supporting the process of innovation: The Maryland Way, *ACM Interactions*, Volume 1, Issue 1 (January 1994), 67-71.
29. Shneiderman, B., Looking for the bright side of agents, *ACM Interactions* 2, 1 (January 1995), 13-15.
30. Shneiderman, B., The Information Superhighway: For the people, *Communications of the ACM* 38, 1 (January 1995), 162. Reprinted in Miller, S. E., *Civilizing Cyberspace: Policy, Power, and the Information Superhighway*, ACM Press, New York & Addison-Wesley, Reading, MA (1996), 54-55.
31. Shneiderman, B., Comprehensible, predictable, and controllable user interfaces, *American Programmer* 8, 4 (April 1995), 2-7.
32. Shneiderman, B., Human values and the future of technology: Convocation Speech Guelph University, *ACM SIGCAS Bulletin: Computers and Society* 25, 3 (September 1995), 15-16.
33. Shneiderman, B., Durango Declaration, *Communications of the ACM* 38, 10 (October 1995), 13. Reprinted *PC Week Inside* (August 28, 1995), A7.
34. Kolker, R. and Shneiderman, B., Tools for creating and exploiting content, In *Getty Art History Information Program, Research Agenda for Networked Cultural Heritage*, Santa Monica, CA (1996), 27-30. Online at <http://www.ahip.getty.edu/agenda/tools.html>
35. Tanin, E., Beigel, R., and Shneiderman, B., Incremental data structures and algorithms for dynamic query interfaces, *ACM SIGMOD Record* 25, 4 (December 1996), 21-24, and *Proc. Workshop on Information Visualization*, (November 1996).
- **36. Shneiderman, B., Byrd, D., and Croft, B., Clarifying search: A user-interface framework for text searches, *D-Lib Magazine* <http://www.dlib.org/dlib/january97/01contents.html> (1997).
- **37. Shneiderman, B., Between hope and fear: Universal access, medical records, and educational computing, *Communications of the ACM* 40, 2 (50th Anniversary Issue) (February 1997), 59-62.
38. Doan, K., Plaisant, C., Shneiderman, B., and Bruns, T., Query previews for networked information systems: A case study with NASA environmental data, *ACM SIGMOD Record* 26, 1 (March 1997), 75-81.
39. Shneiderman, B., A framework for search interfaces, *IEEE Software* (March/April 1997), 18-20.
40. Shneiderman, B., Research to support widespread access to digital libraries and government information services, In Computer Science and Telecommunications Board, National Research Council, *More Than Skin Deep: Towards Every-Citizen Interfaces to the Nation's Information Infrastructure*, National Academy Press, Washington, DC (1997), 372-374.
41. Shneiderman, B., A grander goal: A thousand-fold increase in human capabilities, *Educom*

Review 32, 6 (Nov/Dec 1997), 4, 6, 10.

- **42. Shneiderman, B. and Maes, P., Direct manipulation vs. software agents: A debate, *ACM Interactions* 4, 6 (Nov/Dec 1997), 42-61. Reprinted in Japanese, *Nikkei Electronics No. 728*, October 19, 1998), 149-159 and *No. 730* (November 16, 1998), 203-212.
43. Shneiderman, B., Visualizing personal histories: A workshop July 21-22, 1997, *ACM SIGCHI Bulletin* 30, 1 (January 1998), 34-35.
44. Shneiderman, B., Codex, memex, genex: The pursuit of transformational technologies, Plenary Session, *Proc. ACM CHI98 Conference: Summary*, ACM, New York (April 1998), 98-99,
45. Shneiderman, B., Whipping the boogey-man: A response to David Noble, *Educom Review* 33, 3 (May/June 1998), 26.
46. Kearsley, G. and Shneiderman, B., Engagement theory: A framework for technology-based teaching and learning, *Educational Technology* 38, 5 (September-October 1998), 20-23.
47. Shneiderman, B., Educational journeys on the web frontier, *Educom Review* 33, 6 (Nov-Dec 1998), 10-14. <http://www.educause.edu/ir/library/html/erm9861.html>
48. Kreitzberg, C. and Shneiderman, B., Making computer and internet usability a national priority, *Common Ground* (1999). Revised version reprinted in Branaghan, R. J. (Editor), *Design by People for People: Essays on Usability*, Usability Professionals Assn, Chicago (2001), 7-20.
49. Shneiderman, B., Getting to the Golden Age of Usability, *SAPInfo* 59 (May 1999), 21-23.
50. Shneiderman, B., Jefferson's Laptop: User interfaces for universal creativity, *Educom Review* 34, 3 (May/June 1999), 34-36.
51. Scholtz, J. and Shneiderman, B., Introduction to special issue on usability engineering, *Empirical Software Engineering* 4, 1 (March 1999), 5-10.
52. Brown, J. R., Van Dam, A., Earnshaw, R., Encarnacao, J., Guedj, R., Preece, J., Shneiderman, B., Vince, J., Human-centered computing, online communities, and virtual environments, *ACM interactions vi.5* (Sept-Oct 1999), 9-16. Reprinted in *IEEE Computer Graphics and Applications* 19, 6, (1999).70-74.
53. Brown, J. R., Van Dam, A., Earnshaw, R., Encarnacao, J., Guedj, R., Preece, J., Shneiderman, B., Vince, J., Special report on human-centered computing, online communities and virtual environments, *ACM SIGGRAPH Computer Graphics* 33, 3 (August 1999), 42-62. <http://www.siggraph.org/publications/newsletter/v33n3/contributions/special.html>
54. Shneiderman, B., Human-Computer Interaction Research: Why Does it Matter? And What Can We Do? *IMP Magazine*, http://www.cisp.org/imp/december_99/12_99shneiderman-insight.htm (December 1999).
55. Scholtz, J., Muller, M., Novick, D., Olsen Jr., D., Shneiderman, B., and Wharton, C., A

