Curriculum Vitae
James A. Anderson

1. Business Address:

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Professor
Department of Cognitive and Linguistic Sciences
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190 Thayer Street
Brown University, Providence, Rhode Island 02912

2. Home Address:

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9 Creighton Street
Providence, RI 02906

3. Education:

B.S., Massachusetts Institute of Technology, 1962, in Physics.
Ph.D., Massachusetts Institute of Technology, 1967, in Physiology.

4. Professional Appointments:

September, 1976 to present.
Assistant, Associate and Professor of Psychology,
Neural Science and Cognitive Science.
Chair, Department of Cognitive and Linguistic Sciences (1992-8, 1999-2001)
Brown University

September, 1973 to August, 1976.
Assistant Professor, Divisions of Applied Mathematics
and Biological and Medical Sciences,
Brown University.

June, 1971 to July, 1973.
Research Associate and Post-Doctoral Fellow, Rockefeller University,
New York, New York.

April, 1970 to May, 1971.
Assistant Research Anatomist, Space Biology Laboratory,
Department of Anatomy, U.C.L.A.

March, 1969 to March, 1970.
Public Health Service Post-Doctoral Research Fellowship.
Department of Physiology, U.C.L.A.

5. Publications:

1. JA Anderson (1967). The mechanism of the tentacle withdrawal response in *Aplysia californica*. Ph.D. Thesis, M.I.T., Cambridge, Mass.

2. JA Anderson (1967). Patterns of response of neurons in the cerebral ganglion of *Aplysia californica*. *Experimental Neurology*, **19**, 65-77.

3. JA Anderson (1969). A memory storage model utilizing spatial correlation functions. *Kybernetik*, **5**, 113-119. (Reprinted in G.L. Shaw and G. Palm (Eds.), Brain Theory Reprrint Volume, Singapore: World Scientific, 1988.)

4. JA Anderson (1970). Two models for memory organization using interacting traces. *Mathematical Biosciences*, **8**, 137-160.

5. JA Anderson (1972). Models of interactive memory. In S. Parker (Ed.), *Proceedings of the fifth Asilomar conference on circuits and systems*. Los Angeles, California: Western Periodicals.

6. JA Anderson (1972). A simple neural model generating an interactive memory. *Mathematical Biosciences*. **14**, 197-220. (Reprinted in J.A. Anderson and E. Rosenfeld (Eds.), *Neurocomputing,* Cambridge, MA: MIT Press, 1988).

7. Semicircular canal input to pigeon cerebellum. *Brain Research*, 1972, **45**, 230-235. (With V. J. Wilson and D. Felix.)

8. JA Anderson (1972). Evidence for matched filter retrieval of interactive memory traces. (Abstract). *Society for Neuroscience, Second Annual Meeting*, Houston, Texas, October.

9. Some properties of a neural model for memory. *A.A.A.S. Symposium on Biomathematics, Washington, D.C.* December 30, 1972. (With L. Cooper, M. Nass, W.F. Freiberger, and U. Grenander.)

10. Unit and field potential activity evoked in the pigeon vestibulocerebellum by stimulation of individual semicircular canals. *Experimental Brain Research*, 1974, **19**, 142-157. (With V.J. Wilson and D. Felix.)

11. JA Anderson (1973). A theory for the recognition of items from short memorized lists. *Psychological Review*, 1973, **80**, 417-438.

12. JA Anderson (1974). What is a distinctive feature? *Technical Report 74-1*, Center for Neural Studies, Brown University, Providence, RI.

13. JA Anderson (1974). The neurophysiological basis of "distinctive features". (Abstract). *Society for Neuroscience, Fourth Annual Meeting*, St. Louis, Missouri, October, 1974.

14. JA Anderson (1975). Neural models with cognitive implications. *Technical Report 75-1*, The Center for Neural Studes, Brown University, Providence, R.I. (1975). (Identical with Item 15.)

15. JA Anderson (1977). Neural models with cognitive implications. In: D. LaBerge and S.J. Samuels (Eds.*), Basic Processes in Reading: Perception and Comprehension*. Hillsdale, New Jersey: Erlbaum Associates.

16. Preprocessing of vowels with a simple neural model. *Neuroscience Abstracts*, 1976, **2**, 438. (With J. Silverstein and S. Ritz.)

