Barry G. Becker

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OBJECTIVE

Create software to analyze and visualize information.

EXPERIENCE

2/2016 - 3/2019: Senior Developer of ESI Mineset, **ESI-Group**
8/2014 - 2/2016: Senior Developer of Mineset, **SGI**

Redesigned legacy 3D native visualizations as 2D versions in a cloud app using Java, Javascript, and libraries like D3, jquery, bootstrap, and Backbone. Enabled visualization to work with "big data" by implementing viz aggregation in Scala on the server using Apache Spark. Replaced legacy MLC++ machine learning algorithms with Apache Spark implementations. Filed patents for pixel perfect rendering of bar charts, and 2D Naive Bayes Visualization. Added support for analysis of time series using SAX and Matrix Profile.

9/2007 - 8/2014: Technical Lead, **PROS, Inc**
3/2006 - 9/2007: Senior Developer, **PROS, Inc**

Designed and implemented interactive pricing specific charts and reports for the Scientific Analytics product. Some of the custom visualizations implemented in Flex/Actionscript/Javascript were: HeatMap, DemandSensitivity, Waterfall, BandAnalysis, PivotTable, MarginDrivers, and GoalsView. Helped implement generic view editor for configuring analytics views. Experience with Hadoop, Impala, Mahout, SaaS, odata4j, D3, gradle.

10/2004 - 2/2006: Senior Software Engineer, **Metreo, Inc**

Designed and implemented interactive pricing specific SVG charts and reports for the Vision product. Built widgets for a dynamic AJAX based Flex-like user interface framework. Used these widgets to construct a deal analysis dashboard that could be embedded in other pricing applications.

5/2002 - 10/2004: Senior Visualization Engineer, **Blue Martini Software**
1/2000 - 5/2002: Manager, Data Visualization, **Blue Martini Software**

Helped develop several web-based applications including a customer profiler, expression builder, relationship marketing control graph applet, and Java web-start deployed visualization application. My group was responsible for introducing powerful interactive data exploratory tools that could export their results in easy to understand web-deployed reports. Worked closely with the data mining and analytical services group to ensure that our charting components addressed the needs of the customer, and were able to handle specialized e-commerce data. Built the tools in Java taking advantage of third-party libraries from OpenViz and Tom Sawyer.

9/1999 - 1/2000: Technical Lead on MineSet project, **SGI**
10/1995 - 9/1999: Software Engineer on MineSet project, **SGI**

Developer of 3D information visualization paradigms for MineSet. MineSet is a client/server application which combines machine learning with visualization. Created new visualization schemes for volumetric display of relational data, and for interacting with the results from various machine learning algorithms such as Naive Bayes classifiers, and decision table classifiers. Duties included: providing training, writing extensive documentation, preparing and analyzing datasets, and interacting with customers. Obtained 5 US Patents during the course of this work: US Pat. Numbers 5,861,891; 6,034,697; 5,930,803; 6,301,579; 6,373,483.
6/1998 - 9/1999: Oversaw the efforts of 5-7 visualization engineers and interns, and managed collaborative relationships with professors and graduate students at three Universities.

1/1993 - 10/1995: Computer Scientist, **Lawrence Livermore National Laboratory**

Investigated new techniques for vector field visualization as part of an internal research project. The results have been incorporated into a suite of Iris Explorer modules. Created a class hierarchy of mesh independent visualization algorithms for vector fields.

7/1990 - 12/1992: Student-Employee, **Lawrence Livermore National Laboratory**

Developed a method to smoothly transition between bump rendering algorithms so that scale changes during animation would be graceful. Presented a paper and an animation in SIGGRAPH '93.

3/1991 - 6/1991: Teaching Assistant, **UC Davis**.

Led discussions and graded exams for an introductory freshman computer science class.

6/1988 - 8/1989: GE intern, **General Electric CR&D**.

Encoded algorithms for computing and displaying applied potential tomography simulations using finite element methods. Also worked on developing the Over The Horizon radar project.

6/1987 - 8/1987: Courseware Developer, **RPI** (NSF fellowship).

Designed interactive software tutorials for a data structures course.

EDUCATION

MS in Computer Science, December, 1992, University of California, Davis.
BS in Mathematics, December, 1992, Rensselaer Polytechnic Institute, Troy, NY.
BS in Computer Science, May, 1990, Rensselaer Polytechnic Institute, Troy, NY.

OPEN SOURCE PROJECTS

bb4-simulations - A Scala framework for creating simulations for things like reaction diffusion, fractals, and fluid dynamics.

bb4-puzzles - A Scala puzzle framework with generator and solver implementations for puzzles like Sodoku, Hi-Q, Tantrix, and others.
bb4-games - A Java game playing framework. Uses AI search algorithms to allow computers to play against humans.
bb4-optimization - A collection of heuristic optimization algorithms used in many of my other projects.
bb4-Q-learning - A generic Q-learning library written in Scala.
TutorMatch - Uses Google Apps Script to match student tutors with those needing tutoring.
Executable versions of these projects deployed to http://barrybecker4.com/bb4-projects/ and source is at github.com/barrybecker4.