- Research Agenda for Highly Effective Human-Computer Interaction: Useful, Usable, and Universal **Interim Report**, *ACM SIGCHI Bulletin* 31, 4 (October 1999), 13-16.
56. ** Shneiderman, B., The limits of speech recognition, *Communications of the ACM* 43, 9 (September 2000), 63-65.
 57. Shneiderman, B., Universal Usability, *ACM Ubiquity* (August 29-September 4, 2000) http://www.acm.org/ubiquity/views/b_shneiderman_1.html
 58. Shneiderman, B., Designing websites to enhance online trust, *Communications of the ACM* 43, 12 (December 2000), 81-83.
 59. Shneiderman, B., Design: CUU: bridging the digital divide with universal usability, *ACM Interactions* 8, 2 (March-April 2001), 11-15.
 60. Hochheiser, H. and Shneiderman, B., Universal usability statements: Marking the trail for all users, *ACM Interactions* 8, 2 (March-April 2001), 16-18.
 61. Hert, C.A., Marchionini, G., Liddy, E.D. and Shneiderman, B., Interacting with tabular data through the World Wide Web, *Proceedings of the Seminar on Integrating Federal Statistical Information and Processes* (Federal Committee on Statistical Methodology, Statistical Policy Working Paper 32), Statistical Policy Office. Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC (2000), 219-226.
 62. Shneiderman, B., ACM's computing professionals face new challenges, *Communications of the ACM* 45, 2 (February 2002), 31-34. <http://doi.acm.org/10.1145/503124.503142>
 63. **Shneiderman, B., Kang, H., Kules, B., Plaisant, C., Rose, A., and Rucheir, R., A photo history of SIGCHI: evolution of design from personal to public, *ACM Interactions* 9, 3 (May 2002), 17-23. <http://doi.acm.org/10.1145/506671.506682>
 64. Shneiderman, B., Beyond information appliances: Serving human needs, Invited paper, *Ricoh Technical Report No. 28*, Japan (2002), 7-9.
 65. Hert, C. A., Liddy, E. D., Shneiderman, B., Marchionini, G., Supporting statistical electronic table usage by citizens, *Communications of the ACM* 46, 1 (January 2003), 52-54.
 66. Lazar J., Bessiere, K., Ceaparu, I., Robinson, J., and Shneiderman, B., Help! I'm Lost: User frustration in web navigation, *IT and Society* 1, 3 (March 2003), 18-26, available at <http://www.stanford.edu/group/siqss/itandsociety/v01i03/>
 67. Kang, H. and Shneiderman, B., MediaFinder: An interface for dynamic personal media management with semantic regions, *Extended Abstracts of CHI2003*, ACM, New York (April 2003), 764-765.
 68. Lazar, J., Jones, A., Bessiere, K., Ceaparu, I., Shneiderman, B. User Frustration with Technology in the Workplace, *Proc. Association for Information Systems 2003 Americas Conference* (2003), 2199-2202.

69. Marchionini, G., Haas, S., Plaisant, C., Shneiderman, B., and Hert, C., Project Highlight: Toward a Statistical Knowledge Network, *Proc. 2003 National Conference on Digital Government Research* (2004), 93-94 <http://www.dgrc.org/dgo2004/>
70. **Shneiderman, B., Designing for fun: How to make user interfaces more fun, *ACM Interactions* 11, 5 (Sept-Oct 2004), 48-50.
71. Shneiderman, B., Review of How Users Matter: The Co-Construction of Users and Technology, *American Scientist* 92 (Sept-Oct 2004), 482-483.
72. Klawe, M. and Shneiderman, B., Crisis and Opportunity in Computer Science, *Communications of the ACM* 48, 11 (November 2005), 27-28.
73. **Shneiderman, B., A telescope for high-dimensional data: User controlled data exploration with the rank-by-feature framework, *Computing in Science and Engineering* 8, 2 (March 2006), 48-53.
74. Shneiderman, B., Bederson, B., and Drucker, S., Find that photo! Interface strategies to annotate, browse, and share, *Communications of the ACM* 49, 4 (April 2006), 69-71.
75. Shneiderman, B., Discovering business intelligence using treemap visualizations, *B-Eye: Business Intelligence Network*, (April 11, 2006), <http://www.b-eye-network.com/view/2673>
Reprinted in DSSResources.com (July 2, 2006).
76. **Shneiderman, B. and Preece, J., 911.gov, *Science*, 315, Issue 5814 (16 Feb 2007), 944.
Generated widespread press reports: <http://www.cs.umd.edu/hcil/911gov>
77. Shneiderman, B., 25 years of CHI conferences: Capturing the exchange of ideas, *ACM Interactions* XIV, 2 (March/April 2007), 24-31. Photo history with 100+ images.
78. Shneiderman, B., Human responsibility for autonomous agents, *IEEE Intelligent Systems* 22, 2 (March/April 2007), 60-61.
79. Shneiderman, B., Uniting behind an idea: User interfaces for creativity and cognition, *Proc. 6th Conference on Creativity and Cognition*, ACM Press, New York (2007), 3-5.
80. Shneiderman, B., Science 2.0, *Science* 319 (March 7, 2008), 1349-1350.
<http://www.sciencemag.org/cgi/content/full/319/5868/1349>
81. Shneiderman, B., A National Initiative for Social Participation, *Science* 323 (March 13, 2009), 1426-1427. http://www.sciencemag.org/cgi/pdf_extract/323/5920/1426
82. Shneiderman, B., Civic Collaboration: Book Review of Beth Noveck's *Wiki Government*, *Science* 325 (July 31, 2009), 540.