17. Vowel pre-processing with a neurally based model. *Conference Proceedings, 1977 IEEE International Conference on Acoustics, Speech, and Signal Processing.*

Held Hartford, Connecticut, May, 1977. pp. 265-269. Washington, D.C.: McGregor and Werner, 1977. (With J. Silverstein and S. Ritz.)

18. JA Anderson (1977). Brain modeling and memory. In: X.J.R. Avula (Ed.), *Proceedings of the First International Conference on Mathematical Modeling.* (Invited paper). Rolla, Missouri: University of Missouri.

19. JA Anderson, J Silverstein, S Ritz and R Jones (1978). Distinctive features, categorical perception and probability learning: some applications of a neural model. *Psychological Review,* **85**, 597-603. (Reprinted in J.A. Anderson and E. Rosenfeld (Eds.), *Neurocomputing,* Cambridge, MA: MIT Press, 1988).

20. JA Anderson and J Silverstein (1978). Reply to Grossberg. *Psychological Review*, **85**, 597-603.

21. Non-analytic aspects of mathematics and their implications for research and education. *SIAM Review*, 1979, **21**, 112-127. (With P.J. Davis.)

22. Do you have to have a mind to be smart? In: D. Bindra (Ed.), *Neurosciences and the Mind-Body Problem.* New York: Gardner Press, 1980.

23. States: brain and computer. Book review in *Contemporary Psychology*, 1979, **24**, 172-173.

24. Les modeles mathematiques de l'organisation biologique de la memoire. In: *Plurisciences: 1979*, Paris: Encyclopaedia Universalis, 1979. (With L. Cooper.)

25. Parallel computation with simple neural networks. *Cognition and Brain Theory,* 1979, **3**, 45-53.

26. Network models for computation and cognition. Book review in *Contemporary Psychology*, 1980, **25**, 664-666.

27. *Parallel Models for Associative Memory.* Hillsdale, New Jersey: Erlbaum Associates, 1981. Revised Edition, 1989. (Edited with G. Hinton.)

28. Models of information processing in the brain. In: G. Hinton and J. Anderson (Eds.), *Parallel Models for Associative Memory.* Hillsdale, New Jersey: Erlbaum Associates, 1981. Revised Edition, 1988. (With G. Hinton.)

29. Categorization and selective neurons. In: G. Hinton and J. Anderson (Eds.), *Parallel Models for Associative Memory.* Hillsdale, New Jersey: Erlbaum Associates, 1981. Revised Edition, 1988. (With M. Mozer.)

30. A theory of categorization based on distributed memory storage. *Journal of Experimental Psychology: Learning, Memory and Cognition.* 1984, **9**, 610-622 (With A. Knapp.) (Reprinted in J.A. Anderson and E. Rosenfeld (Eds.), *Neurocomputing,* Cambridge, MA: MIT Press, 1988).

31. *Synaptic Modification, Neuron Selectivity, and Nervous System Organization*. Hillsdale, New Jersey: Erlbaum Associates, 1984. (Edited with S. Levy and S. Lehmkuhle.)

32. What Hebb synapses build. In: S. Levy, J. Anderson, and S. Lehmkuhle, *Synaptic Modification, Neuron Selectivity, and Nervous System Organization.* Hillsdale, New Jersey: Erlbaum Associates, 1985.

33. Neural models and a little about language. In: D. Caplan, A. Roche-Lecours, and A. Smith. *Biological Bases of Language*. Cambridge, Mass: MIT Press, 1984.

34. Neural models for cognitive computation. *IEEE Transactions: Systems, Man, and Cybernetics.* 1983, **SMC-13**, 799-815. (Reprinted in V. Vemuri (Ed.), *Artificial Neural Networks: Theoretical Concepts*, Washington, DC: Computer Society Press of the IEEE, 1988.)

35. A neural network model of multistable perception. *Acta Psychologica*. 1985, 59, 35-65. (With A. Kawamoto.)

36. Lexical Access Using a Neural Network. *Proceedings of the Cognitive Science Society*, June 28, 1984. (With A. Kawamoto.)

37. Cognitive Capabilities of a Parallel System. In E. Bienenstock, F. Foglemann, and G. Weisbuch. (Eds.) *Disordered Systems and Biological Organization*, Berlin: Springer, 1986.

