Robert Christopher Lacher

Personal. US Citizen, married, three children (none living at home).

Education. B.S., University of Georgia, 1962; M.A., University of Georgia, 1964; Ph.D. (Mathematics), University of Georgia, 1966; Major Professor: James C. Cantrell.

Memberships. Phi Beta Kappa, Phi Kappa Phi, Sigma Xi, American Mathematical Society, Association of Members of the Institute for Advanced Study, Association for Computing Machinery, Institute of Electrical and Electronic Engineers, IEEE Computer Society, American Chemical Society, International Neural Networks Society, Florida State University President's Club.

Fellowships. NDEA Fellow, 1962-65; NSF Graduate Fellow, 1965-66; Institute for Advanced Study Fellow, 1967-68; Alfred P. Sloan Fellow, 1970-72.

Academic Positions

Computer Science Faculty, Florida State University Panama City, 2004-08
Adjunct (Computer Science), Florida State University Panama City, 2003-04
Professor (Computer Science), Florida State University, 1984-2003
Professor (Mathematics), Florida State University, 1975-2003
Associate Professor (Mathematics), Florida State University, 1970-75
Assistant Professor (Mathematics), Florida State University, 1968-70
Member, Institute for Advanced Study, Princeton, New Jersey, 1967-68
Research Instructor and Assistant Professor, University of California, Los Angeles, 1966-67

Administrative Positions

Acting and Founding Director, FSU Office for Distributed and Distance Learning, July 1999-June 2002.
Chair, FSU Department of Computer Science, 1991-94, 1994-97, 1997-98
Acting Chair, FSU Department of Computer Science, January-August, 1990

Other Professional Positions and Titles

FSU Teaching Incentive Program Award Recipient, 1994
FSU College of Arts and Sciences Outstanding Advisor, 1990
Short Term Member, Institute for Advanced Study, Princeton, New Jersey, Fall, 1987
Bicentennial Speaker in Mathematics, University of Georgia, April, 1985
(commemorating the Bicentennial of the University, 1785-1985)
Main Speaker, 1978 Conference for Undergraduate Mathematics, April, 1978
Special Guest Lecturer in Mathematics, University of North Carolina, Greensboro, April, 1977
Resource Person, Course in Shape Theory and Pro-Homotopy,
Inter-University Centre of Post-Graduate Studies, Dubrovnik, Yugoslavia, Winter, 1976
Visiting Professor, University of Warwick, Coventry, England, Summer, 1972
Member, Institute for Advanced Study, Princeton, New Jersey, Spring, 1972
Research Scientist, Institute for Defense Analyses, Communications Research Division, Summer, 1968

Inventions and Patents

US Patent # 5,649,066, Method and Apparatus for Refinement of Learning in Expert Networks, issued July 15, 1997, by US Patent Office. [Approved 12-90; filed 1-92; accepted 3-97; issued 7-97; co-inventors are R.C. Lacher, David C. Kuncicky, and Susan I. Hruska.]

US Patent # 5,524,176, Fuzzy Expert System Learning Network, issued June 4, 1996, by US Patent Office. [Approved 11-92 by all parties; filed 10-93; accepted 12-95; issued 6-96; co-inventors are R.C. Lacher (FSU) and Kazunari Narita (Daido Steel Company, Ltd.).]

Software Products

1. **CROSSWALK (1985-87).** A simulation of extramolecular configuration in crystalline polymers, called state-of-the-art by DOE reviewers. Instrumental in 5 publications and 6 invited lectures. Supported by the US Office of Naval Research.

2. **PolyStruct (1987-90).** A PC-based suite for calculating various physical and topological structural variables for prediction of material properties of crystalline polymers. Supported by the US Office of Naval Research.

3. **KNODES (1988-89).** A suite of workstation software for use by scientists and engineers working on reactive flow problems numerically. The modules replace human assistants for many tasks related to the use of large mainframes (supercomputers) for numerically intensive investigations. Supported by the Florida High Technology and Industry Council (design/prototype.)

4. **ENBP (1991-92).** Expert Network BackPropagation learning with influence factors. Portable C version developed with S. I. Hruska. CM FORTRAN version developed with S. I. Hruska and K.D. Nguyen. Supported by the Florida High Technology and Industry Council.

