CURRICULUM VITAE (Research)

Alessandro SPERDUTI

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Personal Data:

Name: Alessandro Sperduti

Birth: May 11, 1965, Sora (FR), Italy

Current Position: Full Professor at the Department of Pure and Applied Mathematics, University of Padova, Italy

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Past Working Experience:

Nov.98-Feb.2001 Associate Professor at the Computer Science Department, University of Pisa, Italy.

Sept.94-Oct.98 Assistant Professor at the Computer Science Department, University of Pisa, Italy.

Jan.94-Sept.94 Postdoctoral at the Computer Science Department, University of Pisa, Italy.

Jan.93-Aug.93 Postdoctoral at the International Computer Science Institute, Berkeley, California, USA.

Studies:

Nov.89-Oct.92 Ph.D. in Computer Science, Computer Science Department, University of Pisa, Italy.

Nov.83-Oct.88 Laurea, Computer Science Department, University of Pisa, Italy. Thesis awarded A with honors.

Areas of Interest:

Neural Networks: supervised and unsupervised learning algorithms, mixed learning algorithms (supervised + unsupervised), optimization of the structure of feed-forward networks in order to improve generalization (pruning and regularization techniques), recurrent networks, representation and processing of data structures by neural networks, associative memories, neuro-fuzzy networks, complexity and computational issues, QSAR/QSPR tasks;

Machine Learning/AI: Boosting, Support Vector Machines, learning soft-constraints;

Hybrid Systems: combining symbolic and fuzzy systems with connectionist systems.

Pattern Recognition: medical applications, tangent distance based techniques.

List of Publications

Journal Papers

1 "Universal Approximation Capability of Cascade Correlation for Structures", B.Hammer, A. Micheli, A. Sperduti, *Neural Computation*, 2004. To appear.

2 "Acquiring both constraint and solution preferences", F. Rossi, A. Sperduti, *Constraints*, vol.9, n. 4, 2004, Kluwer. To appear.

3 "Recursive self-organizing network models", B.Hammer, A. Micheli, A. Sperduti, M.Strickert, Special issue on "New Developments in Self-Organizing Systems", *Neural Networks*, 2004. To appear.

4 "Contextual Processing of Structured Data by Recursive Cascade Correlation.", A. Micheli, D. Sona, A. Sperduti, *IEEE Transactions on Neural Networks*, July 2004. To appear.

5 "A general framework for unsupervised processing of structured data", B.Hammer, A.Micheli, M.Strickert, A.Sperduti, *Neurocomputing*, Vol. 57, Page(s): 3-35, March 2004.

6 "A Self-Organizing Map for Adaptive Processing of Structured Data", M. Hagenbuchner, A. Sperduti, A.C. Tsoi, *IEEE Transactions on Neural Networks*, Volume: 14 Issue: 3, May 2003 Page(s): 491 -505.

7 "Theoretical and Experimental Analysis of a Two-Stage System for Classification", N. Giusti, F. Masulli, A. Sperduti. *IEEE Trans. PAMI.*Volume: 24 Issue: 7, Jul 2002, pp. 893-904.

8 "A Re-weighting Strategy for Improving Margins", F. Aiolli, A. Sperduti. *Artificial Intelligence*, Elsevier. Volume 137, Issues 1-2 , May 2002, pp. 197-216.

9 "Analysis of the Internal Representations Developed by Neural Networks for Structures Applied to QSAR Studies of Benzodiazepines", A. M. Bianucci, A. Micheli, A. Sperduti, A. Starita. *Journal of Chemical Information and Computer Sciences*, Vol. 41, no. 1, pp. 202-218, 2001.

10 "Discriminant Pattern Recognition Using Transformation Invariant Neurons", D. Sona, A. Sperduti, and A. Starita. *Neural Computation.* Vol. 12, n.6, June 2000.

11 "Application of Recursive Cascade-Correlation Networks to Chemical Structures", *Applied Intelligence*, Bianucci A.M., Micheli A., Sperduti A., Starita A., Special Issue on "Neural Networks and Structured Knowledge", Vol. 12 (1/2):115-145, January 2000.

