

Dr. Homayoun Valafar

Bioinformatics and data analysis Project Coordinator

Southeast Collaboratory for Structural Genomics (SECSG)

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Education

PURDUE UNIVERSITY

West Lafayette, IN

May 1995

Ph.D. in Electrical and Computer Engineering

Thesis Topic: Distributed Global Optimization and its Applications to Neural Networks

PURDUE UNIVERSITY

West Lafayette, IN

August 1990

MS in Electrical and Computer Engineering

Thesis Topic: Parallel Self-organizing Consensual Neural Networks

MICHIGAN TECHNOLOGICAL UNIVERSITY

Houghton, MI

May 1988

BS in Electrical and Computer Engineering,

UNIVERSITY OF GEORGIA

Athens, GA

1. August 1996-1998

Post-Graduate courses in Biology

Classes Taken:

Biology I & II,

Human anatomy

Cell biology

Organic chemistry I & II

Genetics

Protein NMR spectroscopy

Biochemistry

Microbiology

Quantum physics

Human physiology

Neuroscience

Bioinformatics.

Research Interests

Special interests:

Bioinformatics and computational biology

Medical informatics

High performance computing

Artificial intelligence

Local and distributed database design

Quantum computing

General Interests

Robotics

Parallel distributed processing

Pattern recognition and classification

Web-based interactive software development

Computer hardware design

Optimization

Grants, Awards, and Honors

- June 2003** *Achievement award* from 2003 International Multi-Conferences in Computer Science and Computer Engineering in recognition and appreciation of research contributions to the field and to the 2003 International MultiConference in Science and Computer Engineering.
- 2003-2008** Co-Principal Investigator. National Science Foundation CRC (Collaborative Research in Chemistry) division: “Chemometrics and NMR as a Tool for Recognition of Natural and Unnatural Complex Carbohydrates: Applications to Drug Discovery and Proteomics”, Proposal No. 0304893 (\$1.5 Million), under review.
- 2002-2005** Active referee to the Journals of *Bioinformatics* and *Artificial Intelligence in Medicine*.
- 2003** Co-chair METMBS. Co-chairman of the annual *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences* (METMBS) (<http://metmbs.sdsu.edu/>). Arranged and organized several sessions in the areas of Bioinformatics and Proteomics.
- June 2002** IR7 (highest) level specialist award from the International Technology Institute, P.O. Box 23166, San Diego, CA 92193-3166, USA. Received an IR7 level technology specialist Diploma in recognition of my research contributions to the fields of Bioinformatics and Data Analysis. Diploma No.: IR7-02062456
- June 2002** *Achievement award* from 2002 International Multi-Conferences in Computer Science in recognition and appreciation of contributions to the set of 2002 international conferences.
- 2000-2002** Session chair for the annual *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences* (METMBS) (<http://metmbs.sdsu.edu/>). Sessions chaired: Bioinformatics, proteomics and structural genomics.
- 2000-2003** Member of the organizing and reviewing committees of the annual conference of *Parallel Distributed Processing Techniques and Application* (PDPTA). Conference Chair: Dr. H. Arabnia, Department of Computer Science, University of Georgia.
- 1998** Invited for presentation on Continuing Technological Advancements Symposium organized by University System of Georgia Research Symposium (1998) on Predicting Sickle Cell Patient Response to Hydroxyurea using Artificial Neural Networks.
- 1997-2000** Contributed to the scientific content and preparation of the following RO1 grant: *Cryptococcus Neoformans: Epitope Antibodies and Structure*, Grant number AI31769.
- 1997-1998** Member of National Dean’s List. Twenty-first annual Edition, Volume I, Educational Communications, Inc.
- 1997** Founder and president of Iranian Student Association (ISA) at the University of Georgia. I sought and integrated the interested Iranian students on campus followed by organizing numerous fund raising events in order to establish the organization.
- 1995-1999** Contributed to the scientific content and preparation of the following grant: *Resource Center for Biomedical Complex Carbohydrate – Development of Computer Assisted Methods for Structural Characterization of Oligosaccharides*, Grant number 5 P41 RR05351
- 1995-1998** Member of IEEE computer society.
- 1990-1995** Recipient of research assistantship from the department of Physics to conduct research in the field of high energy particles.
- 1990-1995** Recipient of research assistantship from the department of Speech and Audiology to conduct research in the modeling of human hearing perception.
- 1984-1995** Dean’s List for outstanding college students. I have been enlisted in Dean’s List throughout my education at Michigan Technological University an Purdue University.
- 1984-1995** Member of Engineering National Honor Society Eta Kappa Nu
- 1984-1995** Member of Engineering National Honor Society Phi Kappa Phi