(iv) Book Forewords

1. Friedman, D. P., *The Little LISPer*, Science Research Associates, Inc., Chicago (1974).
2. Debski, R., Gassin, J., and Smith, M. (Editors), *Language Learning through Social Computing*, Applied Linguistics Association of Australia, Melbourne (1997), v-viii.
3. Hazemi, R., Hailes, S., and Wilbur, S. (Editors), *The Digital University: Reinventing the Academy*, Springer, London (1998), xxi-xxii.
4. Aggarwal, A., *Web-based Learning and Teaching Technologies: Opportunities and Challenges*, Idea Group Publishing, Hershey, PA (2000), v-vi.
5. *NCI Research-based Web Design and Usability Guidelines*, Dept of Health & Human Services, National Institutes of Health, National Cancer Institute, (Sept 2003, revised edition 2006), iii-v. <http://www.usability.gov/pdfs/guidelines.html>
6. Chen, C., *Information Visualization: Beyond the Horizon, 2nd ed.*, Springer (2004), vii-ix.
7. Horton, S., *Access by Design: A Guide to Universal Usability for Web Designers*, New Riders Press, Indianapolis, IN (2005), vii-xi.
8. Hanegan, K., *Building Solutions with the DecisionSite Analytics Platform*, iUniverse, Lincoln, NE (2005), ix-xi.
9. Zhang, P. and Galletta, D. eds., *Human-Computer Interaction and Management Information Systems - Foundations*, M. E. Sharpe, Inc., Armonk, NY (2006).
10. Design for All Newsletter, Vol. 2, No. 1, Universal Usability: Shaping the world for ourselves and our children (January 2007), 6-13. www.designforall.in
11. Lazar, J. (Editor), *Universal Usability: Designing User Interfaces for Diverse Users*, John Wiley & Sons, New York (2007), vii-xiv.
12. Inselberg, A., *Parallel Coordinates: Visual Multidimensional Geometry and Its Applications*, Springer (2008).
13. Whitworth, Brian and De Moor, Aldo (Editors), *Handbook of Research on Socio-Technical Design and Social Networking Systems*, IGI Global, Hershey, PA (2009).

f. Other Media

1. *TROOLS: techniques, rules and tools*, half-hour television interview, WCQR,
2. *It's About Time*, half-hour television interview, WTIU (Public Broadcasting System), Bloomington, IN (1975).

3. Audio cassettes of talks at National Computer Conference 1979, 1975, and ACM National Conference, 1978, 1974.
4. *Software Psychology: Human Factors in Computer and Information Systems*, 12 one hour videotape cassettes, with printed visual aids and related readings, Ethnotech, Inc., Lincoln, NE (1979).
5. *Designing the User Interface*, 5 hour videotape with accompanying notes, University of Maryland Instructional Television, College Park, MD (1987).
6. *User Interface Strategies '88*, 10 hour videotape course with accompanying notes, University of Maryland Instructional Television, College Park, MD (1988), with D. Norman, T. Malone, and J. Foley.
7. *User Interface Strategies '90*, 5 hour videotape course with accompanying notes, University of Maryland Instructional Television (1990), with A. Marcus, J. Carroll, and J. Mountford.
8. *User Interface Design for Advanced Workstations*, Flagship Channel, 29 min., (1990).
9. *User Interface Strategies '91*, 5 hour videotape course with accompanying notes, University of Maryland Instructional Television (1991), with A. Van Dam, E. Soloway, and B. Curtis.
10. Scheduling ON-OFF home control devices, *SIGGRAPH Video Review 63/64*, 6 min. (Referred) (1991), with Catherine Plaisant.
11. Human-Computer Interaction Laboratory Open House Video (1991), 64 min.
12. Ahlberg, C., Shneiderman, B., and Williamson, C., Dynamic Queries, *SIGGRAPH Video Review 77*, 10 min. (Referred) (1991).
13. *User Interface Strategies '92*, 5 hour videotape course with accompanying notes, University of Maryland Instructional Television (1992), with T. Landauer, B. Myers, and B. Laurel.
14. Human-Computer Interaction Laboratory Open House Video (1992), 78 min, compiled by Plaisant, C.
15. *Managing the Human-Computer Interface*, 2 hour videotape course with accompanying notes, University of Maryland Instructional Television (June 1992).
16. *User Interface Strategies '93*, 5 hour videotape course with accompanying notes, University of Maryland Instructional Television (1993), with Mantei, M., Furness, T., and Martin, J.
17. Human-Computer Interaction Laboratory Open House Video (1993), 49 min. compiled by Plaisant, C.
18. *User Interface Strategies '94*, 5 hour videotape course with accompanying notes, University of Maryland Instructional Television (1994), with Nielsen, J., Olson, J., and Krueger, M.

19. Ahlberg, C. and Shneiderman, B., Visual Information Seeking: Tight coupling of dynamic query filters with starfield displays, *SIGGRAPH Video Review 97*, 7 min.(April 1994) (Referred).
20. Human-Computer Interaction Laboratory Open House Video (1994), 80 min.compiled by Plaisant, C.
21. *User Interface Strategies '95*, 5 hour videotape course with accompanying notes, University of Maryland Instructional Television (1995), with Stein, F., Norman, K., Hartson, H. R., and Hix, D.
22. Asahi, T., Shneiderman, B., and Turo, D., Visual Decision-Making: Using Treemaps for the Analytic Hierarchy Process, *SIGGRAPH Video Review*, (April 1995) (Referred).
23. *User Interface Strategies '96*, 5 hour videotape course with accompanying notes, University of Maryland Instructional Television (1996), with Kreitzberg, C. B. and Yourdon, E.
24. Shneiderman, B., *Designing the User Interface: Third Edition*, 5-hour videotape course with accompanying notes, University of Maryland Instructional Television (September 1997).
25. Shneiderman, B., *Treating Web Fever: Human Values for Educational Technology*, 1-hour videotape, available from Wisconsin Educational Technology Center, Madison, WI (November 1998).
26. Kandogan, E. and Shneiderman, B., Using Elastic Windows for World-Wide Web browsing, *CHI98 Video and Proc. ACM CHI98 Conference: Summary*, ACM, New York (April 1996), 189-190.
27. Shneiderman, B., World Usability Day talk during 14th ACM Conference on Information and Knowledge Management in Bremen, Germany (November 4, 2005), 77 minutes, available on the net:
<http://netzspannung.org/cat/servlet/CatServlet?cmd=netzkollektor&subCommand=showEntry&entryId=316147&lang=en>

i. Grants

1. NSF Travel Grant to attend lectures of Edsger Dijkstra, 1974.
2. National Academy of Sciences Travel Grant: International Federation for Information Processing in Stockholm, Sweden, 1974.
3. Research Committee, Indiana University (\$2990) participation in Stored Data Definition and Translation Task Group, 3/74-7/75.
4. NSF MCS-77-18641 (\$20,300) Collaborative US/USSR Research in the use of a conceptual schema in agricultural systems and human factors issues in database facilities 7/77-6/78, with Sibley and Hardgrave.