38. Psychological Concepts in a Parallel System. In J.D. Farmer, A. Lapedes, N. Packard, and B. Wendroff. (Eds.) *Evolution, Games, and Learning*. New York: North Holland, 1986. (With Gregory L. Murphy).

39. Psychological Implications of Parallel Systems. *Optics News*, 1986, **12**, 29-33.

40. Concept Formation and Behavior in Neural Networks. J. Denker, Ed. *Neural Networks for Computing,* AIP Conference Proceedings 151, American Institute of Physics: New York, 1986. (With G.L. Murphy).

41. Concepts in Distributed Systems. In H. Szu (Ed.), *Proceedings of S.P.I.E. Institute on Optical and Hybrid Computing*. S.P.I.E.: Bellingham, Wash., 1987. (With R.M. Golden and G.L. Murphy).

42. Networks for Fun and Profit, *Nature*, 1986, **322**, 406-407.

43. Categorization in a Neural Network. In Ed. W. v. Seelen, *Theoretical Neurobiology,* Wenheim: VCH Verlagsgesellschaft MbH, 1988.

44. *Neurocomputing: Foundations of Research*, Cambridge, MA: MIT Press (1988). Edited with Edward Rosenfeld.

45. Tools for connectionist modelling: The Dynamical systems methodology. *Computers in Psychology, Behavior Research Methods Instruments, and Computers,* **20**, 1988, 276-281. (With Paul Munro).

46. A connectionist model for consonant-vowel syllable recognition, Conference Proceedings, *IEEE Speech and Signal Processing Meeting Proceedings*, Arden House, New York, June, 1988 (With M. Rossen, L.T. Niles, G.N. Tajchman, M.A. Bush, and S.E. Blumstein)

47. Concept formation in neural networks: Implications for evolution of cognitive functions. *Human Evolution,* 1987, **2**, 81-97.

48. A physical system approach to recognition memory for spatially transformed faces, *Neural Networks*, 1988, **1**, 179-200, (With A.J. O'Toole and R.B. Millward)

49. Software for neural networks, *ACM Computer Architecture transactions, Spring, 1988*, (With E.J. Wisniewski and S.R. Viscuso).

50. *What are neural nets good for?* Videotape and manual, Lawrence Erlbaum Associates, 1988, Hillsdale, N.J.

51. Training Methods for a Connectionist Model of Consonant Vowel Syllable Recognition, Proceedings, *IEEE International Conference on Neural Networks, San Diego, CA,* July, 1987, **I-239-I-246.** (With M.L. Rossen, L.T. Niles, G.N. Tajchman, and M.A. Bush)

52. Programming neural networks, *Neural Networks*, **1**, **Supp. 1**, Abstracts of the First Annual INNS Meeting, Boston, 1988, 157. (With A.B. Markman, S.R. Viscuso, and E.J. Wisniewski)

53. Radar Signal Categorization Using a Neural Network, Neural Networks, **1**, **Supp. 1**, *Abstracts of the First Annual INNS Meeting*, Boston, 1988, 422. (With P.A. Penz, M.T. Gately, and D. Collins)

54. Representing Simple Arithmetic in Neural Networks (1989) In: G. Tiberghien (Ed.), *Advanced Cognitive Science: Theory and Applications*, Chichester, England: Horwood. (With S.R. Viscuso and K.T. Spoehr)

55. Syntactic Category Disambiguation with Neural Networks, *Computer Speech and Language*, **3**, 203-217. (With J. Benello and A.W. Mackie)

56. A Neural Network Model of an Aspect of Motion Perception, In G. Cook (Ed.), *Science at the John von Neumann National Supercomputing Center, Consortium for Scientific Computing,* Annual Research Report, 1988. (With M.E. Sereno and D. Kersten)

57. Experiments with data representation in neural networks. (1990) *Synergetics of Cognition*, H. Haken (Ed). Berlin: Springer. (With M.L. Rossen, S.R. Viscuso, and M.E. Sereno) Reprinted in *Neurocomputing 2*, Edited by J.A. Anderson, A. Pellionisz and E. Rosenfeld, 1990, Cambridge, MA: MIT Press.

