

Yaakov (Jonathan) Stein

Non-academic

1999-now: **Chief Scientist, and Head of DSP Department,**

RAD Data Communications, Tel Aviv, Israel <http://www.rad.com/>

As Chief Scientist: Responsible for fundamental scientific issues in R&D

Evaluation of new technologies and innovations

Formalization of communications protocols

Participation in standards committees (ITU-T, IETF, MFA, MEF, etc.)

Drafting patents and handling IPR portfolio

Training courses (see <http://www.dspscsp.com/lectures>)

DSP Development: xDSL modem technology

Voice processing for IP, ATM, and frame relay systems

Fax, modem, tone and signaling relays

Audio watermarking, echo cancellation, etc.

DSP Research: Packet Loss Concealment for packet networks

Audio compression robust to delay variation and packet loss

Timing recovery over packet networks

1995-1998: **Advanced Technology Manager**

1997-1998: **Digital Signal Processing Manager, Comverse Information Systems**

(Now Verint Systems) Woodbury, New York <http://www.verintsystems.com>

Responsible for the development of advanced modem intercept and speech processing

DSP for law enforcement and call center applications.

Developed web-based highly compressed multimedia archive server.

1998: **Scientific consultant, Symbol Technologies**, Holtsville, NY <http://www.symbol.com>

Developed prototype neural network for classification of bar-code images.

1989-1995: **Neural Network Applications Team-Leader, Efrat Future Technology Ltd.**

(Now Comverse Technology) Tel Aviv, Israel <http://www.comverse.com>

Developed state-of-the-art OCR (Optical Character Recognition) and ASR (Automatic

Speech Recognition) applications based on neural network and artificial intelligence

technologies.

1986-1995: **Consultant to the Israel Ministry of Defense**

Advised in the fields of digital signal processing, pattern recognition and applications of artificial neural networks.

Received **Israel Defense Award** (פרס בטיחותן ישראלי) Israel's highest award for defense-related research (see <http://www.mod.gov.il/modh1/otot/otot03.htm> - Otot16)

1980-1985: **Officer in the Israel Defense Forces** (rank: Major)

Research scientist specializing in the exploitation of artificial intelligence techniques in digital signal processing. Participated in a large number of projects that were operationally deployed.

Academic

Author: *Digital Signal Processing: A Computer Science Perspective*

Published by John Wiley and Sons, August 2000

<http://www.dspscsp.com/> <http://www.amazon.com/exec/obidos/ASIN/0471295469>

2002-now: **Lecturer, Jerusalem College of Engineering, Computer Engineering Department**

<http://www.jce.ac.il/> , <http://www.dspscsp.com/jce>

Responsible for the following course:

- 10049: Digital Signal Processing for Software Engineering students

1999-now: **Lecturer, Tel Aviv University, Computer Science Department**

<http://www.tau.ac.il/> , <http://www.dspscsp.com/tau>

Responsible for the following courses:

- 0368.3464.01: Digital Signal Processing Algorithms and Applications (1st degree)
- 0368.4136.01: Digital Signal Processing for Computer Science Students (2nd degree)
- 0368.4338.01: Advanced Seminar in DSP

1995-1998: **Adjunct Professor of Computer Science, Polytechnic University,**

Farmingdale, New York. <http://rama.poly.edu>

Responsible for the following courses:

- CS392: DSP for Computer Science students <http://www.dspscsp.com/poly/cs392.html>
- CS661: Artificial Intelligence <http://www.dspscsp.com/poly/cs661.html>
- CS662: Advanced AI <http://www.dspscsp.com/poly/cs662.html>
- CS667: Neural Networks <http://www.dspscsp.com/poly/cs667.html>

Developed AI and NN specialties for MSc. students.

Lectured to industry on uses of AI and neural networks.

1986-1989: **PhD. theoretical physics** -- Hebrew University of Jerusalem <http://www.huji.ac.il/>

Thesis: *Capacity of Neural Network Models*

1978-1979: **MSc. theoretical physics** - Hebrew University of Jerusalem

Thesis: *Critical Temperature for Superconductivity in the Transition metals*

1974-1977: **BSc. physics, math and computer science** - Hebrew University of Jerusalem

Talks and Conferences

- 2004: **Invited speaker:** Communications Design Conference (San Francisco, California)
<http://www.commdesignconference.com/archive/papers/2004/P826.htm>
- 2002: **Lecturer:** Minicourses on XML, Voice-over-Packet, and xDSL (Tel Aviv)
- 2001: **Chair and speaker:** Seminar on Access Networks (Kfar HaMaccabiah, Tel Aviv)
- 2001: **Invited speaker:** R&D-2001 [*mark-up languages*] (Tel Aviv)
- 2000: **xDSL track chair and 1/2-day tutorial:** DesignCon2000 (Santa Clara, California)
<http://www.designcon.com/2000/tecforum.html>
- 2000: **Invited speaker:** DSP-2000 [*xDSL*] (Tel Aviv)
- 2000: **Invited speaker:** Telecommunications-2000 [*perceptual speech quality*] (Tel Aviv)
- 1995: **Invited speaker:** 18th Convention IEEE Israel [*Advances in Speech Recognition*]
- 1994: **OCR session chair** at the 12th International Conference on Pattern Recognition
<http://www.cs.tut.fi/~avisa/tc3/>
- 1993: **Co-chair** and organizer of the 10th annual Israel AICVNN conference (Artificial Intelligence, Computer Vision, Neural Networks)
<http://www.ibiblio.org/pub/academic/medicine/brazil-mirror/neuralnets/conferences/iaicvnn93.txt>