5. NSF MCS-77-22244 (\$76,400) Towards the development of a methodology for application program conversion based on database semantics 8/77-1/80, Supplement for Teleconference (\$7,973).
6. NSF MCS-77-22509 (\$52,300) Structured Data Base Systems, 2/80-7/81.
7. Control Data Corp. 80M15 (\$49,580) Human Factors Research in Editor Interfaces, 1/81-12/83.
8. Control Data Corp. 83M102 (\$99,993), Human-Computer Interaction Research, 7/6/83-7/5/85.
9. IBM Corp. (\$235,000 for first 30 months) Multiple Coordinated Windows for Programmer Workstations, 7/1/83-12/31/85.
10. Dept. of Health and Human Services, (\$25,000) Impact of Personal Computers on Office Workers, 6/84-6/85.
11. IBM Corp. and University of Maryland FULCRUM Project, Expert Networks for Cooperative Problem-Solving.
12. IBM Corp. (\$33,000) Converting paper manuals to online access, 8/21/84-12/31/84.
13. Dept. of Interior and US Holocaust Memorial Musuem, (\$49,999), Development and Testing of TIES (The Interactive Encyclopedia System, 12/7/84-4/15/85.
14. Inference Corp. (\$73,000) User interface for expert systems, 8/1/85-7/31/86.
15. National Science Foundation, (\$42,000) Developing an effective user evaluation questionnaire for interactive systems), 8/1/86-7/31/87.
16. A T & T Information Systems, (\$232,000), Human-Computer Interaction Research, 9/1/86-8/31/87.
17. National Aeronautics and Space Administration - Ames Laboratory (\$50,000), Structuring and searching online knowledge - TIES, 2/1/87-1/31/88.
18. Maryland Industrial Partnerships with American Voice & Robotics, (\$26,400), 1/1/88 - 6/30/88.
19. A T & T Information Systems, (\$289,000), Human-Computer Interaction Research, 11/1/87 - 12/31/88.
20. Apple Corporation, (\$34,086) - Graduate Research Assistants for the Human-Computer Interaction Laboratory, 1/1/88 - 12/31/88. Additional hardware contribution, approx. \$15,000, 4/88.
21. National Cash Register Corporation, (\$50,000), Extensions to Hyperties, 1/1/88 - 12/31/88.
22. Museum of Jewish Heritage, (\$41,000), Learning Center User Interfaces, 4/1/88 - 12/31/88.

23. Maryland Industrial Partnerships with American Voice and Robotics, (\$50,000), User interfaces for home applications, 7/1/88 - 12/31/88.
24. Museum of Jewish Heritage, (\$61,000), Learning Center User Interfaces, 6/1/89 - 5/30/90.
25. National Cash Register Corporation, (\$50,000), Extensions to Hyperties, (\$50,000) User interface for a portable touchscreen computer, 1/1/89 - 12/31/89.
26. SUN Microsystems (\$35,000 equipment), SUN4 workstation for NeWS implementation of Hyperties, 3/89.
27. Library of Congress, (\$24,999), Survey of LOCIS users, 1/1/89 - 6/30/89.
28. National Library of Medicine, (\$25,000), Usability evaluation of microanatomy videodisk database, 3/15/89 - 9/15/89.
29. Apple Corporation, (\$20,000), Do What I Did Interfaces, 6/89-5/90.
30. NEC Corporation, (\$90,000), Human-Computer Interaction Research, 8/89-8/90.
31. National Library of Medicine, (\$24,999), Usability evaluation of microanatomy videodisk database, 12/1/89 - 4/15/90.
32. Engineering Research Center, (\$12,700) Hypermedia Workstation, 12/89.
33. NCR Corporation, (\$75,000), Human-Computer Interaction Research, 1/1/90 - 12/31/90.
34. Maryland Industrial Partnerships with Custom Command Systems, (\$50,000), User interfaces for home applications, 2/1/90 - 1/31/91.
35. Maryland Industrial Partnerships with Corabi, Inc., (\$37,500), User interfaces for telemedicine, 2/1/90 - 1/31/91.
36. Sun Microsystems, (\$130,000), Orientation, traversal, and mental models for large documents, 6/1/90 - 5/31/91.
37. NEC Corporation, (\$10,000), 10/15/90 - 10/14/91.
38. NCR Corporation, (\$50,000), Human-Computer Interaction Research, 1/1/91 - 12/31/91.
39. General Electric Informations Services, (\$50,000), Graphic Boolean Queries and User Interface Research, 12/1/90 - 11/30/91.
40. Maryland Industrial Partnerships with Corabi, Inc., (\$50,000), User interfaces for telemedicine, 2/1/91 - 1/31/92.
41. NASA Graduate Fellowship (for Andrew Sears) (\$18,000), 7/1/91 - 6/30/92.

42. Johnson Controls Graduate Fellowship (\$20,000), 6/5/91 - 6/4/92.
43. Toshiba Corporation (\$65,000), 9/1/91 - 2/28/93.
44. SONY Corporation (\$50,000), 9/1/91 - 8/31/92.
45. Apple Corporation, Graduate Fellowship, Programming in the User Interface (\$20,000 + \$12,000 equipment), 10/1/91 - 9/30/92.
46. NEC Corporation, (\$10,000), 10/1/91 - 9/30/92.
47. Maryland Industrial Partnerships with Corabi, Inc., (\$50,000), User interfaces for telemedicine, 2/1/92 - 1/31/93.
48. General Electric Information Services, (\$50,000), Research on Platform Independent User Interface Builders, 3/1/92 - 2/28/93.
49. Panasonic Corporation, (\$10,000), 3/1/91 - 2/28/92, Home Automation Consortium.
50. NEC Corporation, (\$50,000), 10/1/92 - 9/30/93, Human-Computer Interaction Research.
51. National Library of Medicine, (\$24,500), 7/6/92 - 11/30/92, Computer Interface Design for Intermediate Results (Grateful Med).
52. National Center for Health Statistics, (\$10,000), 6/5/92 - 9/5/92, Development of a prototype for dynamic queries on a health statistics atlas.
53. National Center for Health Statistics, (\$25,000), 10/1/92 - 5/15/93, Development of a prototype for dynamic queries on cause of death statistics.
54. Johnson Controls Graduate Fellowship (\$20,000), 6/5/92 - 6/4/93.
55. Apple Corporation, Graduate Fellowship, Programming in the User Interface (\$20,000), 11/1/92 - 10/31/93.
56. Maryland Industrial Partnerships with General Electric Information Services, (\$108,000), 3/1/93 - 2/28/94, Improving Usability in Information Services.
57. Maryland Industrial Partnerships with Hughes Network Systems, (\$160,000), 2/1/93 - 1/30/94, Next generation network management system, with J. Baras (ISR).
58. Johnson Controls Graduate Fellowship (\$20,000), 6/5/93 - 6/4/94.
59. Online Computer Library Center, Information Visualization Consortium (\$10,000), 7/93 - 7/94.
60. Visix Corporation, Donation of Galaxy Software (\$15,000), 9/93.