58. Representational issues in a neural network model of syllable recognition (1989), *IJCNN Conference Proceedings*, 1989, **I-19**, (With M.L. Rossen)

59. Analog capabilities of the BSB model as applied to the anti-radiation homing missile problem (1989), *IJCNN Conference Proceedings*, 1989, **II-7**, (With P.A. Penz, A. Katz, M.T. Gately, and D.R. Collins)

60. Radar signal categorization using a neural network, *IEEE Proceedings*, October, 1990, **78**, 1646-1657. (With M.T. Gately, P.A. Penz, and D.R. Collins).

61. Hybrid computation in cognitive systems: neural networks and symbols. (1990) *Applied Cognitive Psychology*, **4**, 337-347.

62. *Neurocomputing 2: Directions for Research* (1990) MIT Press. (With A. Pellionisz and E. Rosenfeld)

63. Data Representation in Neural Networks, *AI Expert*, **5** (June, 1990), 30-37.

64. Why, having so many neurons, do we have so few thoughts, 1991, In W.E. Hockley and S. Lewandowsky, *Relating Theory to Data: Essays on Human Memory*, Hillsdale, NJ: Erlbaum.

65. Computation with large numbers of units, In M. Sami and J. Calzadilla-Daguerre (Eds.), *Silicon architectures for neural networks*. IFIP Symposium Series, Amsterdam: Elsevier (1991).

66. A study in numerical perversity: Teaching arithmetic to a neural network (1993), In D.S. Levine and M. Aparicio (Ed.), *Neural Networks for Knowledge Representation and Inference*, Hillsdale, NJ: Erlbaum. (With K. Spoehr and D. Bennett)

67. Comments on *Foundations of Cognitive Science* (1992), *Psychological Science*, **2**, 283-287.

68. The BSB Model: A simple non-linear autoassociative network (1993), In M. Hassoun (Ed.), *Associative Neural Memories: Theory and Implementation*, Oxford: Oxford University Press.

69. Neural networks and Mark Twain's Cat, *Communications Magazine*, **30** (September, 1992), 16-23.

70. *Introduction to Neural Networks* (1995), Cambridge, MA: MIT Press.

71. *Talking Nets: An Oral History of Neural Network Research*, (1998). With E. Rosenfeld. Cambridge, MA: MIT Press.

72. Associative Computation (1995), In G. d'Ydewalle, P. Eelen, and P. Bertelson (Eds.), *International Perspectives on Psychological Science: The Stat of the Art*. 95-118, Hillsdale, NJ: Erlbaum.

73. Associative Networks, Article in M. Arbib (Ed., 1995), *The Handbook of Brain Theory and Neural Networks*, Cambridge, MA: MIT Press.

74. Neural Network Arithmetic, Article in M. Arbib (Ed., 1995), *The Handbook of Brain Theory and Neural Networks,* Cambridge, MA: MIT Press.

75. Seven times Seven is About Fifty (1998). D. Scarborough and S. Sternberg (Eds) *Invitation to Cognitive Science, Volume 4 Methods, Models and Conceptual Issues*, 255-300, Cambridge, MA: MIT Press.

76. From Discrete to Continuous and Back Again (1997), In J. Mira-Mira (Ed), *Proceedings of the International Conference on Brain Processes*, Theories and Models. Cambridge, MA: MIT Press.

77. Forward (1996). In E. Fiesler and R. Beale (Eds), *Handbook of Neural Computation,* New York, NY: Oxford University Press.

78. Directions for Future Research in Neural Networks (1996), In E. Fiesler and R. Beale (Eds.), *Handbook of Neural Computation*, New York, NY: Oxford University Press.

79. Computational and Neurobiological Features of a Network of Networks (1994), in *Proceedings of the 3rd Computational Neuroscience Meeting*, Monterey, CA. (With Jeffrey P. Sutton)

80. JA Anderson and JP Sutton (1995). A Network of Networks: Computation and Neurobiology, (1995) *In Proceedings of WCNN95*, Washington, DC. Hillsdale, NJ: Erlbaum Associates.

81. JA Anderson and JP Sutton (1997). If we compute faster, do we understand better? *Behavioral Research Methods, Instruments and Computers*, **29**, 67-77.

82. L Guan, JA Anderson and JP Sutton (1997). A network of networks processing model for image regularization, *IEEE Transactions on Neural Networks*, **8**, 1-6. (With Ling Guan and Jeffrey P. Sutton).