Invited Lectures

- *Optimization and pattern recognition tools in structural genomics*, Michigan Technological University, Department of Electrical/Computer Engineering, 3/12/2004.
- *Applications of optimization and pattern recognition tools in structural genomics*, University of Georgia, Department of Engineering, 2/18/2004.
- *Computational methods in structural genomics: high throughput protein structure determination from NMR spectra*, San Diego State University, Departments of Computer Science, Mathematics, Chemistry and Biochemistry Colloquium, 10/17/2003.
- *Structural Genomics Initiative at the SECSG*, Eastern Connecticut State University, Departments of Computer Science and Mathematics, 5/07/03.
- *Computational Developments of the NMR Core of the Southeast Collaboratory for Structural Genomics (SECSG)*, Bioinformatics Seminar Series at UGA, University of Georgia, Computer science and Bioinformatics institute Colloquium, 12/06/02.
- *GeneFormatics*, Rapid Protein Fold recognition Using Backbone ¹⁵N-H Residual Dipolar Couplings, 6/2000

Research Experience

Project Coordinator for bioinformatics and data analysis of NMR core, Southeast Collaboratory for Structural Genomics (SECSG), Athens, GA **10/2000-present**

Research Responsibilities:

- Development and implementation of new computational methods for rapid protein structure determination using Residual Dipolar Couplings.
- Optimization of information extracted from residual dipolar couplings to facilitate structure determination of proteins.
- Integration of bioinformatics tools such as BLAST, Psi Blast, PHD, Genthreader, Prospect and Modeler to provide proposed protein structures for structure confirmation by NMR.

Managerial Responsibilities:

- Participated in the hiring process of appropriate individuals for the expansion of the research group.
- Selection and ordering of appropriate hardware for implementation of databases and computational engines.
- Manage and direct a team of programmers and bioinformaticists.

Postdoctoral Research Associate, Complex Carbohydrate Research Center (CCRC), University of Georgia, Athens, GA, James Prestegard **2/98-10/2000**

- Datamining of Protein Data Bank (PDB) and other databases.
- Development of bioinformatic tools for NMR and X-ray crystallography.
- System administration for Linux boxes and SGI work stations

Postdoctoral Research Associate, Complex Carbohydrate Research Center (CCRC), University of Georgia, Athens, GA, Peter Albersheim **7/95-2/98**

- Design and development of neural network classifiers for spectral analyses of oligosaccharides.
- Pattern extraction using neural networks and other conventional techniques in various bioinformatics and medical informatics tasks.
- Parallelization of the developed algorithms in order to take advantage of the existing high-performance computing platforms.
- Design, implementation and maintenance of an interactive web page (www.ccrc.uga.edu) for the developed software.
- HTML- and JAVA-based implementation of a *Web commerce* package to offer the services of the developed software packages on a fee basis to the scientific community from the industry.