61. World Bank, Future User Interfaces (\$30,000), 10/93 - 1/94.
62. NEC Corporation, Human-Computer Interaction Research (\$10,000), 10/1/93 - 9/30/94.
63. IBM, Video-on-demand User Interfaces (\$29,000), 2/94 - 6/94.
64. Maryland Industrial Partnerships with General Electric Information Services, (\$108,000), 3/1/94 - 2/28/95, Improving Usability in Information Services.
65. Maryland Industrial Partnerships with Hughes Network Systems, (\$160,000), 2/1/94 - 1/30/95, Next generation network management system, with J. Baras (ISR).
66. State of Maryland, Department of Juvenile Services (\$272,000), Advanced User Interfaces for Case Workers, 7/1/94 - 6/30/95.
67. National Science Foundation, SGER (\$48,000), Multiple Window Coordination for Visual Information Access in High Performance User Interfaces, 8/15/94 - 8/14/95.
68. National Library of Medicine (approx \$40,000, 2 graduate fellowships), User Interfaces for the Visible Human Project, 8/94 - 8/95.
69. NEC Corporation, Human-Computer Interaction Research (\$10,000), 10/1/94 - 9/30/95.
70. National Library of Medicine (\$24,981), User Interfaces for the Visible Human Project, 11/15/94 - 9/15/95.
71. Maryland Industrial Partnerships with General Electric Information Services, (\$108,000), 3/1/95 - 2/28/96, Improving Usability in Information Services.
72. NASA - Goddard (\$103,145, NAG52895), 3/1/95 - 2/28/96, Dynamic Queries Interfaces for the EOSDIS Information System.
73. IBM, Boca Raton, FL (\$10,000 + \$30,000), 8/95 - 7/96, Next generation graphical user interfaces.
74. State of Maryland, Department of Juvenile Justice (\$650,000), Advanced User Interfaces for Case Workers, 9/1/95 - 8/31/96.
75. NEC Corporation, Human-Computer Interaction Research (\$10,000), 10/1/95 - 9/30/96.
76. NASA - Goddard (\$130,000, NAG52895), 3/1/96 - 2/28/97, Dynamic Queries Interfaces for the EOSDIS Information System. Plus supplement to support Richard Beigel sabbatical visit (\$34,876).
77. National Science Foundation, IRIS (\$72,648, IRI9615534), Information Abundant Interfaces: Advanced Organization and Coordination, 10/01/96 - 09/30/97.
78. NASA - Goddard (\$163,240, NAG52895), 3/1/97 - 2/28/98, Dynamic Queries Interfaces for the

EOSDIS Information System.

78. NASA - Goddard (\$145,000, NAG57126), Dynamic Queries Interfaces for the EOSDIS Information System, 3/1/98 - 2/28/99. Expanded to \$281,299 and extended to 12/31/99.
79. IBM University Partner Program (\$40,000), Information Visualization for Electronic Commerce, 6/15/98 - 6/14/99.
81. West Publishing (\$149,875, 9712229014), User Interfaces for Visualizing Legal Information, 6/1/98 - 8/31/99.
82. U. S. Bureau of the Census, Human Computer Interface Design, 8/1/1998-9/30/1998 (\$30,000). Renewal 2/25/1999 - 09/15/1999 (\$100,000, 40YABC909111). Renewal 09/16/99 - 06/30/00 (\$100,000, 43YABC917123). Renewal 09/21/00 - 06/30/01 (\$100,000, 43YABC039062). Renewal 7/1/2001-6/30/2002 (\$100,000). Renewal 7/1/2002-6/30/2003 (\$100,000).
83. IBM University Partner Program, E-Commerce: Visualization for Customer Relationship Management (\$40,000), 7/1999-7/2000.
84. Microsoft (\$30,000), Information Visualization Graduate Fellowship, 9/1/1999-8/30/2000.
85. National Science Foundation Digital Government Program (\$80,000), Citizen Access to Government Statistical Data in Tables, 08/15/99 - 07/31/01.
86. Intel (\$100,000), User Interfaces for Photo Libraries, 9/3/1999-9/2/2000, plus equipment grants (approx \$20,000 additional).
87. Toyota Support for Industrial Visitor (\$50,000), 5,2000-5/2001.
88. IBM University Partner Program, Extending Search Interfaces to Support Creative Exploration (\$40,000), 7/2000-7/2001.
89. Agilent Bio-informatics visualization, (\$35,000 + \$35,000), 2000 + 2001.
90. America Online Fellowship in Human-Computer Interaction, (\$35,000/year), 7/2000-7/2001. Awarded to Harry Hochheiser. Renewed 7/2001-7/2002. Renewed 7/2002-7/2003.
91. Ricoh Innovations, Inc., User Interfaces for Digital Photos (\$35,000), 3/2001. Addition (\$15,000), 9/2001.
92. National Science Foundation Information Technology Research (PI-John Robinson, Sociology, \$2.7Million, IIS-0086143) Understanding the Social Impact of the Internet: A Multifaceted Multidisciplinary Approach (9/1/2000-9/1/2003).
93. National Science Foundation Digital Government Program (\$492,000, EIA 0129978) Integration of Data and Interfaces to Enhance Human Understanding of Government Statistics: Toward the National Statistical Knowledge Network, Supplement for AudioMap (\$50,000) (7/1/2002-6/30/2006).

