

Sam Steingold

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Summary: PhD Mathematician with experience in data mining, statistical analysis, quantitative analysis, pattern recognition, mathematical modeling, software and algorithm design and development and more.

Skills:

Applied Mathematics - mathematical modeling using information theory, graph/social network theory, differential equations, geometry, statistical analysis, stochastic processes, regression analysis, neural networks.

Software Development - designed and developed numerous software packages, some of which are available on the Internet via the WWW (see attachment and Employment history).

Operating Systems: UNIX: SysV (Linux, Solaris), BSD (SunOS); DOS/Windows 3.1/95/98/NT; RSX.

Programming Languages: C/C++/Java; Perl; Lisp/Scheme; SAS; Python; Matlab/Maple/Mathematica; Pascal; Fortran; Modula-2; Basic.

Web Technology: HTML, XML, XSL, Javascript, CSS.

Research and Presentation - conducted independent and joint research, wrote papers and gave talks on the results.

Employment history:

- **BAE Systems AIT** (Burlington, MA), Lead Research Engineer June 2003 - present

BAE Systems AIT – formerly ALPHATECH – is a leader in developing sophisticated mathematical and knowledge-based algorithms

Worked on group discovery and vertex classification in large simulated social networks.

Developing adaptive computer network protocol optimization.

Algorithms implemented on **Common Lisp** and **C++**.

- **Premonitia, Inc** (Acton, MA), Principal Mathematical Engineer April 2002 - October 2002

Premonitia tried to predict network faults before they actually happen until it shutdown

Developed the methodology to identify the kind of fault being predicted (system crash versus link down etc).

Algorithms implemented in **Matlab**, **C/C++**.

- **Xchange, Inc** (Boston, MA), Senior Analyst July 1999 – February 2002

Xchange was a leading CVM (Customer Value Management) software provider until it shutdown

Took an active part in consulting and pre-sale engagements, built predictive models for cross-sell and attrition based on neural networks and Bayesian learning, worked closely with the clients on problem specification.

Implemented a Bayesian learning algorithm with boosting and many other data analysis, cleaning, processing and transformation tools in **Java**, **Perl**, **Common Lisp**, **SAS** and **C**.

Participated in the **PMML** standardization process with the **DMG**.

- **Eagle Trading Systems** (Princeton, NJ), Quantitative Analyst July 1997 – June 1999

Eagle is a small futures trading company, a CTA (Commodities Trading Advisor)

Designed and developed technical futures trading systems and hedging strategies based on pattern recognition (channel identification). Conducted performance analysis for a market-neutralized futures trading system.

Algorithms implemented in **Common Lisp**.

- **Parametric Technology Corp** (Waltham, MA), Software Engineer July 1996 – June 1997

PTC is a CAD/CAM software industry leader

Developed various geometric creation and analysis algorithms and implemented them in **C** in a cross-platform environment, which included all major UNIX implementation as well as Windows NT.

- **UCLA Mathematics Department** (Los Angeles, CA), Sloan Research Fellow 1995 – 1996

Conducted research in the area of differential geometry, metric invariants of Alexandrov spaces, and comparison geometry with various curvature bounds.

Algorithms implemented in **Mathematica**, **Matlab** and **Maple**.

- **UCLA Mathematics Department** (Los Angeles, CA), Research and Teaching Assistant 1992 – 1995
Taught lower and upper division classes (Differential Equations, Differential Geometry, Analysis)
- **Manufacturing Research Corporation** (Moscow, Russia), Research Analyst 1991 – 1992

MRC was a leading Russian car industry research institution

Developed a statistical method for analysis of the dependence of the car parts' precision quality on the manufacturing process, material and other 14 factors. Developed a software system implementing the statistical analysis method and evaluated the technical standards used in car manufacturing.

Education:

- **University of California** (Los Angeles, CA), Department of Mathematics Sept 1992 – June 1996
GPA: 4.0. **MA** in Mathematics – June 1993, **PhD** in Mathematics – June 1996.
- **Moscow Aviation Institute** (Russia), Department of Applied Math and CS Sept 1986 – Feb 1992
GPA: 3.9. **BS/MS** in Applied Mathematics and Computer Science – Feb 1992.

Achievements: The list of publications, conferences, languages, and software attached.

Sam Steingold - attachment

Honors:

- Five time winner of the Moscow Aviation Institute Student Mathematical Competition (1987-91).
- First Prize, Advanced Probability/Statistics Competition, Moscow Aviation Institute, 1990.
- Second Prize, Moscow City Student Mathematical Competition, 1989.
- Member, MAA (Mathematical Association of America).
- Member, ACM SIGKDD.
- Alfred P. Sloan Dissertation Year Fellowship 1995/96 (one of the most prestigious national fellowships in mathematics).