83. JA Anderson (2000). McCulloch-Pitts Neurons. *Encyclopedia of Cognitive Scie*nce. London: McMillan Reference, Ltd.

84. JA Anderson (2001). Nonconventional Computing Paradigms in the New Millennium. *Computers in Science and Engineering, 3, 82-96* (With A. Zomaya, D.B. Fogel, G.J. Milburn, and G. Rozenberg.

85. JA Anderson (2002). Hybrid Computation with an Attractor Neural Network. In: Y. Wang, R.H. Johnson, and M.R. Smith (Eds.), *Proceedings of the First IEEE Conference on Cognitive Informatics,* pp. 3-12, Los Alamitos, CA: IEEE Computer Society.

86. JA Anderson (2003). Hybrid Computation with an Attractor Neural Network. (2002) In Y. Wang (Ed), *Cognitive Informatics: Exploring the Natural Intelligence.* Singapore: World Scientific.

87. JA Anderson (2003). Arithmetic on a Parallel Computer: Perception versus Logic. *Brain and Mind*, **4**, 169-188.

88. JA Anderson (2005). A brain-like computer for cognitive software applications. *Proceedings, 2005 IEEE Conference on Cognitive Informatics, University of California, Irvine, CA*. IEEE Press.

89. JA Anderson and P Allopenna (2005). Cognitive Signal Processing: The Ersatz Brain Project. *Proceedings, 2005 IEEE International Workshop on Machine Learning for Signal Processing*, Groton, CT. IEEE Press.

90. JA Anderson, P Allopenna, GS Guralnik, D Sheinberg, JA Santini, Jr., D Dimitriadis (2007), BB Machta, and BT Merritt (in press). Programming a Parallel Computer: The Ersatz Brain Project. In W Duch, J Mandzuik, and JM Zurada (Eds.), *Challenges to Computational Intelligence.* Springer: Berlin.

91. JA Anderson and P Allopenna (2006). The Ersatz Brain Project: Cognitive Inspiration, Practical Application. Proceedings of the 2006 IEEE World Congress on Computational Intelligence, Vancouver, BC.

92. JA Anderson, P Allopenna, GS Guralnik, D Ferrante, and JA Santini, Jr. (in press) . Cognitive Computation: The Ersatz Brain Project. In Proceedings, International Workshop on the Frontier of Neural Engineering, Hangzhou, China, held March, 2011.

93. JA Anderson, P Allopenna, GS Guralnik, D Ferrante, and JA Santini, Jr. ·The Ersatz Brain Project: A Brain-Like Computer Architecture for Cognition. *Journal of Cognitive Informatics and Natural Intelligence (IJCINI), (*Vol. 6, 22-53).

94. JA Anderson. Perpectives on eBrains and Cognitive Computing. *International Journal of Cognitive Informatics and Natural Intelligence (IJCINI), (*I, Vol. 6, 1-21).

Books (Some Items Duplicated from Above List)

1. (27.) G Hinton and JA Anderson (Eds. 1981). *Parallel Models of Associative Memory*. Hillsdale, New Jersey: Erlbaum Associates. Revised Edition, 1989.

2. (31.) S Lehmkuhle, JA Anderosn, and S Levy (1984). *Synaptic Modification, Neuron Selectivity, and Nervous System Organization*. Hillsdale, New Jersey: Erlbaum Associates.

3. (44.) JA Anderson and E Rosenfeld (1988). *Neurocomputing: Foundations of Research*, Cambridge, MA: MIT Press .

4. (62.) JA Anderson, E Rosenfeld and A Pellionisz (1990). *Neurocomputing 2: Directions for Research.* Cambridge, MA: MIT Press.

5. (70.) JA Anderson (1995). *Introduction to Neural Networks*. Cambridge, MA: MIT Press. (This book was listed as one of the outstanding academic books of 1996 by Choice: Current Reviews for Academic Libraries. A Spanish edition is currently in preparation and a Far Eastern edition has appeared.)

6. (71.) JA Anderson and E Rosenfeld (1998). *Talking Nets: An Oral History of Neural Network Research*, Cambridge, MA: MIT Press. Paperback edition appeared April, 2000.)