12 "On the Implementation of Frontier-to-Root Tree Automata in Recursive Neural Networks", M. Gori, Andreas Kuchler, and A. Sperduti. *IEEE Transactions on Neural Networks.* Vol. 10, n.6, 1999.

13 "A Framework for Adaptive Data Structures Processing", P. Frasconi, M. Gori, and A. Sperduti. *IEEE Transactions on Neural Networks.* Vol. 9, No. 5, pp. 768-786, 1998.

14 "Learning Solution Preferences in Constraint Problems", F. Rossi, A. Sperduti. *Journal of Experimental and Theoretical Artificial Intelligence.* Vol 10, pp. 103-116, 1998.

15 "Rule Specialization in Networks of Fuzzy Basis Functions", F. Casalino, F. Masulli, and A. Sperduti. *Intelligent Automation and Soft Computing*, Vol. 4, No. 1, pp. 73-82, 1998.

16 "Supervised Neural Networks for the Classification of Structures", A. Sperduti, A. Starita. *IEEE Transactions on Neural Networks.* Vol. 8, n. 3, pp. 714-735, 1997.

17 "On the Computational Power of Neural Networks for Structures", A. Sperduti. *Neural Networks.* Vol. 10, n. 3, pp. 395-400, 1997.

18 "A System for the Automatic Morphological Analysis of Mediaeval Manuscripts", F. Masulli, D. Sona, A. Sperduti A. Starita, G. Zaccagnini. *Journal of Forensic Document Examination*, Vol. 9, pp. 45-55, Fall 1996.

19 "Stability Properties of the Labeling Recursive Auto-Associative Memory", A. Sperduti. *IEEE Transactions on Neural Networks*, Vol.6, n. 6, 1995.

20 "A Neural Network Model for Associative Access of Structures", A. Sperduti, A. Starita. *International Journal of Neural Systems*, Suppl. Vol. 6, pp. 189-194, 1995.

21 "Labeling RAAM", A. Sperduti. *Connection Science*,Vol. 6, n. 4, pages 429-459, 1994.

22 "Speed Up Learning and Network Optimization with Extended Back Propagation", A. Sperduti, A. Starita. *Neural Networks* , Vol. 6, pp. 365-383, 1993.

Book Chapters

23 "A novel approach to QSPR/QSAR based on Neural Networks for Structures", A. M. Bianucci, A. Micheli, A. Sperduti, and A. Starita, in *Soft Computing Approaches in Chemistry*, Eds. L. Sztandera and H. Cartwright, Studies in Fuzziness and Soft Computing, Vol. 120, pp. 265-296, 2003, Springer-Verlag.

24 "From Sequences to Data Structures: Theory and Applications", Frasconi P., Gori M., Kuchler A., Sperduti A., in *Dynamical Recurrent Networks*, Eds. J. Kolen and S.C. Kremer, pp. 351-374, IEEE Press, 2001.

25 "On the Need for a Neural Abstract Machine", D. Sona, A. Sperduti, in *Sequence Learning: Paradigms, Algorithms, and Applications*, Eds. Ron Sun and Lee Giles, LNCS deluxe edition, Springer-Verlag, Vol. 1828, pp. 135-162, 2000.

26 "Learning Techniques for Supervised Fuzzy Classifiers", F. Masulli, A. Sperduti, in *Fuzzy Learning and Applications*, Eds. L.C. Jain amd M. Russo, CRC Press, USA, pp. 147-169, 2000.

27 "Integration of Graphical-Based Rules with Adaptive Learning of Structured Information". Frasconi P., Gori M., Sperduti A., in *Hybrid Neural Symbolic Integration*, Lecture Notes in Computer Science, VOL. 1778, Eds. S. Wermter and R. Sun, Springer-Verlag, pp. 211-225, 2000.

28 "A Tutorial on Neurocomputing of Structures", A. Sperduti, in *Knowledge-based Neurocomputing*, Ed. J. Zurada and I. Cloete, MIT Press. pp. 117-154, MIT Press, 2000.

29 "A Neural-based System for the Automatic Classification and Follow-up of Diabetic Retinopsthies", Starita A., Sperduti A., In "Artificial Neural Networks in Biomedicine", Eds. E. Ifeachor, P. Lisboa, and P.S. Szczepaniak, pp. 233-247, Springer-Verlag. 2000.

