

## Dr. Benjamin B. Bederson

University of Maryland, College Park  
Professor Emeritus, Computer Science

[bederson@umd.edu](mailto:bederson@umd.edu)  
[www.cs.umd.edu/~bederson](http://www.cs.umd.edu/~bederson)

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I have read the following and certify that it is a current and accurate statement of my professional record as of October 20, 2022.



### 1. PERSONAL INFORMATION

#### EDUCATION

9/89 – 6/92	<b>Ph.D., New York University, Computer Science Dept.</b>	<b>New York, NY</b>
9/87 – 8/89	<b>M.S., New York University, Computer Science Dept.</b>	<b>New York, NY</b>
9/82 – 6/86	<b>B.S., Rensselaer Polytechnic Institute, Computer Science Dept. Minor, Electrical Engineering</b>	<b>Troy, NY</b>

#### EMPLOYMENT

1/19 – Present	<b>Bederson Expert Services, Inc.</b> Technical consulting	<b>Windsor, MA</b>
1/98 – Present	<b>University of Maryland, Computer Science Dept./UMIACS</b> 7/19 – Present: Professor Emeritus, Computer Science Department. 4/14 – 6/18: Associate Provost of Learning Initiatives, and Executive Director of Teaching and Learning Transformation Center 4/13 – 4/14: Special Advisor to the Provost on Technology and Educational Transformation 8/11 – 6/19: Professor 9/04 – 7/11: Associate Professor 6/00 – 9/06: Director of the Human-Computer Interaction Lab (HCIL) 1/98 – 8/04: Assistant Professor	<b>College Park, MD</b>
1/06 – Present	<b>International Children’s Digital Library Foundation</b> Co-founder and Technical Director for this library of exemplary free online children’s books from around the world. 7/17 – present: President, secretary and treasurer	<b>Windsor, MA</b>
10/14 – Present	<b>Hazel Analytics, Inc.</b> Co-founder & Board member: regulatory data analytics 10/14 – 12/19: Chief Technology Officer	<b>Seattle, WA</b>
9/06 – 10/14	<b>Zumobi, Inc.</b> Co-founder of VC-funded startup for mobile apps and advertising. 9/06–1/08: VP Client Technologies 1/08–10/14: Chief Scientist	<b>Seattle, WA</b>
6/03 – 11/08	<b>Windsor Interfaces, Inc.</b> Founder: Small company to commercialize HCIL products.	<b>Chevy Chase, MD</b>
1/95 – 8/97	<b>University of New Mexico, Computer Science Department</b> Assistant Professor in the Computer Science Department.	<b>Albuquerque, NM</b>
9/92 – 8/94	<b>Bell Communications Research (Bellcore)</b> Research Scientist in Computer Graphics and Interactive Media group.	<b>Morristown, NJ</b>
6/93 – 7/94	<b>New York University, Media Research Laboratory</b> Visiting Research Scientist.	<b>New York, NY</b>

9/90 – 8/92	<b>Vision Applications, Inc.</b> Research Scientist.	<b>New York, NY</b>
9/88 – 6/90	<b>New York University, Computer Science Department</b> Teaching Assistant.	<b>New York, NY</b>
1/87 – 5/87	<b>North Slope Borough/North Slope Higher Education Center</b> Instructor. Taught Computers & Society to rural Eskimo population.	<b>Barrow, AK</b>

## 2. RESEARCH, SCHOLARLY, AND CREATIVE ACTIVITIES

Note about publications:

- In all references, my name is in bold.
- Authors are displayed as published. Authors are usually listed in order of decreasing contribution – except that sometimes the last author is the lead advising faculty member. I put an asterisk next to my name when I served that role.
- Students that I supervised are underlined.

### A. BOOKS

#### i. Authored Books

1. Herrnson, P.S., Niemi, R.G., Hanmer, M.J., **Bederson, B. B.**, Conrad, F.G., Traugott, M., (2008) “Voting Technology and the Not-So-Simple Act of Casting a Ballot,” *Brookings Institute Press*.

#### ii. Edited Collections

1. Teevan, J., Jones, W., **Bederson, B. B.** (Eds.) (2006) *Communications of the ACM (CACM)*, Editors of special issue on “Personal Information Management”, 49 (1), ACM Press.
2. **Bederson, B. B.**, Shneiderman, B. (Eds.) (2003). *The Craft of Information Visualization: Readings and Reflections*. San Francisco: Morgan Kaufmann.