7. Final revision in progress: After Digital: Computation in Brains and Machines. Oxford University Press.

7. Professional Societies and Government Panels

International Neural Network Society:
- Member, Governing Board (1987-1995),
- Fellow, INNS
- Secretary (1990-1992)
- Treasurer (1993-1994)
- Co-Chair of Technical Program, First Annual Meeting (Boston, September, 1988)

Co-Chair of Technical Program, International Joint Conference on Neural Networks, (Washington, DC, January, 1990).

Editorial and Advisory Boards, current and immediate past
- Journal of Neural Network Computation,
- Journal of Mathematical Psychology
- Connection Science
- Brain Research,
- Neural Computation.

Referee and panel member for many, many grants from NSF, NIMH, AFOSR, and foreign granting agencies.

Member and Chair, ad hoc review panel on Theoretical Neurobiology, NIMH. (1989-1991)

Chairman of the Cognitive Functional Neuroscience study section of NIMH (1991-1994).

Member, external review panels of programs at SUNY Buffalo, Dartmouth College, University of Minnesota, University of Texas, Dallas.

Member, National Science Foundation Committee of Visitors for Human Cognition and Perception Program Review (May, 1996)

Member, National Science Foundation Advisory Committee Social, Behavioral and Economic Sciences Directorate. (November, 1996 - November, 1998).

Chair, Evaluation Review Sub-Committee of SBE Advisory Committee. (November, 1997 - November, 1998.)

Member, NSF Blue Ribbon Panel, final evaluation of Center Proposals, April, 1999.

Member, External Advisory Board, National Space Biology Research Institute. (December, 1999 – December, 2002)

8. Major Lectures, Presentations, Grants and Business Experience since 1988.

8.1. Awards, Major Lectures and Presentations

Cecil and Ida Green Distinguished Lecturer, University of Texas, Dallas. October, 1988

20th Annual Joseph Henry Lecture, General Electric Corporation and American Association of University Women. November, 1988

IEEE Satellite Video Symposium on Neural Networks, September 25, 1989. ("Neural Networks.")

IEEE Satellite Video Symposium on Neural Networks, Organizer, May 23, 1991. ("Neural Network Applications in the 1990's.")

Keynote speaker, ANNA Conference, Fairfax, VA., May, 1991.

National Technical University, Satellite TV Introduction to Neural Network Technology, February 5, 1992

State-of-the-Art Lecture on Associative Computation and Network Learning, World Congress of Psychology, Brussels, July, 1992

Fesler-Lampert Visiting Lecturer, Department of Psychology, University of Minnesota, Minneapolis, MN, June, 1993

Keynote speaker, Joint Conference on Information Sciences, Wrightsville Beach, NC, October, 1995.

Invited Speaker, Society for Neuroscience Satellite Meeting, Washington, DC, November, 1996.

Keynote Speaker, University of Washington/Microsoft Summer Institute, Seattle, WA, August, 1998.

Keynote speaker, Joint Conference on Information Sciences, Durham, NC. October, 1998.

Keynote speaker, Brazilian Computer Society, Fifth Neural Network Conference, Belo Horizonte, Brazil, December, 1998.

Keynote Speaker, Joint Conference on Information Sciences, Atlantic City, NJ, March, 2000.

Keynote Speaker, Joint Conference on Information Sciences, Durham, NC (March, 2002). In conjunction with receiving an award in Information Science.

Listed in multiple Who's Who versions: Who's Who in America, Who's Who in New England, Who's Who in Biomedicine, Who's Who in High Technology, etc.

Invited Talk, AAAS Meeting, Boston, MA, February 2002.

Information Science Award, Joint Conference on Information Sciences, March, 2002.

Keynote Speaker, IEEE Conference on Cognitive Informatics, Irvine, CA, August, 2005.

Invited Talk, World Congress on Computational Intelligence, Vancouver, BC July 2006.

Invited Panel Participation, World Congress on Computational Intelligence, Vancouver, BC, July 2006.

Invited Speaker (2011), International Workshop on the Frontier of Neural Engineering, Hangzhou, China.

Keynote Speaker (2012), "11th IEEE International Conference on Cognitive Informatics and Cognitive Computing" sponsored by the IEEE group on Cognitive Informatics.

8.2. Recent Grants and Contracts

Office of Naval Research (1996-1999) (Subcontract from Massachusetts General Hospital) A Network of Networks: Computation and Neurobiology, $25,000/yr.