30 "Recursive Neural Networks for Processing Data Structures", A. Sperduti, in *Adaptive Processing of Temporal Information*, Ed. C. L. Giles and M. Gori. LNAI 1387, Springer-Verlag, pp. 121-144, 1998.

31 "Distributed representations for terms in hybrid reasoning systems", A. Sperduti, A. Starita, C. Goller. in *Connectionist Symbolic Integration*, Ed. R. Sun and F. Alexandre, Lawrence Erlbaum Associates. Chapter 18, pp. 329-344. 1997.

Papers Published in Refereed Conference Proceedings

32 "Learning Preferences for Multiclass Problems", F. Aiolli, A. Sperduti, *Advances in Neural Information Processing Systems (NIPS) 2004*. MIT Press. To appear.

33 "A generalized quadratic loss for Support Vector Machines", F. Portera, A. Sperduti, *16th European Conference on Artificial Intelligence*, August 2004 Valencia, Spain. pp. 628-632.

34 "A preliminary experimental comparison of recursive neural networks and a tree kernel method for QSAR/QSPR regression tasks", A. Micheli, F. Portera, A. Sperduti, in: M.Verleysen (ed.), *European Symposium on Artificial Neural Networks'2004*, D-side publications, Pages: 293-298, 2004.

35 "Multi-prototype Support Vector Machines", F. Aiolli, A. Sperduti, *18th International Joint Conference on Artificial Intelligence 2003*, Acapulco, Mexico, August 9-15, 2003, Pages: 541-546.

36 "Speeding up the solution of multilabel problems with Support Vector Machines", F. Aiolli, F. Portera, A. Sperduti, *Joint 13th International Conference on Artificial Neural Networks and 10th International Conference on Neural Information Processing, ICANN/ICONIP 2003*, June 26-29, 2003, Istanbul, TURKEY, supplementary proceedings, Pages: 118-121.

37 "Formal Determination of Context in Contextual Recursive Cascade Correlation Networks", A. Micheli, D. Sona, A. Sperduti, *Joint 13th International Conference on Artificial Neural Networks and 10th International Conference on Neural Information Processing, ICANN/ICONIP 2003*, June 26-29, 2003, Istanbul, TURKEY, LNCS, Volume 2714, Pages: 173-180, Springer-Verlag Heidelberg.

38 "Discretizing continuous attributes in AdaBoost for text categorization", P. Nardiello, F. Sebastiani, A. Sperduti. *25th European Conference on Information Retrieval Research*, April 14-16, 2003, Pisa, Italy, LNCS, Volume 2633, Pages: 320-334, Springer-Verlag Heidelberg.

39 "On linear Separability of Sequences and Structures", A. Sperduti, in: J.R.Dorronsoro (Ed.), *Artificial Neural Networks – ICANN 2002*, Madrid, Spain, August 28-30, 2002, LNCS, Volume 2415 Springer, Pages: 601-606, Springer-Verlag Heidelberg.

40 "Learning and Solving Soft Temporal Constraints: An Experimental Study", F. Rossi, A. Sperduti, K.B. Venable, L. Khatib, P. Morris, R. Morris, *Proc. CP 2002*, Springer Verlag, LNCS, Ithaca, NY, September 2002.

41 "An efficient SMO-like algorithm for multiclass SVM", Aiolli, F.; Sperduti, A., , *Proceedings of the 2002 12th IEEE Workshop on Neural Networks for Signal Processing*, 2002, pp. 297-306.

42 "A general framework for unsupervised processing of structured data", B. Hammer, A. Micheli, A. Sperduti, in: M.Verleysen (ed.), *European Symposium on Artificial Neural Networks'2002*, D-side publications, 389-394, 2002.

43 "Recursive Cascade Correlation for Contextual Processing of Structured Data". A. Micheli, D. Sona, A. Sperduti. *International Joint Conference on Neural Network 2002*, Hawaii, USA. Volume: 1 , 2002 pp. 268 -273.

44 "Modelling in the neural abstract machine framework". D. Sona, A. Sperduti. *NATO Advanced Research Workshop on "Limitations and Future Trends in Neural Computation"*, Siena, 22-24 October 2001, pp. 99-108.