5. **fsuSTL (1998-2003).** A standard template library meeting most of the specifications and all of the functionality requirements of the C++ STL, but with some naming and conventional changes making the library sufficiently different from the STL to be suitable for student assignments. Students can build, expand, experiment with, and create applications using the library. The library also facilitates exploration of issues, options, and choices that were faced by the STL standards committee. Suitable for use in modern data structures and algorithms classes and also in professional development environments. The library features improved *set*, *map*, and *hashtable* containers that are adaptor classes, allowing the client program to select the underlying implementation technology while maintaining the abstract data type through the common adaptor interface.

6. **xnet (2007-).** New object oriented implementation of ENBP, together with new inventions in knowledge discovery. Proprietary with Select University Technologies, Inc.

Journal Articles

1. R.C. Lacher, Locally flat strings and half-strings, *Proc. Amer. Math. Soc*. **18** (1967) 299-304.

2. R.C. Lacher, Some conditions for manifolds to be locally flat, *Trans. Amer. Math. Soc*. **126** (1967) 119-130.

3. R.C. Lacher, Almost combinatorial manifolds and the annulus conjecture, *Michigan Math. J.* **14** (1967) 357-364.

4. J.C Cantrell and R.C. Lacher, Flattening a submanifold in codimension one and two, *Bull. Amer. Math. Soc*. **74** (1968) 314-315.

5. R.C. Lacher, Cell-like mappings of ANR's, *Bull. Amer. Math. Soc*. **74** (1968) 933-935.

6. R.C. Lacher, Topologically unknotting tubes in euclidean space, *Illinois J. Math*. **12** (1968) 483-493.

7. R.C. Lacher, A disc in n-space which lies on no 2-sphere, *Duke Math. J*. **35** (1968) 735-738.

8. J.C. Cantrell and R.C. Lacher, Local flattening of a submanifold, *Quart. J. Math*. (Oxford 2nd Series) **20** (1969) 1-10.

9. R.C. Lacher, Cell-like spaces, *Proc. Amer. Math. Soc*. **20** (1969) 598-602.

10. R.C. Lacher, Cell-like mappings, I, *Pacific J. Math*. **30** (1969) 717-731.

11. K. Kuratowski and R.C. Lacher, A theorem on the space of monotone mappings, *Bull. Pol. Acad. Sci*. **12** (1969) 797-800.

12. R.C. Lacher, Some wild spheres and groups actions, *Fundamenta M*ath. **67** (1970) 195-202.

13. J.C. Cantrell and R.C. Lacher, Some local flatness criteria for low-codimensional submanifolds, *Quart.erly J. Math.* (Oxford 2nd Series) **21** (1970) 129-136.

14. R.C. Lacher, Cellularity criteria for maps, *Mich.igan J. Math*. **17** (1970) 385-396.

15. R.C. Lacher, Cell-like mappings, II, *Pacific J. Math*. **35** (1970) 648-660.

16. R.C. Lacher, Suspending homotopy 3-spheres and embedding mapping cylinders in *S4, Proc. Amer. Math. Soc*. **27** (1971) 584-586.

17. R.C. Lacher and D.R. McMillan, Jr., Partially acyclic mappings between manifolds, *American J. Math*. **94** (1972) 246-266.

18. J.L. Bryant and R.C. Lacher, Mapping cylinder neighborhoods of one-complexes in four-space, *Trans. Amer. Math. Soc.* **164** (1972) 333-339.

19. R.C. Lacher, Some mapping theorems, *Trans. Amer. Math. Soc*. **195** (1974) 291-303.

20. J.L. Bryant and R.C. Lacher, Embeddings with mapping cylinder neighborhoods, *Topology* **14** (1975) 191-201.

21. J.W. Baker and R.C. Lacher, Some mappings which do not admit an averaging operator, *Pac. J. Math***. 62** (1976) 43-48.

22. R. Geoghegan and R.C. Lacher, Compacta with the shape of finite complexes, *Fundamenta Math*. **92** (1976) 25-28.

23. R.C. Lacher, A cellularity criterion based on codimension, *Glasnik Mathematicki* **11** (1976) 135-140.

24. J.J. Andrews and R.C. Lacher, Stacked exponents, *Aequationes Mathematicae* **15** (1977) 305-306 and **16** (1977) 137-147.