Teaching Experience

- January 2003-Present** CSCI 2610, Discrete Mathematics and its Applications, Department of Computer Science, University of Georgia, Athens, Georgia. Book: "Discrete Mathematics and Its Applications" - Kenneth H. Rosen
- August 2002 and June 2003** Participated in NSF sponsored workshop on NMR spectroscopy. I organized and conducted multiple sessions on the use of Maple for product operator formalism.
- Fall 2001 and 2002** BCMB/CHEM 8190, Biomolecular NMR, at UGA, fall of 2001 and fall of 2002. Book: Protein NMR Spectroscopy, Principles and Practice. John Cavanagh, et al. Taught sections of the course on signal processing techniques.
- 2000-Present** Arranged and conducted weekly tutorial sessions on the theory and computational NMR spectroscopy at the Complex Carbohydrate Research Center of the University of Georgia. Software: Maple and Matlab.
- 1999-2001** Taught C/C++ programming for bioinformatics programming at the Complex Carbohydrate Research Center of the University of Georgia. Book: "C++ primer; The expert tutorial and reference for C++ programmers!" and "Developing Bioinformatics Computer Skills".
- Summer 1998** Taught multiple sessions of CS 101, Introduction to computers, at the computer science department of the University of Georgia. In my lectures, I introduced students to IBM hardware components and described evolution of the hardware over the previous decade.
- April 1998** **Training:** Participated in the UGA academic affairs symposium on the use of instructional technology.
- Fall/1997** **Training:** Participated in a series of bi-weekly teaching related workshops through the *Lilly Teaching Fellowship*. Topics included: Critical incidents in the classroom; preparing to teach large classes; composing writing-intensive courses across the curriculum; preparing for promotion and tenure, and effective teaching methods.
- Fall/1997** **Training:** Participated in a 2-day *Lilly* teaching retreat/workshop on effective teaching methods.
- 1992-1995** Provided private tutorial sessions to graduate and undergraduate students in mathematics, biology and computer science courses at the Purdue University.
- 1990-1992** Provided consulting advice and private computer lessons as a member of Personal Computer Learning Resource Center (PCLRC) at Purdue University.
- 6/89-5/91** **Lecturer:** Electrical Engineering Department, Purdue University, West Lafayette, IN. Taught courses in Computer Engineering and Computer Science.
- Spring 1988** Teaching assistant for EE497, Computer hardware design. Book: Digital Computer Arithmetic Design and Implementation, ISBN 0-07-010282-1
- Summer 1987** Basic programming language. This was a special session for minority and under privileged students. During this course I introduced students to the Basic programming language (QBasic) on PCs.

Other Relevant Research Experience

- Parallel distributed implementation of sorting algorithms on parallel machines (NCUBE and MasPar)
- Parallel implementation of artificial neural networks on MasPar (MPI with 16384 processors).
- Design of modular and hierarchical neural networks
- Application of distributed optimization techniques to NP complete problems (traveling salesman, back packing)
- Filter design and development of artifact reject algorithms
- Remote sensing
- Design and implementation of Parametric and non-parametric classifiers such as Fisher discriminant, Parzen density estimation and Bayes classifiers.
- Modeling of human speech perception and production using non-conventional neural networks.

- Development and implementation of linear programming and optimization techniques in bioinformatics and medical-informatics tasks.
- Design and implementation of bioinformatics tools.
- Statistical profiling of protein secondary structures using NMR data.
- Prediction of human physiological state alteration due to various stimuli
- Electroencephalogram (EEG) classification using artificial neural networks

Computer Systems Experience

Parallel Systems: MasPar MP-1 architecture and SIMD programming (AMPL parallel programming language), Hyper cube architecture and MIMD programming (Ncube), CYBER 205 architecture and vector programming, DEC ALPHA-EV5 8400, and SGI Origin 2000 with CRAY-link hyper cube implementation, Connection Machine I architecture and programming.

UNIX platforms: Over 5 years of experience in using various Digital Equipment Co. (now Compaq) alpha workstation and servers, Silicon Graphics, and SUN Microsystems' workstations and parallel processors. Also 10 years of experience in using and administering Linux workstation and servers.