#### iii. Book Chapters

1. Fails, J., Druin, A., **Bederson, B. B.**, Weeks, A., & Rose, A. (2009) A Child’s Mobile Digital Library: Collaboration, Community and Change. Druin, A. (Ed.) *Mobile Technology for Children: Designing for Interaction and Learning*, Morgan Kaufmann Press.
2. Herrnson, P.S., Niemi, R.G., Hanmer, M.J., **Bederson, B. B.**, Conrad, F.G., Traugott, M.W. (2008) The Current State of Electronic Voting in the United States. Chen, H., Brandt, L., Dawes, S., Gregg, V., Hovy, E., Macintosh, A., Traunmüller, R., Larson, C. (Eds.) *Digital Government: Advanced Research and Case Studies*, Springer, 157-180.
3. Karlson, A., **Bederson, B. B.**, & Contreras-Vidal, Jose L. (2007) Understanding One Handed Use of Mobile Devices. Lumsden, Jo (Ed.), *Handbook of Research on User Interface Design and Evaluation for Mobile Technology*, Idea Group Reference, 86-101.
4. Hutchinson, H., Druin, A., **Bederson, B. B.** (2007) Designing Searching and Browsing Software for Elementary-Age Children. Lazar, J. (Ed.), *Universal Usability*. John Wiley. 1618-1630.
5. Druin, A., **Bederson, B. B.**, Boltman, A., Muira, A., Knotts-Callahan, D., & Platt, M. (1999). Children As Our Technology Design Partners. A. Druin (Ed.), *The Design of Children's Technology* (51-72). San Francisco: Morgan Kaufmann.
6. Hollan, J. D., **Bederson, B. B.**, & Helfman, J. (1998). Information Visualization. Helander, M., Landauer, T. K., & Prabhu, P. V. (eds.), *The Handbook of Human Computer Interaction* (Chap. 2, 33-48). Amsterdam: Elsevier Press.
7. **Bederson, B. B.**, Hollan, J. D., Stewart, J., Rogers, D., Druin, A., Vick, D., Ring, L., Grose, E., & Forsythe, C. (1997). A Zooming Web Browser. C. Forsythe, J. Ratner, & E. Grose (eds.), *Human Factors and Web Development* (Chap. 19, 255-266). New Jersey: Lawrence Erlbaum.

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8. **Bederson, B. B.**, & Druin, A. (1995). Computer Augmented Environments: Physical Spaces to Enrich Our Lives. Jakob Nielsen (eds.), *Advances in Human-Computer Interaction* (Vol. 5, Chap. 2, 37-66). New Jersey: Ablex Press.
  9. **Bederson, B. B.**, Wallace, R. S., & Schwartz, E. L. (1993). A Miniaturized Space-Variant Active Vision System: Cortex-I. Richard Mammone (eds.), *Artificial Neural Networks for Speech and Vision*. Chapman-Hall Publishers.
  10. Wallace, R. S., Ong, P.-W., **Bederson, B. B.**, & Schwartz, E. L. (1993). Connective Graphs in Space-Variant Active Vision. George A. Bekey & Ken Goldberg (eds.), *Neural Networks in Robotics*. Kluwer Academic Publishers.