45 "Self-organizing maps for structured data". M. Hagenbuchner, A. Sperduti, A-C. Tsoi. *NATO Advanced Research Workshop on "Limitations and Future Trends in Neural Computation"*, Siena, 22-24 October 2001, pp. 89-98.

46 "A Simple Additive Re-weighting Strategy for Improving Margins", F. Aiolli, A. Sperduti. *International Joint Conference on Artificial Intelligence* , 2001 (IJCAI'01), Seattle, vol. 2, 927-32.

47 "Neural Networks for Adaptive Processing of Data Structures". A. Sperduti. *International Conference on Artificial Neural Networks*, Aug. 21-25, 2001 Vienna. pp. 5-12, (articolo invitato).

48 "Design of New Biologically Active Molecules by Recursive Neural Networks". A. Micheli, A. Sperduti, A. Starita, A. M. Bianucci. *International Joint Conference on Neural Network 2001*, Washington, DC, Vol. 4, pp 2732–2737.

49 "Learning preferences on temporal constraints: a preliminary report". F. Rossi, A. Sperduti, L. Khatib, P. Morris, R. Morris. *Proc. TIME 2001*, IEEE Computer Society Press, June 2001, vol. 1, 63-68, 2001.

50 "A supervised self-organising map for structured data". M. Hagenbuchner, A. C. Tsoi, A. Sperduti.*Proc. WSOM 2001: Advances in Self-Organising Maps*. pp. 21-28. Springer, June 2001.

51 "An improved boosting algorithm and its application to automated text categorization". F. Sebastiani, A. Sperduti, and N. Valdambrini. In A. Agah, J. Callan, and E. Rundensteiner, editors, *Proceedings of CIKM-00, 9th ACM International Conference on Information and Knowledge Management*, pages 78-85, McLean, US, 2000. ACM Press, New York, US.

52 "Learning Efficiently with Neural Networks: A Theoretical Comparison between Structured and Flat Representations" P. Frasconi, M. Gori, A. Sperduti. *European Conference on Artificial Intelligence*, 2000 (ECAI 2000), pp. 301-305, 2000.

53 "Bi-causal Recurrent Cascade Correlation" A. Micheli, D. Sona, A. Sperduti, *International Joint Conference on Neural Networks 2000*, Vol. 3, pag. 3-8, 2000.

54 "Experimental results on Learning Soft Constraints", A. Biso, F. Rossi, A. Sperduti, in *Proc. KR 2000 (7th Int. Conf. on Principles of Knowledge Representation and Reasoning)*, Breckenridge, CO, USA, April 12-15, Morgan Kaufmann 2000, pp. 435-444.

55 "Optical Font Recognition for Multi-Font OCR and Document Processing" S. La Manna, A.M. Colla, A. Sperduti. *10th International Workshop on Database and Expert Systems Applications*, 1-3 September, 1999, Firenze. pp. 549-553. IEEE Press.

56 "Multiple Classifier Systems for the Automatic Detection of Anomalies in Retinas of Diabetic Patients" M. Morganti, A. Sperduti, A. Starita. *3rd International Conference on Neural Networks and Expert Systems in Medicine and Healthcare*, 2-4 September, 1998, Pisa. pp. 101-108. World Scientific.

57 "Quantitative Structure-Activity Relationships of Benzodiazepines by Recursive Cascade Correlation", A. M. Bianucci, A. Micheli, A. Sperduti, A. Starita. Proceeding *International Joint Conference on Neural Networks* , 1998 (IJCNN'98). Anchorage. pp. 117-122.

58 "A Constructive Learning Algorithm for Discriminant Tangent Models", D. Sona, A. Sperduti, A. Starita. *Advances in Neural Information Processing Systems*, MIT Press. pp. 786-792, 1997.

59 "Logo Recognition by Recursive Neural Networks", P. Frasconi, E. Francesconi, M. Gori, S. Marinai, J.Q. Sheng, G. Soda, A. Sperduti. *Second International Workshop on Graphics Recognition, GREC'97.* Eds. Kasturi, R. and K. Tombre, LNCS, pp.104–117, Springer-Verlag, 1997.