Personal Computers: over 10 years of experience in hardware and software trouble shooting, diagnosis and repair

Linux Cluster: Significant experience in installation, administration and programming of Linux clusters using queue and MPI systems. I have successfully installed and maintained Linux Clusters on systems ranging from home-made, four node computers to 64 node, dual CPU IBM hardware with SAN (Storage Area Network) capability.

Computer Language: Just about any kind of high level language, scripting language and www publishing language.

Database Experience: Design and administration experience (over 2 years) with MySQL, Postgres, SQL server and DB2. I have initiated, designed and implemented the infrastructure for the database system employed today at the SECSG. I have evaluated Oracle 8i, DB2, MySQL and Postgres SQL as possible database engines. My final conclusion was to utilize the open source software MySQL in conjunction with Apache web server and PHP web programming tools. This combination is still currently used by our group and is now industry standard.

References

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|-------------------------|--|----------------|
| Dr. James H. Prestegard | jpresteg@ccrc.uga.edu | (706) 542-6281 |
| Dr. Hamid Arabnia | hra@cs.uga.edu | (706) 542-3480 |
| 1. Dr. Alan Darvill | adarvill@ccrc.uga.edu | (706) 542-4411 |
| Dr. Abdulah Kutlar | akutlar@mail.mcg.edu | (706) 721-2505 |

List of Publications

Books

1. Editor of the *Proceedings of the International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS)*. ISBN number: 1-932415-04-1 (518 pages). CSREA press, USA, 2003.
2. Associate editor of the *Proceedings of the International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS)*. ISBN numbers: 1-892512-31-9 (Volume I, 600 pages), 1-892512-32-7 (Volume II, 315 pages), and 1-892512-33-5 (complete set, 915 pages). CSREA press, USA, 2002.
3. Associate editor of the *Proceedings of the International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS)*. ISBN number: 1-892512-77-7 (523 pages). CSREA press, USA, 2001.
4. Associate editor of the *Proceedings of the International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS)*. ISBN numbers: 1-892512-60-2 (Volume I, 408 pages), 1-892512-61-0 (Volume II, 346 pages), and 1-892512-62-9 (complete set, 754 pages). CSREA press, USA, 2000.