PUBLICATIONS & PRESENTATIONS

Speaker at Spark Summit 2017, San Francisco, Visualization of Enhanced Spark Induced Naive Bayes Classifier.

Brainerd, Jeffrey, Barry Becker, "E-Commerce Clickstream Visualization", *IEEE Information Visualization Symposium Proceedings*, Oct., 2001.

Camuto, Matthew, Roger Crawfis, Barry Becker, "Approximating Scatterplots of Large Datasets Using Nominal Splats", *Proceedings of Visual Data Exploration and Analysis VII*, Jan., 2000, San Jose CA.

Kurt Thearling, Barry Becker, Dennis DeCoste, Mill Mawby, Michel Pilote, and Dan Sommerfield, "Visualizing the Simple Bayesian Classifier", *Information Visualization in Data Mining and Knowledge Discovery*", edited by Usama Fayyad, Georges Grinstein, and Andreas Wierse, Morgan Kaufmann, 2001.

Becker, Barry, Ronny Kohavi, Dan Sommerfield, "Visualizing the Simple Bayesian Classifier", *Information Visualization in Data Mining and Knowledge Discovery*, edited by Usama Fayyad, Georges Grinstein, and Andreas Wierse, Morgan Kaufmann, 2001.

Becker, Barry, "Visualizing Decision Table Classifiers", *IEEE Information Visualization Symposium Proceedings*, p102-105, Oct., 1998.

Becker, Barry, "Volume Rendering for Relational Data",*IEEE Information Visualization Symposium Proceedings*, p87-90, Oct.,1997.

Becker, Barry, "Using MineSet for Knowledge Discovery", IEEE Computer Graphics &Applications, vol. 17, No. 4, p75-78, Aug., 1997.

Participant on the 'Information Shootout' Panel, organized by Georges Grinstein, IEEE visualization '96 and '97 conferences.

Becker, Barry, David Lane, Nelson Max, "Unsteady Flow Volumes",*Proceedings of Visualization '95*, Atlanta GA, Oct., 1995.

Max, Nelson, Barry Becker, "Flow Visualization using Moving Textures", Visualizing Time-Varying Data, ICASE/LaRC Symposium, Williamsburg VA, Sept., 1995.

Becker, Barry, "Grid Independent Flow Visualization", Presentation at the 4th SIAM conference on Geometric Design, Nashville TN, Nov., 1995. also presented as an invited talk at NASA Ames research facility, Oct, 1995.

Max, Nelson, Roger Crawfis, Barry Becker, "Applications of Texture Mapping and Flow Visualization", *Proceedings of GraphiCon '95*, St. Petersburg, Russia, July, 1995.

Crawfis, Roger, Nelson Max, Barry Becker, "Vector Field Visualization", *IEEE Computer Graphics & Applications*, vol. 14, No. 5, p50-56, Sept., 1994.

Stein, Clifford, Barry Becker, Nelson Max, "Sorting and Hardware Assisted Rendering for Volume Visualization", *Symposium on Volume Rendering*, ACM Press, New York, p83-89,Oct., 1994.

Max, Nelson, Roger Crawfis, Barry Becker, "New Techniques in Scalar and Vector Field Visualization", *Proceedings of the First Pacific Conference on Computer Graphics & Applications*, Pacific Graphics '93, vol. 1, Seoul, Korea, Aug., 1993.

Crawfis, Roger, Nelson Max, Barry Becker, Brian Cabral, "Volume Rendering of 3D Scalar and Vector Fields at LLNL", *Proceedings of Supercomputing '93*, p570-576, Nov., 1993.

Max, Nelson, Barry Becker, Roger Crawfis, "Flow Volumes for Interactive Vector Field Visualization", *Proceedings of Visualization'93*, San Jose, CA, p19-23, Oct., 1993.

Becker, Barry, Nelson Max, "Smooth Transitions between Bump rendering Algorithms", *Proceedings of SIGGRAPH 1993*, Computer Graphics, p183-190, Aug., 1993.

Becker, Barry, "Smooth Transitions between Rendering Algorithms During Animation", Masters Thesis, University of California at Davis, LLNL, Dec., 1992.

Max, Nelson, Barry Becker, "Bump Shading for Volume Textures", *IEEE Computer Graphics & Applications*, Vol. 14 No.4, p18-20, July, 1992.

Glinert, Ephraim, Meera Blattner, Barry Becker, "Techniques for Interactive 3-D Scientific Visualization", Technical Report, Rensselaer Polytechnic Institute, Dec., 1990.

Hussain, Moayyed, Ben Noble, Barry Becker, "Finite Element Analysis for an Inverse Problem in Electrical Tomography", ASME International Computers in Engineering Conference & Exhibit, Anaheim, CA, July, 1989.

Hussain, Moayyed, Ben Noble, Barry Becker, "Network Analogy for the Inverse Problems of Applied potential and Electrical Current Tomography", *Bioheat Transfer*, ASME annual meeting, San Francisco, CA, Dec., 1989.

REFERENCES Available upon request.