60 "On the Efficient Classification of Data Structures by Neural Networks", P. Frasconi, M. Gori, A. Sperduti. *International Joint Conference on Artificial Intelligence* , 1997 (IJCAI'97), Nagoya. pp. 1066-1171, 1997.

61 "An Overview on Supervised Neural Networks for Structures", A. Sperduti. *IEEE International Conference on Neural Networks* , 1997 (ICNN'97), Houston. Vol. 4, pp. 2550-2554.

62 "Competitive and Hybrid Neuro-Fuzzy Models for Supervised Classification", N. Giusti, F. Masulli, A. Sperduti. *IEEE International Conference on Neural Networks* , 1997 (ICNN'97), Houston. Vol. 1, pp. 516-521.

63 "Diabetic Retina Analyser", E. Casi, A. Ceravola, R. Cionini, A. Sperduti, A. Starita. *Proceedings of the 18th Annual International Conference of IEEE Eng. in Med. and Biol. Soc.* Vol 4, pp. 282-283, Amsterdam, 1996.

64 "Extended Cascade-Correlation for Syntactic and Structural Pattern Recognition", A. Sperduti, D. Majidi, A. Starita. *International Workshop on Structural and Syntactic Pattern Recognition*, August 20-23, 1996, Leipzig, Germany. Lecture Notes in Computer Science 1121, Berlin: Springer-Verlag. pp. 90-99.

65 "A Memory Model Based on LRAAM for Associative Access of Structures", A. Sperduti, A. Starita. *Proceedings of IEEE International Conference on Neural Networks*, June 2-6, Washington, DC, USA, 1996. Vol. 1, pp. 543-548.

66 "A Hybrid Pattern Recognition Scheme", F. Masulli, A. Sperduti, D. Alfonso,. *Applications of Fuzzy Logic Technology III - International AeroSense Symposium*, 10-12 April, Orlando, USA, 1996. pp. 154-162.

67 "Competitive Learning in a Classifier based on an Adaptive Fuzzy System", D. Alfonso, F. Masulli, and A. Sperduti. *International Symposium on SOFT COMPUTING - SOCO'96*, Reading, England March 26 - 28, 1996. pp. C2-C8.

68 "Learning Distributed Representations for the Classification of Terms", A. Sperduti, A. Starita, C. Goller. *International Joint Conference on Artificial Intelligence '95*, Vol. 1, pp.509-515, Montreal, 1995.

69 "Rule Specialization and Semantic Phase Transition in the Adaptive Fuzzy System", F. Casalino, F. Masulli, and A. Sperduti. *First ICSC International Symposium on Fuzzy Logic*, Zurich (Switzerland) 26-27 May 1995, pp. B87-B92.

70 "Modular Labeling RAAM", A. Sperduti, A. Starita. *International Conference on Neural Networks and Genetic Algorithms*, pp. 368-371, May 16-19, Ales Cedex, France, 1995.

71 "A Rapid Graph-based Method for Arbitrary Transformation Invariant Pattern Classification", A. Sperduti, D.G. Stork. *Advances in Neural Information Processing Systems*, Vol. 7, pp. 665-672. MIT Press.

72 "Encoding Pyramids by Labeling RAAM", S. Lonardi, A. Sperduti, A. Starita. *IEEE Workshop on Neural Networks for Signal Processing*, 6-8 September, Ermioni, 1994, pp. 651-660.

73 "Using Labeling RAAM to Encode Medical Conceptual Graphs", M. de Gerlache, A. Sperduti, A. Starita. *International Conference on Neural Networks and Expert Systems in Medicine and Healthcare*, August 24-26, Plymouth, 1994.

74 "Semantic Phase Transition in a Classifier Based on an Adaptive Fuzzy System", F. Casalino, F. Masulli, A. Sperduti, F. Vannucci. *Proceedings of IEEE International Conference on Fuzzy Systems*, 26-29 June, Orlando, USA, 1994, pp. 808-812.

75 "On the Access by Content Capabilities of the LRAAM", A. Sperduti, A. Starita. *IEEE International Conference on Neural Networks*, 28 June - 2 July, Orlando, USA, 1994, pp. 1143-1148.