94. Adobe, Inc. User Interfaces for Presenting Digital Photos (\$38,000), (1/2004).
95. America Online Fellowship in Human-Computer Interaction, (\$38,000/year), 7/2003-7/2004. Awarded to Bill Kules. Renewed 7/2004-7/2005. Renewed (8/2005-12/2005).
96. National Science Foundation (\$45,000, IIS-0527109) Workshop on Creativity Support Tools (5/1/2005-4/31/2006).
97. Microsoft Contribution to social computing research (\$15,000) 9/2005. Renewed (\$15,000) 9/2006. Renewed (\$47,000) 7/2008.
98. National Science Foundation (\$60,000, IIS-0633843) Developing Ethnographic Evaluations for Creativity Support Tools: A Case Study with Expert Users of a New Social Network Visualization (8/15/2006-8/14/2007).
99. Washington Hospital Center (\$100,000), Discovering Patterns of Events in Patient Histories (1/1/2007-12/31/2007).
100. Office of the Vice President for Research, University of Maryland. Yan Qu, Paul T. Jaeger, Jenny Preece, Ben Shneiderman, Ken Fleischmann, & Philip Fei Wu. University of Maryland Community Response Grid: Building Emergency Response Infrastructure (\$40,421), (5/2007-5/2008).
101. National Science Foundation (\$720,000, IIS-0705832) iOPENR--A Flexible Framework to Support Rapid Learning in Unfamiliar Research Domains (8/1/2007-7/31/2010). PI Bonnie Dorr, also includes J. Klavans, J. Lin, D. Radev.
102. National Cancer Institute (subcontract from iDOXsolutions, inc.) (\$100,235) Evaluating Cooperation Among NCI Partners, (2/11/08 - 8/31/08).
103. Washington Hospital Center (\$100,000) Discovering Patterns of Events in Medical Patient Records (1/1/2008-12/31/2008). Renewed (\$150,000) (1/1/2009-12/31/2009).
104. Lockheed Martin Corporation (\$100,000), Human-Computer Interaction Research (12/01/2008 - 12/01/2009). Add-on for Social networking (\$50,000).
105. TIBCO/Spotfire (\$40,000) Unrestricted Gift for Social Networking Visualization (8/28/2009-8/27/2010).
106. National Science Foundation (\$718,644, SBE-0915645)TLS: Science & Technology Innovation Concept Knowledge-base (STICK): Monitoring, Understanding, and Advancing the (R)Evolution of Science & Technology Innovations, Ping Wang, Ben Shneiderman, Yan Qu (9/1/2009-8/31/2012).
107. National Science Foundation (\$86,744, IIS-0956571) Proposal for Two NSF Workshops: Technology-Mediated Social Participation Jennifer Preece (PI), Peter Pirolli & Ben Shneiderman (co-PIs) (9/1/2009-8/31/2010).

k. Editorships

Editorial Board member -

Previous *ACM Transactions on Database Systems* (1974-80).

Hypermedia (1989-92)

HCI Abstracts (1990-91)

International Journal of Man-Machine Studies (1985-95)

ACM Transactions on Computer-Human Interaction (1992-95)

Empirical Software Engineering (1999-2002)

Journal of Digital Information (1997-2004)

ACM Interactions (1994-2007)

Current *International Journal of Human-Computer Interaction* (1988-).

Interacting with Computers (1989-)

Behaviour and Information Technology (1989-)

Information Visualization (2002-) Advisory Editor

Journal of Information Technologies and International Development (2003-)

Journal of Biomedical Discovery and Collaboration (BioMed Central) (2005-)

Foundations and Trends in Web Science (2005-)

Association for Information Systems (AIS) Advisory Board for

Transactions on Human-Computer Interaction (THCI) (2008-)

Editor - Book series, Human/Computer Interaction, Ablex Publishers,
(21 books published, list available on request).

Assistant Editor - *Information Processing and Management*, (1974-78).

Guest Editor - *Communications of the ACM*, Special Section on Ecological Studies of
Professional Programmers, (November 1988).

Special Issue Editor, Usability Engineering, *Empirical Software Engineering*, (March 1999),
with J. Scholtz.

Special Issue Editor, Web Navigation, *IT and Society* 1, 3 (March 2003), with Melody Ivory
and Jonathan Lazar, <http://www.stanford.edu/group/siqss/itandsociety/v01i03/>

l. Other Comments

My current research interests are in the human-computer interaction, human factors of designing user interfaces, information visualization, and interactive information systems. I maintain an awareness of hypertext and database systems research and more generally my concern is with high level problem solving and learning, and the impact of computers on society.

Active involvement in the work of the Association for Computing Machinery and participation in numerous conferences have been extremely satisfying. Interaction with people in the classroom or at a convention is always a stimulating, exciting experience.

My nonacademic pursuits include traveling, skiing and an active interest in the arts. My strong interest in photography has led to two one-man exhibitions in New York and an exhibit entitled "Candid Photos of Computer Scientists" at the ACM Computer Science Conference in St. Louis, February 1981. I try to avoid narrow specialization and find an energetic, dynamic, eclectic style to

be more rewarding and productive. My pleasure has been to work with colleagues in application areas such as libraries, museums, legal databases, transportation, and most recently microarray gene chip expression data analysis.