Standardization Efforts

Regularly participates in IETF and ITU-T SG13 meetings
Has participated in ETSI, MFA Forum, MEF, DSL-forum, T1E1, activities.

IETF: Coauthor of RFC4553, author of numerous Internet Drafts in PWE3 Working Group

ITU-T Editor of Y.1413, Y.1414, Y.1452, Y.1453; major contributor to Y.1415 and many other Recommendations

Significant contributions can be found at: <http://www.dspsp.com/tdmoip/>

Patents

- US 6,829,246** *System and Method for Extending the Range of XDSL Services*
US Application: *A Small Form-factor Device Implementing Protocol Conversion*
US Application: *Method for Low Bit Rate Compression of Combined Speech and Music*
US Application: *Asynchronous Audio Compression robust to packet network impairments*

Publications (see <http://www.dspsp.com/pubs>)

Yaakov Stein and Brian Stroehlein (2006)

Using Synchronization over PSN – Does IEEE 1588 Really Make a Difference?

NIST-ATIS Workshop on Synchronization in Telecommunication Systems (WSTS '06)

Yaakov Stein (2004)

The Wonders of Digital Processing (in Hebrew)

Galileo, Vol 66, Feb 2004 <http://www.sbc.co.il/Magazine.asp?MagId=17>

Yaakov Stein and Eitan Schwartz (2001)

An Evolutionary Approach to Transporting Voice and Legacy Data over IP Networks

Carriers world, 16/03/2001 <http://www.carriersworld.com>

Yaakov Stein and Eitan Schwartz (2000)

Ever thought about extending circuits over IP?

Telecommunications, Nov 2000 pp 89-94

http://www.telecommagazine.com/issues/200011/tci/ever_thought.html

Yaakov Stein and Eitan Schwartz (2000)

TDMoIP: An Evolutionary Approach to Transporting Voice over IP Networks (in Russian)

Networks and Communications Systems, Sept 2000 pp 96-101 <http://ccc.ru/magazine>

J. Y. Stein (2000)

Digital Signal Processing - a Computer Science Perspective

John Wiley and Sons, NY, ISBN 0471295469

<http://www.dspsp.com> <http://www.amazon.com/exec/obidos/ASIN/0471295469/>

J. Y. Stein (2000)

TecForum - Tutorial on xDSL

DesignCon2000, Santa Clara, California

<http://www.designcon.com/2000/tecforum.html> - TFA6

Y. Stein (1993)

False Alarm Reduction for ASR and OCR

Proc. 10th IAICVNN, 195-200. <http://www.ibiblio.org>

Y. Stein (1993)

Hyperplane Training of a Hypersphere Classifier

Proc. 10th IAICVNN, 291-296. <http://www.ibiblio.org>

R. Aloni-Lavi, Y. Metzger and Y. Stein (1992)

A BP Variant with Improved Convergence and Generalization

International Joint Conference on Neural Networks (Baltimore) I-932 - I-937

<http://ieeexplore.ieee.org>

Y. Stein (Dec 1990)
Storage Capacity for Neural Network Models (in Hebrew)
PhD. Thesis, Hebrew University - Theoretical Physics

H. Gutfreund and Y. Stein (1990)
Capacity of Neural Networks with Discrete Synaptic Couplings
J. Phys. A (Math. Gen.) 23, 2613-2630.

H. Gutfreund and Y. Stein (1989)
Neural Networks with Discrete Synaptic Couplings
STATPHYS 17 (Porto Alegre, Brazil)

H.J. Sommers, A. Crisanti, H. Sompolinsky and Y. Stein (1988)
Spectrum of Large Random Asymmetric Matrices
Phys. Rev. Lett. 60, 1895-1898.

Y. Stein (1983)
Two Dimensional Euclidean Regression
Conference on Computer Mapping (Herzeliya, Israel)

Y. Stein (1981)
A Short Note Concerning Planiversal Solid State Physics
First Symposium on Two-Dimensional Science and Technology (ed. AK Dewdney) 90-91.

Y. Stein (1981)
Maxwell's Equations in Two Dimensions
First Symposium on Two-Dimensional Science and Technology (ed. AK Dewdney) 28-33.

Y. Stein (June 1979)
Critical Temperature for the Onset of Superconductivity in the Transition Metals (in Hebrew)
MSc. Thesis, Hebrew University - Theoretical Physics