National Science Foundation (1997-2000) Adaptive Cortical Computation in the Visual Domain: An Integrated Approach. Learning and Intelligent Systems Program. $750,000 total

DARPA. Bio/Micro/Info program (2000-2005). Brain like computation with microstructures. $2,000,000 total.

Air Force Research Laboratory (Rome, NY) (2005-6). Consultant to Phase I SBIR Contract on the Ersatz Brain Project. Contract held by Aptima, Inc., Woburn, MA.

Air Force Research Laboratory (Rome, NY).(2006-7) Phase II SBIR: The Ersatz Brain Project. Subcontract from Aptima, Inc., Woburn, MA to Brown University for about $200,000.

DARPA Phase I STTR on the Ersatz Brain (2009) with continuation
DARPA Phase II STTR on the Ersatz Brain (2010-12). Subcontract from Aptima, Inc. to Brown University, roughly $200,000.

8.3. Business Experience

Founder and President of Artemis Associates, Inc., neural network consulting and education.

Past and present consultant: Honeywell, DuPont, Texas Instruments, Sonalysts, Inc., Photonic Systems, Inc., Distributed Data Systems, Inc., Raytheon-Texas Instruments Systems, Abstract Productions, Inc., Aptima, Inc.

Senior Consultant, Distributed Data Systems, Inc. consulting on radar source classification contract for the U.S. Navy.

Chief Scientist, Vice President and co-Founder, Simpli.Com, Inc. Design of a web search engine interface using principals of cognitive science and linguistics. (Sabbatical term, Fall, 1999)

Scientist in Residence (Senior Consultant) for Simpli.com, a wholly owned subsidiary of NetZero, Inc. (From August, 2000 to February 2002.).

8.4. Patent History

System and Method for High Speed Computing and Feature Recognition Capturing Aspects of Neocortical Computation. (Submitted July, 1996, Assigned to Massachusetts General Hospital and Brown University. Patent issued November, 1998, patent number 5,842,190.)

Patent licensed to Aptima, Inc., Woburn, MA in 2006.

A preliminary patent application on the formation of high level "Module Assemblies" tentatively entitled, "A Hybrid "Continuous-Discrete" Computational Approach for Use in Software for a Neocortex Inspired Computer" was submitted in 2009 jointly by Aptima, Inc. and Brown University, patent application (12/507901) filed in 2009 based on a 2008 provisional.

8.5. Seminars and Invited Talks (from 1989-2011):

University of California, San Diego, CA
University of Kentucky, Lexington, KY
University of West Virginia, Morgantown, WVA
Northwestern University, Evanston, IL
Northwestern University Medical School, Chicago, IL
Society for Philosophy and Psychology Meeting, Chapel Hill, NC
Columbia University, New York, NY
Jet Propulsion Laboratory, Pasadena, CA
Arden House Speech Conference, Arden House, Harriman, NY
Office of Naval Research, Contractor's Meeting, Washington, DC
Advanced Telephony Research (ATR), Osaka, Japan
Wright Patterson Air Force Base, OH
Alliant Computer Conf. on Network Applications, San Francisico, CA
Metroplex Neural Net Conference, Dallas, TX
State University of New York, Stony Brook, NY
IEEE-ACM Workshop on Neural Networks, Minneapolis, MN