76 "Encoding Conceptual Graphs by Labeling RAAM", M. de Gerlache, A. Sperduti, A. Starita. *International Conference on Artificial Neural Networks*, Sorrento, Italy, 1994, pp. 272-275.

77 "Rejection Driven Hierarchy of Neural Network Classifiers", S. Knerr, A. Sperduti. *Proceedings of International Symposium on Nonlinear Theory and its Applications '93*, Waikiki, pp. 957-961, 1993

78 "Encoding of Labeled Graphs by Labeling RAAM", A. Sperduti. in *Advances in Neural Information Processing Systems*, Vol. 6, pp. 1125-32. San Mateo, CA: Morgan Kaufmann.

79 "Exploitation of Structured Gating Connections for the Normalization of a Visual Pattern", A. Sperduti. *International Joint Conference on Neural Networks '93*, Nagoya, pp. 228-232, 1993.

80 "An Example of Neural Code: Neural Trees Implemented by LRAAM", A. Sperduti, A. Starita. *International Conference on Neural Networks and Genetic Algorithms*, Innsbruck, pp. 33-39, 1993.

81 "Unsupervised and Mixed Learning Using Input-Orderings with Weightless Neural Networks", M. H. Gera, A. Sperduti. *International Joint Conference on Neural Networks*, Beijing, Vol. 3, pp. 678-683, 1992.

82 "A Neural Optimizer Exploiting Linear Redundancy", A. Sperduti, A. Starita. *International Joint Conference on Neural Networks*, Beijing, Vol. 2, pp. 500-505, 1992.

83 "Using Linear Dependency in the Weight Space to Reduce the Size of a Feed-forward Network", A. Sperduti, A. Starita. *International Joint Conference on Neural Networks*, Beijing, Vol. 2, pp. 460-461, 1992.

84 "Discovering Nonlinear Dependences in the Output of Feed-forward Networks", A. Sperduti, A. Starita. *International Conference on Artificial Neural Networks*, Brighton, Vol. 2, pp. 425-428, 1992.

85 "Integration of Contact and Positional Information in the Hand", A. Sperduti, A. Starita. *Proceedings of Medicon '92*, Capri, Vol. 2, pp. 1071-1074.

86 "Reducing Linear Redundancy in Neural Networks", A. Sperduti, A. Starita. *International Joint Conference on Neural Networks*, Baltimore, Vol. 4, pp. 612-617, 1992.

87 "Integration of Contact and Positional Information in the Hand: a Computational Model", A. Sperduti, A. Starita. *Proceedings of Interface to Real and Virtual Worlds '92*, Montpellier, pp. 267-275.

88 "Extension of Generalized Delta Rule to Adapt Sigmoid Functions", A. Sperduti, A. Starita. *13th Annual International Conference IEEE/EMBS*, Orlando, Vol. 3, pp. 1393-1394, 1991.

89 "An Algorithm for Multi-scale Analysis in Edge Detection", A. Navangione, A. Sperduti, A. Starita. *International Conference on Image Analysis and Processing*, Como, pp. 526-530, 1991.

90 "Hand Control by a Neural Network Using Tactile and Positional Information", A. Sperduti, A. Starita. *5th International Conference on Advanced Robotics*, Pisa, Vol. 2, pp. 1747-1751, 1991

91 "Interacting Neural Networks for Tactile Data Driven Motor Control of the Hand", A. Starita, A. Sperduti. *12th Annual International Conference IEEE/EMBS*, Philadelphia, Vol. 3, pp. 1440-1441, 1990.

Other Papers (Minor Conferences)

92 "Support Vector Regression with a Generalized Quadratic Loss", F. Portera, A. Sperduti, *15th Italian Workshop on Neural Nets, WIRN 2004*, Perugia, Italy, September 14-17, 2004, to appear, Springer-Verlag Heidelberg.

93 "QSAR/QSPR Studies by Kernel Machines, Recursive Neural Networks and Their Integration", A. Micheli, F. Portera, A. Sperduti, *14th Italian Workshop on Neural Nets, WIRN VIETRI 2003*, Vietri sul Mare, Italy, June 4-7, 2003, Pages: 308-315, Springer-Verlag Heidelberg.

94 "SPI: A System for Paleographic Inspections", F. Aiolli, M. Simi, D. Sona, A. Sperduti, A. Starita, G. Zaccagnini, *Notiziario AI*IA*, n. 4, December 1999.