3. Teaching and advising

a. Courses taught

Course No.	Description	Semester	Enrollment
CMSC498F	Human factors in computer and information systems	Fall 83	44
CMSC424	Database design	Spring 84	40
CMSC434	Human factors in computer and information systems	Fall 84	34
CMSC434	Human factors in computer and system information	Spring 85	16
CMSC424	Database design	Fall 85	36
CMSC434	Human factors in computer and information systems	Spring 86	26
CMSC434	Human factors in computer and information systems	Fall 87	9
CMSC434	Human factors in computer and information systems	Spring 88	21
CMSC828S	User interface design	Fall 88	12
CMSC434/828	Human factors in computer and information systems	Spring 89	12
CMSC112	Introduction to Computer Science	Spring 90	100
CMSC434/828	Human factors in computer and information systems	Fall 90	20
CMSC498A	Computers and Society	Spring 91	30
CMSC828S	User interface design seminar	Spring 91	3
CMSC434/828	Human factors in computer and information systems	Fall 91	17
CMSC112	Introduction to Computer Science	Spring 92	40
CMSC424	Database Systems	Fall 92	40
CMSC434/828	Human factors in computer and information systems	Spring 93	25
CMSC828S	Virtual Reality, Telepresence & Beyond	Fall 93	30
CMSC112	Introduction to Computer Science	Spring 94	12
CMSC434	Human factors in computer and information systems	Fall 94	38
CMSC434	Human factors in computer and information systems	Fall 95	40
CMSC434	Human factors in computer and information systems	Spring 97	37
CMSC 828/838	Information Visualization	Fall 97	10
CMSC434	Human factors in computer and information systems	Spring 98	38

MSWE 613	Usability Engineering	Fall 98	40
CMSC434	Human factors in computer and information systems	Spring 99	42
CMSC 828/838	Information Visualization	Fall 99	12
CMSC434/838	Human factors in computer and information systems	Spring 2000	40
CMSC434/838	Human factors in computer and information systems	Spring 2001	44
CMSC838S	Advanced Usability-Mobile devices	Fall 2001	9
CMSC434/838	Human factors in computer and information systems	Spring 2002	34
CMSC838S	Advanced Usability-Creativity Support Tools	Fall 2002	7
CMSC434	Human factors in computer and information systems	Spring 2004	41
CMSC434	Human factors in computer and information systems	Fall 2004	50
CMSC 838S	Information Visualization	Spring 2005	16
CMSC434	Human factors in computer and information systems	Fall 2005	44
CMSC 838S	Information Visualization	Spring 2006	19
CMSC434	Human factors in computer and information systems	Fall 2006	31
CMSC 734	Information Visualization	Spring 2007	24
CMSC 734	Information Visualization	Spring 2008	23
CMSC434	Introduction to HCI	Fall 2008	36
CMSC 734	Information Visualization	Fall 2009	

(iv) **Independent study:** List available on request.

f. Advising: research direction

(ii) Master's Student	Thesis Title	Date
Alan Laverson	Menu selection systems jump-ahead techniques: Evaluation of type-ahead vs. direct access methodologies	5/1985
Lawrence Koved	Restructuring textual information for online retrieval	8/1985
Gupta Pradeep	Evaluation of user interface for computer based communication	12/1985
Joe Reisel	The effects of display size on program comprehension	5/1986
Dan Ostroff	Selection systems: Interactive devices and strategies	5/1986
Richard Seabrook	User interface for a hypertext program browsing system	12/1988
Jacob Lifshitz	Multiwindow display systems for a hypertext system	12/1989
Patricia Jones	Hypertext for educational applications	8/1990
Rodrigo Botafogo	Structural analysis of hypertexts	5/1991
William Weiland	A graphical query interface based on aggregation/generalization hierarchies	5/1991
Degi Young	A graphical filter/flow model for boolean queries:	

	An implementation and experiment	5/1992
Boon-Teck Kuah	Providing advisory notices for UNIX command users: Design, implementation, and empirical evaluations	12/1992
Vinit Jain	Data structures for dynamic queries	8/1993
David Turo	Enhancing treemap displays via distortion and animation: Algorithms and experimental evaluation	12/1993
Harsha Kumar	Browsing hierarchical data with multi-level dynamic queries and pruning	12/1994
Rohit Mahajan	Layout and textual consistency in user interfaces	5/1996
Irina Ceaparu	(No thesis)	5/2003
Gouthami Chintalapani	Temporal treemaps for visualizing time series data	5/2004
Jack Kustanowitz	(No Thesis)	5/2005
Joonghoon Lee	(No Thesis)	5/2008
Machon Gregory	Shape identification and ranking in temporal data sets	5/2009

(iii) Doctoral students

- Andrew Sears, Layout Appropriateness: Guiding user interface design with simple task descriptions (5/1993). (Prof & Chair, Dept of Information Systems, UMBC)
- Brian Johnson, Treemaps: Visualizing hierarchical and categorical data (12/1993). (eBay)
- David Carr, Specification methods for user interface objects (5/1995). Prof. Lulea Univ, died 2005).
- Eser Kandogan, Hierarchical multi-window management with elastic layout dynamics (8/1998). (IBM Research, Almaden, CA)
- Richard Potter, Pixel data access: Interprocess communication in the user interface for end-user programming and graphical macros (5/1999). (Researcher, Univ of Tokyo).
- Zhijun Zhang, (jointly with Victor Basili), Perspective-based usability inspection: empirical studies of efficacy (5/1999).
- Chris North, A user interface for coordinating visualizations based on relational schemata: Snap Together Visualization (5/2000). (Assoc Prof, Virginia Tech)
- Egemen Tanin, Exploration of large online data tables using generalized query previews (5/2001). (Asst Prof, Univ of Melbourne)
- Harry Hochheiser, Interactive graphical querying of time series and linear sequence data sets (5/2003). (Asst Prof. Towson Univ)
- Hyunmo Kang, Dynamic personal management and exploration of media using semantic regions: a spatial interface supporting user-defined mental models (12/2003). (Micro Strategy).
- Jinwook Seo, Information visualization design for multidimensional data: Integrating the rank-by-feature framework with hierarchical clustering, (5/2005). (Asst Prof. Seoul National Univ)
- William Kules, Supporting exploratory web search with meaningful and stable categorized overviews (5/2006). (Asst. Prof. Catholic Univ. of America)
- Haixia Zhao, Interactive sonification of abstract data - Framework, design space, evaluation, and user tool (5/2006). (Google)
- Aleks Aris, Visualizing & exploring networks with semantic substrates (8/2008)
- Adam Perer, Integrating statistics and visualization to improve exploratory social network analysis (5/2008). (Post-doc IBM Research).
- Georg Apitz (jointly with Jimmy Lin, on hold)
- David Wang, Electronic Health Records

Cody Dunne, Network visualization

g. Short courses (partial list)

University of Maryland University College, Center for Professional Development:
June 5-6, 1980, June 15-17, 1981, December 14-15, 1981, January 9-11, 1984, May 30-
June 1, 1984 (UCLA), January 8-10, 1985, May 29-31, 1985 (UCLA), January 13-17, 1986,
January 12-16, 1987, May 27-29, 1987 (UCLA), January 11-15, 1988, July 11-15, 1988
(UCLA), January 9-13, 1989, August 23-25, 1989 (UC Santa Cruz, CA), June 27-29, 1990,
July 9-11, 1990 (UC Santa Cruz, CA), January 14-15, 1991 (Univ. of Calgary).