IEEE Boston Section Neural Networks Lecture Series
University of Lowell, Lowell, MA
Georgetown University, Washington, DC
Boston University, Boston, MA
Siemens Corporate Research Laboratory, Princeton, NJ
ONR Signal Processing Conference, Leesburg, VA
Synergetics of Cognition, Schloss Elmau, Germany
U.C.L.A. Computer Science Dept., Los Angeles, CA
Harvard Business School, Boston, MA
Rockefeller University, New York, New York
Sanibel Symposium, St. Augustine, FL
NASA Neural Network and Fuzzy Logic Conference, Houston, TX
Neural Networks for Defense, San Diego, CA
Texas Instruments, Dallas, TX
Naval Surface Warfare Center, Washington, DC
University of Texas, Dallas, TX
MIND Conference, Dallas, TX
University of Connecticut, Storrs, CT
IFIP Workshop, Silicon Architectures for Neural Nets, Nice, France
Dartmouth College, Hanover, NH
Southeastern Massachusetts University, North Dartmouth, MA
Northwestern University, Evanston, IL
Tutorial Speaker, IJCNN, Seattle, WA
Korea-US Bilateral Workshop on Cognitive Science,
Artificial Intelligence, and Computer Science, Seoul, Korea
Elsevier Engineering Course in Neural Networks Garmisch-Partenkirchen, Germany
Communications Laboratory, McMaster Univerity, Ontario
IEEE Continuing Education Series, Gordon Institute, MA
NEC Research Laboratories, Princeton, NJ
University of Southern California, Los Angeles, CA
California Institute of Technology, Pasadena, CA
UCLA Computer Science, Los Angeles, CA
UCLA Extension Course, Los Angeles, CA
ACM Chapter, Hartford, CT
Reed College, Portland, OR
Oregon Graduate Institute, Portland, OR
IJCNN-92, Baltimore, MD
Computational Neuroscience Symposium, Indianapolis, IN
Digital Equipment Corporation, Hudson, MA
Queens University, Kingston, Ontario
IEEE ICNN Conference, San Francisco, CA
University of Minnesota, Minneapolis, MN
WCCN 93 Conference, Portland, OR
Mathematical Psychology Meeting, Norman, OK
University of Virginia, Charlottesville, VA
Int. Symposium on Integrating Knowledge and Neural Heuristics ‘94, Pensacola, FL
WCCN 94 Conference, San Diego, CA
Florida State University, Talahassee, FL
Brandeis University, Waltham, MA
SUNY Buffalo, Buffalo, NY
NIMH Workshop on Levels of Organization, Rockville, MD
WCNN 95 Conference, Washington, DC
University of Toronto, Toronto, Ont.
Theoretical Physics Institute, University of Minnesota, Minneapolis,MN
JCIS Conference, Wrightsville Beach, NC
University of Pennsylvania, Philadelphia, PA
Supercomputer Center, University of Minnesota, Minneapolis, MN

NSF, Washington, DC
McMaster University, Hamilton, Ontario
Society for Neuroscience, Satellite Meeting,
  Traversing Scales of Organization, Washington, DC
NSF Summer Workshop, Irvine, CA
University of Texas, Dallas, TX (2 talks)
Raytheon-Texas Instruments Systems, Dallas, TX
Naval Research Laboratories, Washington, DC
University of Washington/Microsoft Summer Institute, Seattle, WA
Joint Conference on Information Sciences, Durham, NC
Fifth Brazilian Neural Network Conference, Belo Horizonte, Brazil
JCIS, Atlantic City, NJ
National On-line Conference, New York, NY
Bioinformatics Presentation to NewCoGen, Inc., Cambridge, MA
AAAS Meeting Symposium (Invited Talk), Boston, MA
JCIS, Durham, NC (Award Presentation)
Redwood Neuroscience Institute, Menlo Park, CA
Stanford University, Stanford, CA
Intelligent Systems Conference, Santa Fe, NM
University of Massachusetts, North Dartmouth, MA
World Wide Consortium for the Grid, Manassas, VA.
Workshop on Cognitive Architectures, Cornell, Ithaca, NY
ICCI ’05, Irvine, CA
Air Force Research Laboratory, Rome, NY.
Rhode Island College, Providence, RI
Brown University, Providence, RI
Air Force Research Laboratory, Rome, NY
Cognitive Computing 2007, Berkeley, CA
Computer Research Institute, Budapest, Hungary (two talks)
Advanced Technology laboratories, Lockheed Martin, Cherry Hill, NJ.
DARPA Headquarters, Arlington, VA
Portland State University, Portland, OR
Chinese Academy of Engineering Workshop, Hangzhou China
Zhejiang University, Dept. of Engineering, Hangzhou, China
Kyoto, Japan, Kerynote, 11th IEEE International Conference on Cognitive
  Informatics and Cognitive Computing”.

9. Teaching

For Fall, 2015, and for the past few years, I taught a Freshman Seminar, CLPS 0050A, “Computation in Brains and Machines.” 2015 Enrollment was 16.

In the Spring, 2015 and for the past few years I have taught CLPS1491, Neural Modeling Laboratory. 2015 Enrollment was 7.

I also taught CLPS1900, the Senior Cognitive Seminar, a “capstone” course required for graduating seniors in the cognitive science concentration. 2015 enrollment was 10.

January 28, 2016