95 "Tangent Models: Comparing the TD-neuron Constructive Algorithm versus SVD Based Algorithms", D. Sona, A. Sperduti, A. Starita. *10th Italian Workshop on Neural Networks (WIRN)*, Vietri sul Mare, Ed. M. Marinaro, R. Tagliaferri, Springer. pp. 377-382, 1998.

96 "Hidden Recursive Models", P. Frasconi, M. Gori, A. Sperduti. *9th Italian Workshop on Neural Networks (WIRN)*, Vietri sul Mare, Ed. M. Marinaro, R. Tagliaferri, 1997, Springer.

97 "Classification of Structures by Recurrent Neural Networks", A. Sperduti, A. Starita. *8th Italian Workshop on Neural Networks (WIRN)*, Vietri sul Mare, Ed. M. Marinaro, R. Tagliaferri, pp. 143-149, 1996, Springer.

98 "A General Learning Framework for the RAAM Family", A. Sperduti, A. Starita. *7th Italian Workshop on Neural Networks (WIRN)*, Vietri sul Mare, Ed. M. Marinaro, R. Tagliaferri, pp. 136-141, 1995, World Scientific.

99 "Encoding Quadtrees by Labeling RAAM", S. Lonardi, A. Sperduti, A. Starita. *atti Giornata di Studio: Elaborazioni di Immagini Mediante Reti Neurali'*, Fondazione Ugo Bordoni, 16 Dicembre, Roma, 1993.

100 "Modular Neural Codes Implementing Neural Trees", A. Sperduti, A. Starita. *6th Italian Workshop on Neural Networks (WIRN)*, Vietri sul Mare, 1993, pp. 339-346.

101 "Equation Sets as a Tool for the Declarative Semantics of Perpetual Processes", A. Sperduti, X. J. Chen. *GULP '91, Atti del VI Convegno sulla Programmazione Logica*, Pisa, pp. 149-160.

Editorials

102 "Editorial of the Special issue on integration of symbolic and connectionist systems", Frasconi, P., Gori, M., Kurfess, F. and Sperduti, A. *Cognitive Systems Research* 3(2), June 2002, Elsevier Science B.V., Pages 121-123.

103 "Guest editors' introduction: special section on connectionist models for learning in structured domains", Frasconi, P.; Gori, M.; Sperduti, A.; *Knowledge and Data Engineering, IEEE Transactions on*, Volume: 13 Issue: 2, March-April 2001 Page(s): 145 -147.

PhD Thesis

104 "Optimization and Functional Reduced Descriptors in Neural Networks", A. Sperduti. *TD-22/93*, Dipartimento di Informatica, Università di Pisa.

Edited Books and Special Issues

- Guest Editor (jointly with Barbara Hammer and Craig Saunders) of **Neural Networks** special issue on *Neural Networks and Kernel Methods for Structured Domains*, 2005.
- Guest Editor (jointly with Paolo Frasconi, Marco Gori and Franz Kurfess) of **Cognitive Systems Research** special issue on *Integration of Symbolic and Connectionist Systems*, 3(2), June 2002, Elsevier Science B.V.
- Guest Editor (jointly with Paolo Frasconi and Marco Gori) of **IEEE Transactions on Knowledge and Data Engineering** special issue on *Connectionist Models for Learning in Structured Domains*, Volume: 13 Issue: 2.
- "Neural Networks and Expert Systems in Medicine and Healthcare", NNESMED '98, Proc. of the 3rd International Conference on Neural Networks and Expert Systems in Medicine and Healthcare, Pisa, E.C. Ifeachor, A. Sperduti, A. Starita Eds., World Scientific, 1998.