## B. REFEREED ARTICLES

### i. Journals

1. **Bederson, B. B.**, Jin, G. Z., Leslie, P., Quinn, A. J., Zou, B. (2017) "Incomplete Disclosure: Evidence of Signaling and Countersignaling", in *American Economic Journal: Microeconomics*, (in press).
2. Anderson, L. B., Gardner, E. E., Wolvin, A., Kirby-Straker, R., Yalcin, A., & **Bederson, B. B.\*** (2016), "Incorporating Learning Analytics into Basic Course Administration: How to Embrace the Opportunity to Identify Inconsistencies and Inform Responses", in *Journal of the Association for Communication Administration*, 35 (1), Winter-Spring 2016, pp 2-14.
3. Lee, T. Y., **Bederson, B. B.\*** (2016) "Give the people what they want: studying end-user needs for enhancing the web", *PeerJ Computer Science*, Nov, 2016, 2:e91 <https://doi.org/10.7717/peerj-cs.91>
4. Yalcin, M. A., Elmqvist, N. & **Bederson, B. B.\***. (2015) "AggreSet: Rich and Scalable Set Exploration using Visualizations of Element Aggregations". in *IEEE Transactions on Visualization and Computer Graphics*, 22(1), 688–697, 2015.
5. Hu, C., Resnik, P., & **Bederson, B. B.\*** (2014) "Crowdsourced Monolingual Translation", in *ACM Transactions on Computer-Human Interaction (TOCHI)*, 21 (4), Aug 2014, pp. 22:1–22:35.
6. Lee, T.Y., Mauriello, M., Ahn, J. & **Bederson, B. B.\*** (2014) "CTArcade: Computational Thinking with Games in School Age Children", in *International Journal of Child-Computer Interaction*, 2 (1), Jan 2014, 26–33.
7. Bonsignore, E., Quinn, A. J., Druin, A. & **Bederson, B. B.\*** (2013) "Sharing Stories 'In The Wild': A Mobile Storytelling Case Study using StoryKit", in *Transactions on Computer-Human Interaction (TOCHI)*, ACM, 20 (3), July 2013, Article 18.
8. Resnik, P., Buzek, O., Kronrod, Y., Hu, C., Quinn, A.J. & **Bederson, B. B.** (2013) "Using Targeted Paraphrasing and Monolingual Crowdsourcing to Improve Translation", in *Transactions on Intelligent Systems and Technology*, ACM, 4 (3), July 2013, Article 38, 21 pages.
9. **Bederson, B. B.** (2011) "The Promise of Zoomable User Interfaces", in *Behaviour & Information Technology*, Taylor & Francis, Nov-Dec 2011, 30 (6), 853-866.
10. Druin, A., **Bederson, B. B.**, Rose, A., Weeks, A. (2009) "From New Zealand to Mongolia: Co-Designing and Deploying a Digital Library for the World's Children", in *Children, Youth and Environments*, University of Colorado, 19 (1), 34-57.
11. Conrad, F.G., **Bederson, B. B.**, Lewis, B., Peytcheva, E., Traugott, M.W., Hanmer, M.J., Herrnson, P.S., & Niemi, R.G. (2009) "Electronic voting eliminates hanging chads but introduces new usability challenges", in *International Journal of Human-Computer Studies (IJHCS)*, Elsevier Press, 67 (1), 111-124.
12. Hanmer, M.J., Park, W-H., Traugott, M.W., Niemi, R.G., Herrnson, P.S., **Bederson, B. B.**, and Conrad, F.C. (2008) "Losing Fewer Votes: The Impact of Changing Voting Systems on Residual Votes", in *Political Research Quarterly*, Sage Publications, September, 2008. doi:10.1177/1065912908324201.
13. **Bederson, B. B.**, Clamage, A., Plaisant, C. (2008) Enhancing In-Car Navigation Systems with Personal Experience, in *Transportation Research Record (TRR)*, The National Academies, 2064 (2008) 33-42.