Independent software development:

- GNU Emacs - as a pre-tester, fixed numerous bugs and added some features, such as a package for automated maintenance of the add-on software etc. [1994-now]
- CLISP - an ANSI Common Lisp implementation; one of the maintainers, added some major functionality, such as PostgreSQL interface, multiple valued places, worked on standards compliance. [1997-now]
- SCWM - a Scheme-configurable X Window Manager; one of the maintainers, added some modules and an Emacs interface. [1997-1999]
- CLOCC - the Common Lisp Open Code Collection; one of the founders, maintain port (the cross-implementation portability package) and c1lib (the Common Lisp extension library). [1998-now]
- Implemented in **Lisp** a simple neural network and an *animals* player based on it. [1999-now]
- Developed an integrated software package facilitating foreign language learning. The package contained a **UNIX Shell** script, a **Perl** script and a **C** program. [1992-1995]
- Designed and implemented in **C++** a package integrating an interactive tool for John Horton Conway's evolution simulation game "life", and games Mastermind and Battleship. [1994-1995]
- Developed a transliteration/encoding program for Internet e-mail transmission (implemented in **C**). Originally designed for Cyrillic, it can be used for any non-ASCII character set. [1994-now]
- Designed and implemented in **C** a command line interface to a database created by a Lisp package. This involved heavy string parsing and optimization. [1995-1997]
- Designed a command line HTTP interface, and, based on it, a system for querying servers for stock quotes, keeping the history and graphing it using third party software via IPC. Implemented in **C**, **Perl**, **Java** (with a GUI) and **Lisp**. [1995-now]
- Designed and implemented in **Java** a GUI for interactive map creation via the WWW. [1997]
- Designed and implemented in **Java** an IMAP command-line client for mail retrieval automation. [1999-2000]

Publications:

1. Semion Shteingold, "Smoothness of Generalized Solutions of Boundary Value Problem for Functional-Differential Equations", *Uspehi Mat. Nauk - (in Russian)*, 46 (1991), no. 3(279), 203-204.
2. Semion Shteingold, "One Solution of the Pentagon Problem", *J. of Math. Behavior*, 13 (1994), 299-302.
3. Semion Shteingold, "Volume comparison for Alexandrov spaces", *Indiana U. Math. J.*, 43 (1994), no. 4, 1349-1357.
4. Semion Shteingold, "Covering Radii and Paving Diameters of Alexandrov Spaces", *J. of Geometric Analysis*, 8 (1999), no. 4, 613-627.
5. Peter Petersen, Semion Shteingold, Guofang Wei, "Comparison Geometry with Integral Curvature Bounds", *GAFA* 7 (1997) 1011-1030.
6. Gregory Piatetsky-Shapiro, Sam Steingold, "Measuring Lift Quality in Database Marketing", *SIGKDD Explorations*, Vol. 2:2, (2000), 81-86.
7. Samuel Steingold, Richard Wherry, Gregory Piatetsky-Shapiro, "Measuring Real-Time Predictive Models", *ICDM2001*.
8. J.V. White, G. Colby, S. Steingold. "Threat-Detection Performance On Wet-Run Data." EAGLE miniTIE workshop, August 2, 2004.
9. J.V. White, S. Steingold, C. Fournelle. "Performance Metrics for Group-Detection Algorithms." Presented at Interface 2004, Baltimore, MD, May 29, 2004.

10. S. Steingold, C. Fournelle, J.V. White. "Clustering and Threat Detection". Presented at 2005 AAAI Spring Symposium on AI Technologies for Homeland Security, Stanford University, March, 2005.

Conferences Attended:

- Micro Program in Riemannian Geometry; Fields Institute for Research in Mathematical Sciences, Ontario, Canada; August 1993.
- Workshop on Comparison Geometry; Mathematical Sciences Research Institute, Berkeley, CA; October 1993.
- 4th Southern California Geometric Analysis Seminar, UC Irvine, CA; February 1995.
- GeomFest 1995; SUNY Stony Brook, NY; April 1995.
- Summer School on Geometry and Physics; Odense University, Denmark; July 1995.
- Mathematics and Finance Conference, Institute for Advanced Studies, Princeton, NJ; September 1997.
- SAS Conference on Data Mining Methods; Cary, North Carolina; September 1999.
- 6th ACM SIGKDD Conference on Knowledge Discovery and Data Mining; Boston, MA; August 2000.
- BioITWorld - the 1st Information Technology for Life Sciences Conference, Boston, MA; March 2002.
- Spam Conference, MIT, Cambridge, MA; January 2003.
- BioITWorld - the 2nd Information Technology for Life Sciences Conference, Boston, MA; March 2003.
- 9th ACM SIGKDD Conference on Knowledge Discovery and Data Mining; Washington, DC; August 2003.
- 10th ACM SIGKDD Conference on Knowledge Discovery and Data Mining; Seattle, WA; August 2004.
- BioITWorld - the 4th Information Technology for Life Sciences Conference, Boston, MA; April 2005.
- 11th ACM SIGKDD Conference on Knowledge Discovery and Data Mining; Chicago, IL; August 2005.

Invited Addresses:

- International Student Conference, MAI, 1990.
- Department of Mathematics, Tufts University, 1996.
- ALPHATECH Inc, 2003.

Languages: English (fluent), Russian (native), French (reading), German (reading).