

Andreas S. Weigend, PhD

303 East Pike Street #401  
Seattle, WA 98122, USA

+1 (917) 697-3800

aweigend@stanford.edu  
www.stanford.edu/~aweigend

## Summary

---

### *Current Employment*

---

**Amazon.com**, Chief Scientist

Seattle, WA

- Responsible for research in machine learning and computational marketing
- In charge of development and strategic application of analytic approaches throughout the firm
- Applications include real-time predictions of customer intent and satisfaction, actionable models of shopping behavior, personalization and long-term optimization of pricing and promotions
- Point person for relations with academic and other external researchers

**Stanford University, Department of Statistics**, Visiting Professor

Stanford, CA

- Teaching “Data Mining and E-Business” (Statistics252, 3 units)

---

### *Expertise*

---

#### **Strategic**

- Leverage information technology and the internet to create value from data
- Transfer relevant scientific research from academia to business

#### **Scientific and Technical**

- Machine learning, data mining and knowledge discovery
- Time series analysis and prediction
- Risk management, quantitative and behavioral finance
- Information retrieval and visualization

---

### *Experience and Environments*

---

#### **Academic**

- Business School (New York University, Associate Professor; 3 years full-time; Executive MBA faculty at China Europe International Business School – CEIBS; 1 year)
- Computer Science (University of Colorado, Assistant Professor; 4 years full-time)

#### **Research**

- Xerox PARC (Palo Alto Research Center, 2 years full-time)
- Published six books and more than 100 scientific papers, some cited more than 300 times

#### **Entrepreneurship**

- Startups (Shockmarket, Moodlogic; 2 years full-time)
- Consulting (data mining, behavioral analytics, trading and risk models; 10 years part-time)

## Education

<b>Stanford University</b>	PhD Thesis on Neural Networks for Time Series Analysis and Prediction Advisors: D. E. Rumelhart, J. H. Friedman, W. B. Arthur, B. A. Huberman, W. A. Little	Stanford, CA (86-91) <b>PhD in Physics</b> <b>MS in Physics</b>
<b>Bonn University</b>	Masters Thesis on Comparing Computer Simulations of Elementary Particle Physics with Experimental Data at CERN	Bonn, Germany (83-86) <b>Diplom-Physiker</b>
<b>Trinity College, Cambridge</b>	Graduate coursework in Physics and Philosophy	Cambridge, UK (82-83)
<b>Karlsruhe University</b>	Undergraduate degrees in Electrical Engineering and Physics	Karlsruhe, Germany (79-82) <b>Vordiplom</b>

## Previous Full-Time Positions

---

### **ShockMarket Corporation (Chief Scientist)** Palo Alto, CA (00-01)

*A financial information services startup providing information products and market sentiment  
Funded by Deutsche Bank, D. E. Shaw, Odeon Capital and others, currently "mothballed"*

#### **Research and Development**

- Directed interdisciplinary team to:
  - Develop analytics based on real-time transactions from online brokerages
  - Design core products based on quantitative data analysis and behavioral finance concepts
  - Verify validity of data collection and results using advanced statistical techniques
- Assembled and managed board of scientific advisors (D. Kahneman, T. Odean, N. Schwarz, R. H. Thaler)

#### **Corporate Activities**

- Worked closely with CEO to define strategy and vision
- Developed partnerships with hedge funds, distribution channels, and financial institutions
- Presented to major brokerages, financial and information services companies, and venture firms

---

### **MoodLogic, Inc. (Chief Scientist)** (formerly Emotioneering, Inc.) San Francisco, CA (99-00)

*A music technology startup providing software systems and data services for audio consumer electronics, music desktop applications, and music subscription services*

#### **Research and Development**

- Designed music navigation system based on music perception and digital fingerprinting
- Led initial research and developed successful prototype

#### **Corporate Activities**

- Created long-term vision for managing, programming, and discovering music
- Built interdisciplinary team (hired first eight employees)

---

**New York University, Stern School of Business**

New York, NY (97-00)

**Associate Professor of Information Systems**

(Sabbatical at Stanford University, Department of Statistics, 99-01)

- Directed research group on data mining and knowledge discovery
- Received New York University Teaching Award for course on Data Mining in Finance

---

**University of Colorado at Boulder**

Boulder, CO (93-96)

**Assistant Professor of Computer Science and Cognitive Science**

- Founded research group on time series analysis and prediction
- Taught courses on artificial intelligence, neural networks, and music cognition

---

**Xerox Palo Alto Research Center (PARC)**

Palo Alto, CA (91-93)

**Member of Research Staff, Machine Perception Group**

- Invented architecture for hierarchical classification of text documents
- Applied neural networks to optical character recognition

---

Other Positions
-----------------

---

**Consulting: Financial**

---

**Yodlee, Inc.**

Redwood Shores, CA (02)

Led team to develop strategy for data and information products based on account aggregation

**Lava Trading, Inc**

New York, NY (02)

Presented value-added products and new order types based on real-time analytics on direct trading data

**Grantham, Mayo, Van Otterloo & Co. LLC**

Boston, MA (98-99)

Implemented and evaluated Hidden Markov Models for trading strategies, now used in production

**J.P. Morgan**

New York, NY (95-97)

Developed and delivered model for volatility prediction

**Nikko Securities**

Tokyo, Japan (96)

Built trading model for Nikkei 225 index

**Prediction Company**

Santa Fe, NM (96)

Assessed novel machine learning technologies for statistical arbitrage

**Union Bank of Switzerland**

Zurich, Switzerland (95-96)

Invented *information radar* to alert investors of relevant trends and events**Morgan Stanley**

New York, NY (95-96)

Developed neural network to optimize Sharpe ratio in trading model

**Goldman Sachs**

New York, NY (93-95)

Evaluated use of neural networks for financial time series prediction

Other engagements included the Swiss Stock Exchange (Zurich), Shanghai Credit Information Systems, Stockstore (Breda, Netherlands), Bank of China (Beijing), and Bank of Thailand (Bangkok).