Journal Publications

1. **H. Valafar**, Mayer KL, Bougault C., LeBlond P., Prestegard J.H., Rapid Protein Backbone Determination Using a New Program REDcRAT, *Journal of Structural and Functional Genomics* (submitted).
2. Di Lello P, Benison GC, **Valafar H**, Pitts KE, Summers AO, Legault P, Omichinski JG., NMR Structural Studies Reveal a Novel Protein Fold for MerB, the Organomercurial Lyase Involved in the Bacterial Mercury Resistance System, *Biochemistry*, 2004 Jul 6;43(26):8322-8332.
3. **H. Valafar**, Arabnia H.R., Distributed Global Optimization and its Potential Implementation on the MultiRing Network. *Journal of Neural, Parallel and Scientific Computations*, accepted (in print).
4. J. Wang, **Valafar H.**, Prestegard J. H., Assessment of Protein Alignment Using ^1H - ^1H Residual Dipolar Couplings Measurements. Submitted to the *Journal of Magnetic Resonance*, accepted (in print).
5. L. C. Morris, **Valafar H.**, Prestegard J. H., Assignment of Backbone Resonances from Minimal NMR Data Using Connectivity, Torsion Angle Constraints, and Chemical Shifts. *Journal of Biomolecular NMR* 29: 1-9, 2004.
6. **H. Valafar**, Prestegard J.H., REDCAT: A Residual Dipolar Coupling Analysis Tool. *Journal of Magnetic Resonance* 167 (2004) 228-241.
7. K. Umamoto, Leffler H., Venot A., **Valafar H.**, Prestegard J., Conformational Differences in Liganded and Unliganded States of Galectin-3. *Biochemistry*, 2 (13): 3688-3695 APR 8 2003
8. **H. Valafar**, Prestegard J., Rapid Classification of a Protein Fold Family Using a Statistical Analysis of Dipolar Couplings. *Bioinformatics*, 2003 Aug 12;19(12):1549-55
9. Ford MG, **Valafar H**, Prestegard JH, Utilizing molecular symmetry and dipolar couplings to assign the resonances of a 33kDa protein complex, *BIOPHYSICAL JOURNAL* 84 (2): 276A-276A Part 2 Suppl. S FEB 2003
10. **H. Valafar**, Valafar F., J. Prestegard, Data-mining protein structure databanks for crystallization patterns of proteins, *Techniques in Bioinformatics and Medical Informatics, Annals of the New York Academy of Sciences*, 980: 13-22 2002
11. **H. Valafar**, Valafar F., Data Mining and Knowledge Discovery in Proton Nuclear Magnetic Resonance (^1H -NMR) Spectra using Frequency to Information Transformation (FIT). *KNOWL-BASED SYST* 15 (4): 251-259 Sp. Iss. SI MAY 2002
12. Fang T, **Valafar H.**, and Prestegard J., A Dipolar Coupling Based Strategy for Simultaneous Resonance Assignment and Structure Determination of Protein Backbones, *Journal of the American Chemical Society*; 2001
13. J. H. Prestegard, **Valafar H.**, Glushka J., Tian F., Nuclear magnetic resonance in the Era of Structural Genomics. *BIOCHEMISTRY-US* 40 (30): 8677-8685 JUL 31 2001
14. Al-Hashimi HM, **Valafar H**, et al., Variation of molecular alignment as a means of resolving orientational ambiguities in protein structures from dipolar couplings. *J MAGN RESON* 143: (2) 402-406 APR 2000.
15. **H. Valafar**, Valafar F et al., Predicting the effectiveness of hydroxyurea in individual sickle cell anemia patients. *ARTIF INTELL MED* 18: (2) 133-148 FEB 2000.
16. Valafar F, **Valafar H**. CCRC-Net: an Internet-based spectral database for complex carbohydrates using artificial neural networks search engines. *TRAC-TREND ANAL CHEM* 18: (8) 508-512 AUG 1999.
17. Cherniak R, **Valafar H**, et al., *Cryptococcus neoformans* chemotyping by quantitative analysis of H-1 nuclear magnetic resonance spectra of glucuronoxylomannans with a computer-simulated artificial neural network. *CLIN DIAGN LAB IMMUN* 5: (2) 146-159 MAR 1998.