Other Activities

- International Tutorials:
  - Tutorial on Machine learning for the categorization of text documents and Web pages, **17th International Joint Conference on Artificial Intelligence**, Seattle, USA, July 2001 (jointly with Fabrizio Sebastiani).
  - Tutorial on Neural Networks for Data Structures: Principles and Applications, **16th International Joint Conference on Artificial Intelligence**, City Conference Center, Stockholm, Sweden, July 31st - August 6th 1999 (jointly with Paolo Frasconi).
  - "Neural Networks for processing data structures", "E.R. CAIANIELLO SUMMER SCHOOL" on Adaptive Processing of Sequences, Vietri sul Mare, Salerno (IT), 6th - 14th September, 1997.
  - "Neural Networks for Structured Knowledge", **15th International Joint Conference on Artificial Intelligence**, NAGOYA, Aichi, Japan. August 23rd-29th, 1997. (jointly with Franz Kurfeß).
  - "Neural Networks for Processing of Structures", Autumn School on Hybrid Systems, Fachhochschule Ravensburg - Weingarten, Germany, September 1996.
- Program Committee Member of:
  - *ICANN 2005 International Conference on Artificial Neural Networks*, September 2005 Warsaw, Poland.
  - *IEEE-INNS-ENNS International Joint Conference on Neural Networks*, July 2004, Budapest, Hungary.
  - *16th European Conference on Artificial Intelligence*, August 2004 Valencia, Spain.
  - *26th European Conference on Information Retrieval Research (ECIR-04)*, April 2004, University of Sunderland, U.K.
  - *Joint 13th International Conference on Artificial Neural Networks and 10th International Conference on Neural Information Processing, ICANN/ICONIP*, June 2003, Istanbul, Turkey.
  - *25th European Conference on Information Retrieval Research (ECIR-03)*, April 2003, Pisa, Italy.
  - *International Conference on Machine Learning (ICML 2002)*, July, 2002, The University of New South Wales, Sydney, Australia.
  - *IEEE-INNS-ENNS International Joint Conference on Neural Networks*, July 2000, Como, Italy.
  - *International Symposium on Computational Intelligence*, 29th August - 1st September 2000, Kosice, Slovakia.
  - *International Conference on Neural Networks and Expert Systems in Medicine and Healthcare '98*, September 1998, Pisa.
  - (Co-chair) Workshop "Neural Networks and Structured Knowledge", within *12th European Conference on Artificial Intelligence*, Budapest, Hungary, 1996.
  - *International Conference on Neural Networks and Genetic Algorithms*, Ales Cedex, France, 1995.

- *International Conference on Neural Networks and Genetic Algorithms*, Innsbruck, Austria, 1993.

- Member of the Editorial Bord of "Neural Information Processing - Letters & Reviews", ISBN: 89-89453-04-6 93560.
- Member of the Executive Committee of the European Neural Networks Society (ENNS), since 2002.
- Member of the Steering Committee of the Italian Society on Neural Networks (SIREN) and Program Committee Member of the annual Italian Workshop on Neural Nets (WIRN).
- Organizer of a Special Session within the IJCNN 2004 on "Neural Networks and Kernel Methods for Structured Domains" (ENNS Special Session).
- Organizer (jointly with Paolo Frasconi, Marco Gori, and Franz Kurfess) of the Workshop "Foundations of connectionist-symbolic integration: representation, paradigms, and algorithms", within European Conference on Artificial Intelligence, Humboldt University, Berlin (Germany) August 21, 2000.
- Organizer (jointly with Franz Kurfeß) of the Special Session on "Soft Computing of Structured Information" within IIA/SOCO '99, Genova, 1999.
- Organizer (jointly with Paolo Frasconi) of the Workshop "Learning dynamical data structures: From sequences to graphs" within "Neural Information Processing Systems '97", Breckenridge, Colorado.
- Organizer (jointly with Franz Kurfeß) of the Workshop "Logic and Reasoning with Neural Networks", within International Conference on Logic Programming, Santa Margherita Ligure, Italy, 1994.
- Co-organizer of the Workshop "Combining Symbolic and Connectionist Processing", within European Conference on Artificial Intelligence, Amsterdam, Netherlands, 1994.
- Reviewer for conferences and journals, such as *IEEE Transactions on Neural Networks*, *IEEE Transactions on Fuzzy Systems*, *IEEE Transactions on Systems, Man,and Cybernetics*, *Neurocomputing*, *Discrete Applied Mathematics*.
- Reviewer of project proposals for the *Australian Research Council*.
- Head of local research units in several national projects (MIUR grants), and involved into international projects, mainly in neural networks theory and neural networks applications in Chemistry.