---

### ***Consulting: Non-Financial***

---

**Bertelsmann Venture Capital** San Francisco, CA, and Hamburg, Germany (01-02)  
Performed due diligence on technology start-ups

**Opion, Inc.** Herndon, VA (00-01)  
Designed algorithms for identifying opinion leaders and trends from message boards

**Acciom Corp.** Little Rock, AR (00)  
Developed strategy for direct marketing on the Web enhancing demographics with online behavioral data

**Interval Research Corp.** Palo Alto, CA (00)  
Wrote research proposal for targeted advertising on cable television

**TextWise LLC** Syracuse, NY (95)  
Unified diverse sources of relevance assessment for text mining

**Siemens Corporate Technology** Munich, Germany (91-98)  
Innovated time series analysis software now used in-house and in consulting

Other engagements included BHP Research (Melbourne), Deutsche Bahn AG (German Railway, Frankfurt), Electricité de France (Paris), Yahoo (Mountain View), Zone Reactor (Los Angeles), and the CIA.

---

### ***Advisory Boards***

---

- Startups
- Hedge funds
- Stanford University's Asia Technology Initiative

---

### **Awards and Publications (Selection)**

---

#### ***Awards***

---

- IBM Partnership Award for work on Discovering Trading Styles in Financial Transactions
- National Science Foundation (NSF) and the Air Force Office of Scientific Research (AFOSR) awards and grants for work on Time Series Prediction
- German National Scholarship Foundation (*Studienstiftung des Deutschen Volkes*), and German Academic Exchange Service (*Deutscher Akademischer Austauschdienst, DAAD*) scholarships for entire undergraduate and graduate education
- Baden-Württemberg State Award for best undergraduate degree

#### ***Books***

---

- *Computational Finance*. (1999) Abu-Mostafa, Y. S., B. LeBaron, A. W. Lo, and A. S. Weigend (Eds.) Proceedings of the Sixth International Conference on Computational Finance (CF99, New York, January 1999). Cambridge, MA: MIT Press.
- *Decision Technologies for Financial Engineering*. (1997) Weigend, A. S., Y. S. Abu-Mostafa, and A.-P. N. Refenes (Eds.) Proceedings of the Fourth International Conference on Neural Networks in the Capital Markets (NNCM'96, Pasadena, November 1996). Singapore: World Scientific.
- *Time Series Prediction: Forecasting the Future and Understanding the Past*. (1994) Weigend, A. S., and N. A. Gershenfeld (Eds.) Santa Fe Institute Studies in the Sciences of Complexity XV; Proceedings of the NATO Advanced Research Workshop on Comparative Time Series Analysis (Santa Fe, May 1992). Reading, MA: Addison-Wesley.

### **Journal Articles**

---

- Predicting Daily Probability Distributions of S&P500 Returns (2000) Weigend, A. S., and S. Shi. *Journal of Forecasting* 19, p. 375-392.
- Data Mining for Features Using Scale-Sensitive Gated Experts (1999) Srivastava, A. N., R. Su, and A. S. Weigend. *IEEE Transactions on Pattern Analysis and Machine Intelligence* 21, p. 1268-1279.
- Exploiting Hierarchy in Text Categorization (1999) Weigend, A. S., E. D. Wiener, and J. O. Pedersen. *Information Retrieval* 1, p. 193-216.
- A Bootstrap Evaluation of the Effect of Data Splitting on Financial Time Series (1998) LeBaron, B., and A. S. Weigend. *IEEE Transactions on Neural Networks* 9, p. 213-220.
- Exploiting Local Relations as Soft Constraints to Improve Forecasting (1998) Weigend, A. S., and H. G. Zimmermann. *Journal of Computational Intelligence in Finance* 6, p. 14-23.
- A First Application of Independent Component Analysis to Extracting Structure from Stock Returns (1997) Back, A. D., and A. S. Weigend. *International Journal of Neural Systems* 8, p. 473-484.
- Nonlinear Trading Models Through Sharpe Ratio Maximization (1997) Choey, M., and A. S. Weigend. *International Journal of Neural Systems* 8, p. 417-431.
- Modeling Volatility Using State Space Models (1997) Timmer, J., and A. S. Weigend. *International Journal of Neural Systems* 8, p. 385-398.
- Time Series Analysis and Prediction using Gated Experts with Application to Energy Demand Forecasts (1996) Weigend, A. S. *Applied Artificial Intelligence* 10, p. 583-624.
- Predicting Conditional Probability Distributions: A Connectionist Approach (1995) Weigend, A. S., and A. N. Srivastava. *International Journal of Neural Systems* 6, p. 109-118.
- Paradigm Change in Prediction (1994) Weigend, A. S. *Philosophical Transactions of the Royal Society, Series A (Physical Sciences)* 348, p. 405-420 (with discussion).
- Bayesian Back-Propagation (1991) Buntine, W. L., and A. S. Weigend. *Complex Systems* 5, p. 603-643.
- Predicting the Future: A Connectionist Approach (1990) Weigend, A. S., B. A. Huberman, and D. E. Rumelhart. *International Journal of Neural Systems* 1, p. 193-209.

*The full list of publications is available at [www.weigend.com/publications](http://www.weigend.com/publications)*