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14. Herrnson, P.S., Niemi, R.G., Hanmer, M.J., Francia, P.L., **Bederson, B. B.**, Conrad, F.G., Traugott, M. (2008) Voter's Evaluations of Electronic Voting Systems: Results from a Usability Field Study, *American Politics Research*, Sage Journals, 36 (4), July 2008, 580-611.
  15. Cockburn, A., Karlson, A., & **Bederson, B. B.\*** (2008) A Review of Overview+Detail, Zooming, and Focus+Context Interfaces, *ACM Computing Surveys*, ACM Press, December 2008, 41 (1).
  16. Kang, H., **Bederson, B. B.**, & Suh, B. (2008) Capture, Annotate, Browse, Find, Share: Novel Interfaces for Personal Photo Management, *International Journal of Human-Computer Interaction (IJHCI)*, 23 (3), 1-23.
  17. Parr, C.S., Lee, B., **Bederson, B. B.\*** (2007) EcoLens: Integration and Interactive Visualization of Ecological Datasets, *Journal of Ecological Informatics*, Elsevier, 2 (1), 61-69.
  18. Suh, B., and **Bederson, B. B.\*** (2007) Semi-Automatic Photo Annotation Strategies Using Event Based Clustering and Clothing Based Person Recognition, *Interacting With Computers*, Elsevier, 19 (4), 524-544.
  19. Hutchinson, H., **Bederson, B. B.**, Druin, A., (2007) Supporting Elementary-Age Children's Searching and Browsing: Design and Evaluation Using the International Children's Digital Library, *Journal of the American Society for Information Science and Technology*, John Wiley & Sons, 58 (11), 1618-1630.
  20. Kang, H., Plaisant, C., Lee, B., **Bederson, B. B.\***, (2007) NetLens: Iterative Exploration of Content-Actor Network Data, *Information Visualization*, Palgrave Macmillan, 6 (1), 18-31.
  21. Lee, B., Parr, C.S., Plaisant, C., **Bederson, B. B.**, Veksler, V.D., Gray, W.D., Kotfila, C. (2006) TreePlus: Interactive Exploration of Networks with Enhanced Tree Layouts, *IEEE Transactions on Vision and Computer Graphics (TVCG)*, IEEE Press, 12 (6), 1414-1426.
  22. Plaisant, C., **Bederson, B. B.**, Clamage, A., Hutchinson, H.B., Druin, A. (2006) Shared Family Calendars: Promoting Symmetry and Accessibility, *Transactions on Computer-Human Interaction*, New York: ACM, 13 (3), 313-346.
  23. Shneiderman, B., **Bederson, B. B.**, and Drucker, S., (2006) Find that photo! Interface strategies to annotate, browse, and share, *Communications of the ACM*, 49 (4), 69-71.
  24. Hutchinson, H.B., Rose, A., **Bederson, B. B.**, Weeks, A.C., Druin, A. (2005) The International Children's Digital Library: A Case Study in Designing for a Multi-Lingual, Multi-Cultural, Multi-Generational Audience, *Information Technology and Libraries*, 24 (1), 4-12.
  25. Herrnson, P.S., **Bederson, B. B.**, Lee, B., Francia, P. L., Sherman, R.M., Conrad, F.G., Traugott, M., Niemi, R.G. (2005) Early Appraisals of Electronic Voting, *Social Science Computing Review*, 23 (3), 274-292.
  26. Hourcade, J. P., **Bederson, B. B.**, Druin, A., & Guimbretière, F. (2004) Differences in pointing task performance between preschool children and adults using mice, *Transactions on Computer-Human Interaction*, New York: ACM, 11 (4), 357-386.
  27. Parr, C. S., Lee, B., & **Bederson, B. B.\*** (2004). Visualizations for Taxonomic and Phylogenetic Trees. *Bioinformatics*, Oxford University Press, 20 (17), 2997-3004.
  28. **Bederson, B. B.**, Grosjean, J., Meyer, J. (2004) Toolkit Design for Interactive Structured Graphics, *Transactions on Software Engineering*, New York: IEEE, 30 (8), 535-546.
  29. Chipman, L. E., **Bederson, B. B.**, Golbeck, J. A. (2004) SlideBar: Analysis of a Linear Input Device. *Journal of Behaviour and Information Technology*, London, Taylor & Francis, 23 (1), 1-9.
  30. **Bederson, B. B.**, Clamage, A., Czerwinski, M. P., & Robertson, G. G. (2004) DateLens: A Fisheye Calendar Interface for PDAs, *Transactions on Computer-Human Interaction*, New York: ACM, 11 (1), 90-119.
  31. Hourcade, J. P., **Bederson, B. B.**, & Druin, A. (2004) Building KidPad: An Application for Children's Collaborative Storytelling, *Software: Practice & Experience*, New Jersey: John Wiley & Sons, Ltd, 34 (9), 895-914.
  32. Druin, A., **Bederson, B. B.**, Weeks, A., Farber, A., Grosjean, J., Guha, M. L., Hourcade, J. P., Lee, J., Liao, S., Reuter, K., Rose, A., Takayama, Y., & Zhang, L. (2003). The International Children's Digital Library: Description and Analysis of First Use. *First Monday*, 8(5).