Conferences and Symposia Publications

1. **H. Valafar**, Prestegard JH, Fold Family Recognition Based on Unassigned Residual Dipolar Couplings, *Computational Aspects of Biomolecular NMR, Gordon Research Conference*, January 18-23, 2004, Ventura, California.
2. **H Valafar** ; Prestegard JH, A New Program for RDC Analysis and Structure Validation. *44th ENC Program* March 30 - April 4, 2003, Savannah, Georgia
3. LC Morris ; **Valafar H**; Prestegard JH, Assignment of Backbone Resonances from Minimal NMR Data Sets Using Connectivity, Torsion Angle Constraints, and Chemical Shifts. *44th ENC Program* March 30 - April 4, 2003, Savannah, Georgia
4. KL Mayer ; **Valafar H**; et. al., NMR Structure Determination Using Residual Dipolar Couplings,. *44th ENC Program* March 30 - April 4, 2003, Savannah, Georgia
5. MG Ford ; **Valafar H**; Prestegard JH, Residual Dipolar Coupling Assisted Assignment for HSQC Based Ligand Titration Data on Galectin-1. *44th ENC Program* March 30 - April 4, 2003, Savannah, Georgia
6. RD Seidel; Juan-Carlos Amor; **H Valafar**; Richard A. Kahn; James H. Prestegard, Conformational Changes in human Arf1 on Nucleotide Exchange and Deletion of the N-terminal Helix using Residual Dipolar Coupling. *44th ENC Program* March 30 - April 4, 2003, Savannah, Georgia
7. K. Mayer, **H. Valafar**, et al, NMR Structure Determination and Validation using Residual Dipolar Couplings, *ISGO International Conference on Structural Genomics*, Oct 10-13, 2002 Berlin
8. K. Mayer, **H. Valafar**, et al, The Roles of NMR in Structural Genomics at the SECSG, *43rd Experimental NMR Conference (ENC 43)*, April 14-19, 2002 Asilomar, CA
9. **H. Valafar**, Tian F., Prestegard J. H., Rapid Classification of Protein Fold Families Using a Statistical Analysis of Dipolar Couplings. *42st Experimental Nuclear Magnetic Resonance Conference (ENC 42)*, 2001.
10. F. Tian; **Valafar H.**; Prestegard J. H.; A Dipolar Coupling Based Strategy for Simultaneous Protein Resonance Assignment and Structure Determination. *42st Experimental Nuclear Magnetic Resonance Conference (ENC 42)*, 2001.
11. J. H. Prestegard, Tian F., **H. Valafar**, High Through-put NMR Analysis of Proteins at the Southeast Collaboratory for Structural Genomics. *42st Experimental Nuclear Magnetic Resonance Conference (ENC 42)*, 2001.
12. **H. Valafar**, Valafar F.; Knowledge Discovery in ¹H-NMR spectra of Complex Carbohydrates using Frequency to Information Transformation (FIT). *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS'2001)*, p61-66.
13. **H. Valafar**, Valafar F., Prestegard J. H.; One and Two Dimensional Statistical Data-Mining of Protein Databank for Crystallization Patterns of Proteins. *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS'2001)*, p67-72.
14. **H. Valafar**, Tian F., Prestegard J. H., Rapid Classification of Protein Fold Families Using a Statistical Analysis of Dipolar Couplings. *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS'2001)*, p146-151.
15. **H. Valafar**, Valafar F, Reduction in the complexity of 1D ¹H-NMR spectra by the use of Frequency to Information Transformation. *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS'2000)*, p207-212
16. **H. Valafar**, Muti-levelled output Neural Networks in Monosaccharide decomposition Analysis of N-linked Oligosaccharides, *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS'2000)*, p219-224
17. **H. Valafar**, Prestegard J, Data-mining of Protein Structure Databank for Crystallization patterns of Proteins. *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS'2000)*, p193-200
18. H. Al-Hashimi, **Valafar H.**, et al., Resolving Orientational Ambiguities in Protein Structures Using Dipolar Couplings and Variation of Molecular Alignment, *41st Experimental Nuclear Magnetic Resonance Conference (ENC)*, 2000.
19. J. Glushka, Q. Teng, E. R. Zartler, **Valafar H.**, J. Prestegard, Rapid and automated evaluation of proteins as candidates for structure determination, *41st Experimental Nuclear Magnetic Resonance Conference (ENC)*, 2000.
20. Valafar, F., **Valafar H.** 1999. A Comparative study of Artificial Neural Networks Using Reinforcement learning and Multidimensional Bayesian Classification Using Parzen Density Estimation for Identification of GC-EIMS Spectra of Partially Methylated Alditol Acetates on the World Wide Web. International Joint Conference on Artificial Intelligence International Joint Conference on Neural Networks (IJCNN 1999), Washington, DC, July 10-16, 1999