4. Service

a. Professional

(i) Offices held in professional societies

Co-chair and Founder, Software Psychology Society (1975-96), more than 600 members.

Member, Association for Computing Machinery, National ACM Lecturer.

Member, International Commission on Human Aspects in Computing (1986-92)

Member of the Executive Committee of the Special Interest Group on
Computer-Human Interaction (SIGCHI) (1987-89).

Member of the Executive Committee of the USACM, Public Policy Group (199).

Member ACM SIGART, CAS, CHI, CSE, IR, MOD, PC, PLAN, SOFT.

Member, CODASYL Stored Data Definition and Translation Task Group (1973-76)
and Database Program Conversion Task Group (1977-80).

Senior Member, IEEE Society (2004 -)

Affiliate Member, IEEE Computer Society.

Member, Human Factors Society, Computer Systems Technical Group.

Program committee member for 28 conferences.

(ii) Reviewing activities for agencies: List available on request

(iii) Reviewing for journals and conferences: List available on request

b. University

Director of Departmental Colloquium (1982-1987) - Obtained corporate contributions,
arranged for speakers, prepared brochures, developed publicity, and arranged visits.

Chairman Appeals Committee, August 1984 Comprehensive Exam.

Member, Search Committee for MPSE Division Assistant Provost (1988).

Member Department Advisory Board (1984).

Annual Report Editor (1985).

Chairman, January 1985 Comprehensive Exam.

Member of Promotion Committee for Nicholas Roussopoulos (1989).

Member, Hiring and Tenure Committee for Gary Knott (1989).

Organizer for High School Day (April 1989).

Member, Campus Review Committee for the Center for Automation Research (1990).

Member, Undergraduate Studies Committee (1990-91).

Member Tenure committee for David Stotts (1990).

Member Systems Engineering Advisory Board (1990-).

Member, Faculty Senate (1990-93?)

Member Tenure committee for Richard Furuta (1991).

Chairman Tenure committee for Leo Mark (1991).

Chairman, January 1992 IP Comprehensive Exam.
 Member Information Processing Field Committee, Dept. of Computer Science.
 Member of Appointments, Promotions and Tenure Committee, Dept. of Computer Science.
 Liaison with College of Business (1982-).
 Liaison with College of Library and Information Services (1982-).
 Liaison with Department of Psychology (1982-).
 Member Steering Committee for AT&T Teaching Theater (1988-)
 Member University Senate (September 1991-September 1994).
 Member Search Committee: Dean of College of Library and Information Services (1992-93).
 Chair, Instructor Evaluation Criteria Committee (1994-95).
 Member Promotion Committee for Yiannis Aloimonos (1997)
 Member, University Senate (1997- 2000)
 Member, College of Library and Information Services, Search Committee (1998-99)
 Member Search Committee: Dean of College of Library and Information Services (2000-2001)
 Chair of Software Engineering & Programming Languages Field Committee (2000-2001)
 Chair Dept of Computer Science Distinguished Lecture Series (2002)
 Member, Hornbake Library Advisory Committee (2002-)
 Chair, Tenure Committee for Ben Bederson (2003)
 Member, CS Department Awards Committee (2004-)
 Member, Tenure Committee for Alison Druin (2004)
 Reviewer for 3-year renewal for Francois Guimbretiere (2005)
 Chair of Software Engineering & Programming Languages Field Committee (Fall 2005)
 Member Promotion Committee for Amitabh Varshney (2005)
 UMIACS Newsletter/Brochure (2006)
 HCIL Symposium (2006)
 Chair, Tenure Committee for Francois Guimbretiere (2007-2008)
 Member, Faculty Senate (2008-)
 Member, UMIACS Promotion Committee for Catherine Plaisant (2008-2009)
 Reviewer for Chau-Wen Tseng (2009)

Selected articles about Ben Shneiderman in the popular press, with web access:

Between the Columns, University of Maryland (March 2008)

<http://betweenthecolumns.org/2008/03/01/pioneering/>

User Experience Pioneers (Interview by T. Adlin, July 2007)

http://www.adlininc.com/uxpioneers/original_pioneers/ben_shneiderman.html

Interview by Ivo Weevers & Wouter Sluis (June 2004)

<http://www.ivowevers.nl/HCI/Docs/Weevers-Interview%20Ben%20Shneiderman.pdf>

The New Computing (Ubiquity, ACM Interview, 2003)

http://www.acm.org/ubiquity/interviews/b_shneiderman_3.html

A Visual Rather Than Verbal Future, Leslie Walker, *Washington Post* (May 9, 2002)

<http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A56499-2002May8¬Found=true>

Experts: Computers slouching toward usability, Mathew Schwartz, *Computerworld* (April 12, 2001)

http://www.computerworld.com/cwi/story/0,1199,NAV47_STO59553,00.html

Computer Controls? Save Your Breath, Anne Eisenberg, *New York Times* (November 2, 2000)

<http://www.nytimes.com/2000/11/02/technology/02NEXT.html>

*** Humans Unite! Tim Beardsley, *Scientific American* profile (March 1999)

<http://www.sciam.com/1999/0399issue/0399profile.html>

Banks that chat, and other irrelevancies, Carrie Shook, *Forbes Magazine* (April 20, 1998)

<http://www.forbes.com/forbes/1998/0420/6108224a.html>

The Passion to Know: An Interview with Ben Shneiderman, Amy Friedlander, *D-Lib Magazine* (September 1997).

<http://www.dlib.org/dlib/september97/09editorial.html>

Ben Shneiderman's biography appears in Marquis's *Who's Who in America*, *Who's Who in Science and Technology*, and *Who's Who in Education*. He is listed among the top 1000 creative people in the USA in the book: *1000: Richard Wurman's Who's Really Who* (2002).