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33. Druin, A., Revelle, G., **Bederson, B. B.**, Hourcade, J. P., Farber, A., Lee, J., & Campbell, D. (2003) A Collaborative Digital Library for Children: A Descriptive Study of Children's Collaborative Behavior and Dialogue. *The Journal of Computer-Assisted Learning*, 19 (2), 239-248.
  34. Hourcade, J.P., **Bederson, B. B.**, Druin, A., Rose, A., Farber, A., Takayama, Y. (2003). The International Children's Digital Library: Viewing Digital Books Online. *Interacting with Computers*, Elsevier Press, 15 (3), 151-167.
  35. Hornbæk, K., **Bederson, B. B.**, & Plaisant, C. (2002) Navigation Patterns and Usability of Zoomable User Interfaces With and Without an Overview, *ACM Transactions on Computer-Human Interaction*, 9 (4), 362-389.
  36. **Bederson, B. B.**, Shneiderman, B., & Wattenberg, M. (2002) Ordered and Quantum Treemaps: Making Effective Use of 2D Space to Display Hierarchies, *ACM Transactions on Graphics*, 21 (4), 833-854, ACM Press. – **Won 2021 IEEE Vis Test of Time Award in InfoVis**, <http://ieevis.org/year/2021/info/awards/test-of-time-awards>.
  37. Good, L., & **Bederson, B. B.\*** (2002) Zoomable User Interfaces as a Medium for Slide Show Presentations, *Information Visualization*, Palgrave Macmillan, 35-49.
  38. Revelle, G., Druin, A., Platner, M., **Bederson, B. B.**, Hourcade, J.P., & Sherman, L. (2002) A Visual Search Tool for Early Elementary Science Students, *Journal of Science Education and Technology*, 11(1), 49-57.
  39. **Bederson, B. B.**, & Meyer, J. (1998). Implementing a Zooming User Interface: Experience Building Pad++. *Software: Practice and Experience*, 28(10), 1101-1135.
  40. **Bederson, B. B.**, Hollan, J. D., Perlin, K., Meyer, J., Bacon, D., & Furnas, G. W. (1996). Pad++: A Zoomable Graphical Sketchpad for Exploring Alternate Interface Physics. *Journal of Visual Languages and Computing*, 7, 3-31.
  41. **Bederson, B. B.**, Wallace, R. S., & Schwartz, E. L. (1995). A Miniaturized Space-Variant Active Vision System: Cortex-I. *Machine Vision and Applications*, 8 (2), 101-109.
  42. **Bederson, B. B.**, Wallace, R. S., & Schwartz, E. L. (1994). A Miniature Pan-Tilt Actuator: the Spherical Pointing Motor. *IEEE Transactions on Robotics and Automation*, 10(3), 298-308.
  43. Wallace, R. S., Ong, P.-W., **Bederson, B. B.**, & Schwartz, E. L. (1994). Space-Variant Image Processing. *International Journal of Computer Vision*, 13(1), 71-90.

## ii. Peer-Reviewed Published Full-Length Conference Papers

1. Yalçın, M. A., Elmqvist, N., & **Bederson, B. B.\*** (2017) Raising the Bars: Evaluating Treemaps vs. Wrapped Bars for Dense Visualization of Sorted Numeric Data, *Proceedings of Graphics Interface (GI 2017)*, 41-49. DOI: <https://doi.org/10.20380/GI2017.06>
2. Quinn, A., & **Bederson, B. B.\*** (2014) AskSheet: Efficient Use of Web Workers to Support Decision Making, *Proceedings of ACM CSCW (CSCW 2014)*, ACM Press, pp. 1456–1466.
3. Yeh, T., Chang, T-H., Xie, B., Walsh, G., Watkins, I., Wongsuphasawat, K., Davis, L.S., & **Bederson, B. B.\*** (2011) Creating Contextual Help for GUIs Using Screenshots, *Proceedings of ACM UIST (UIST 2011)*, ACM Press, 145-154.
4. Quinn, A., & **Bederson, B. B.\*** (2011) Human Computation: A Survey and Taxonomy of a Growing Field, *Proceedings of ACM CHI (CHI 2011)*, ACM Press, 1403-1412.
5. Resnik, P., Buzek, O., Hu, C., Kronrod, Y., Quinn, A.J., & **Bederson, B. B.\*** (2010) Improving Translation via Targeted Paraphrasing, *Proceedings of Conference on Empirical Methods in Natural Language Processing (EMNLP 2010)*, 127-137.
6. Hu, C., **Bederson, B. B.**, & Resnik, P. (2010) Translation by Interactive Collaboration between Monolingual Users, *Proceedings of Graphics Interface (GI 2010)*, 39-46.
7. Dearman, D., Karlson, A., Meyers, B., & **Bederson, B. B.** (2010) Multi-Modal Text Entry and Selection on Mobile Devices, *Proceedings of Graphics Interface (GI 2010)*, 19-26.

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