21. Valafar, F., **Valafar H.** 1999. Identification of ¹H-NMR Spectra of Xyloglucan Oligosaccharides: A Comparative Study of Artificial Neural Networks and Bayesian Classification Using Non-parametric Density Estimation. International Joint Conference on Neural Networks (IJCNN 1999), Washington, DC, July 10-16, 1999
22. **H. Valafar**, F. Valafar. 1999. Identification of ¹H-NMR Spectra of N-Linked Oligosaccharides Using Artificial Neural Networks. *First Joint BMES/EMBS Conference 99*, p157-158.
23. **Valafar, H.**, F. Valafar. 1999. Prediction of a Patient's Response to a Specific Drug Treatment Using Artificial Neural Networks. *First Joint BMES/EMBS Conference 99*, p72-73.
24. **Valafar, H.**, F. Valafar and O. Ersoy. Parallel, self-organizing, consensus neural networks. International Joint Conference on Neural Network 1999 (IJCNN99).
25. Roushanzamir, S., F. Valafar and **H. Valafar**. 1999. Comparative study of different variable selection algorithms. International Joint Conference on Neural Networks (IJCNN 1999), Washington, DC, July 10-16, 1999
26. **Valafar H.**, F. Valafar, O. Ersoy. 1998. Parallel Implementation of Distributed Global Optimization (DGO). Proceedings of the International Conference on Parallel Distributed Processing Techniques and Applications (PDPTA'98). Volume IV, page 1782.
27. **Valafar H.**, F. Valafar, R. Cherniak, L. C. Morris 1998. Artificial Neural Networks in Chemotype analysis of *Cryptococcus neoformans*. International Biomedical Engineering Days 1998 (IBED 98).
28. **Valafar H.**, F. Valafar, L. C. Morris, R. Cherniak 1997. Quantitative Mixture Analysis of ¹H-NMR Spectra Using Artificial Neural Networks for Chemotyping of *Cryptococcus neoformans*. International Joint conference on Neural Networks (IJCNN '98) as part of the World Congress in Computational Intelligence (WCCI '98).
29. **Valafar H.**, F. Valafar, P. Albersheim, A. Darvil, A. Kutlar, K. Woods, J. Hardin. 1998. Predicting Sickle Cell Patient Response to Hydroxyurea using Artificial Neural Networks, University System of Georgia Research Symposium 1998.
30. Cherniak R., **H. Valafar**, L. C. Morris, and F. Valafar 1997. *Cryptococcus neoformans* Chemotyping by Quantitative Analysis of ¹H-NMR Spectra of Glucuronoxylomannans Using a Computer Based Neural Network. American Society for Microbiology (ASM). 97th General Meeting, Miami, Florida, May 4-8, F39 page 266.
31. **Valafar, H.**, F. Valafar, and O. K. Ersoy. 1996. Distributed Global Optimization (DGO). Proceedings of the International Conference on Neural Networks (IEEE-ICNN '96): 530a-536, Washington, DC, June 2-6.
32. Cherniak R., **H. Valafar**, L. C. Morris, and F. Valafar 1996. Invited Talk Titled: Chemotyping of *Cryptococcus Neoformans* by Analysis of Glucuronoxylomannan. 3rd International Conference on *Cryptococcus* and *Cryptococcosis*. Institut Pasteur, Paris, France, September 22-26, 1996. Paper VII.1 page 129.
33. Valafar, F., **H. Valafar**, O. K. Ersoy, and R. J. Schwartz. 1995. Comparative studies of two neural network architectures for modeling of human speech production. Proceedings of the International Conference on Neural Networks (IEEE-ICNN '95), Perth, Australia, November 27-December 1, Vol. 4, pp. 2056-2059.
34. Valafar, F., **H. Valafar**, O. K. Ersoy, and R. J. Schwartz. 1991. Comparative Studies of Two Neural Network Architectures for Modeling of Human Speech Production. Technical Report EE91-42, Purdue University, West Lafayette, IN, October.
35. Neural Network Architectures for Modeling of Human Speech Production. Technical Report EE91-42, Purdue University, West Lafayette, IN, October.
36. Reddy, G.N., D.M. Elmore, **H. Valafar**, Design of Microprogrammed Processors Using an IBM-PC Based AHPL Simulator – a Tutorial, Summer Computer Simulation Conference (SCSC-88), Seattle, Washington, July 25-28, 1988.