25. R.C. Lacher, Cell-like mappings and their generalizations, *Bull. Amer. Math. Soc*. **83** (1977) 495-552.

26. J.L. Bryant and R.C. Lacher, Blowing up homology manifolds, *J. London Math. Soc*. (2) **16** (1977) 372-376.

27. R.C. Lacher, R. McArthur, and G. Buzyna, Catastrophic changes in circulation flow patterns, *American Scientist* **65** (5) (1977) 614-621.

28. J.L. Bryant and R.C. Lacher, A Hopf-like invariant for mappings between odd-dimensional manifolds, *Gen. Top. Appl*. **8** (1) (1978) 47-62.

29. J.L. Bryant and R.C. Lacher, Resolving 0-dimensional singularities in generalized manifolds, *Math. Proc. Cambridge. Phil. Soc.* **83** (1978) 403-413.

30. J.L. Bryant and R.C. Lacher, Resolving acyclic images of three-manifolds, *Math. Proc. Cambridge Phil. Soc*. **88** (1980) 311-319.

31. D. Repovs and R.C. Lacher, A disjoint disks property for 3-manifolds, *Topology and its Applications* **16** (1983) 161-170.

32. D. Repovs and R.C. Lacher, Resolving acyclic images of nonorientable 3-manifolds, *Proc. Amer. Math. Soc.* **90** (1984) 157-162.

33. R.C. Lacher, J.L. Bryant, L.N. Howard, and D.W. Sumners, Linking phenomena in the amorphous phase of semicrystalline polymers, *Macromolecules* **19** (1986) 2639-2643.

34. R.C. Lacher, J.L. Bryant, and L.N. Howard, A model for the asymptotic behavior of loop entanglement in a constrained liquid region , *J. Chem. Phys*. **85** (1986) 6147-6152.

35. R.C. Lacher, Estimating topological interlamellar connections in long-strand polymers, *Kemija u Industriji* **35** (1986) 653-656.

36. R.C. Lacher, Loop entanglement in a constrained liquid region: simulation data, simplified models, and general measurement heuristics, *Macromolecules* **20** (1987) 3054-3059.

37. R.C. Lacher and J.L. Bryant, On the amorphous structure of ethylene - 1-alkene copolymers, *Macromolecules* **21** (1988) 1183-1184.

38. J.L. Bryant and R.C. Lacher, Topological structure of semicrystalline polymers, *Topology Proceedings* **13** (1988) 1-16.

39. J.L. Bryant and R.C. Lacher, Molecular weight dependence in Flory's theory of crystallization of copolymers, J. *Chem. Phys*. **92** (1990) 3977-3979.

40. D.C. Kuncicky, S.I. Hruska, and R.C. Lacher, The equivalence of expert system and neural network inference, *International Journal of Expert Systems* **4** (3) (1992) 281-297.

41. R.C. Lacher, S.I. Hruska, and D.C. Kuncicky, Backpropagation learning in expert networks, *IEEE Transactions on Neural Networks* **3** (1) (1992) 62-71.

42. R.C. Lacher, Expert networks: Paradigmatic conflict, technological rapprochement, *Minds and Machines* **3** (1993) 53-71.

43. K.D. McCroan and R.C. Lacher, Region coloring, edge coloring, and scan-conversion of maps, *Journal of Computational Geometry and Applications* **4** (4) (1994) 423-455.

44. R.C. Lacher, P.K. Coats, S.C. Sharma, and L.F. Fant, A neural network tool for classifying the financial health of a firm, *European Journal of Operations Research* **85** (1) (1995) 53-65.

Book Chapters

1. R.C. Lacher and A. Wright, Mapping cylinders and 4-manifolds, *Topology of Manifolds*, Markham, Chicago, 1970, 424-427.

2. J.W. Cannon, J.L. Bryant, and R.C. Lacher, The structure of generalized manifolds with singular set of trivial dimension, Geometric Topology (Georgia, 1977) (J.C. Cantrell, ed.), Academic Press, 1979, 261-300.

3. R.C. Lacher, Generalized 3-manifolds, Shape Theory and Geometric Topology, *Springer-Verlag Lectures in Mathematics #870*, 1981, 82-92.

4. F.Craig Johnson and R.C. Lacher, Contributions of mathematics to qualitative research methods, *Qualitative Methods for Institutional Research*, Jossey-Bass, San Francisco, 1982, 27-42.

5. D. Edelson, J. Diehl, E. King, H.S. Liao, C.E. Martin, L. Sibley, and R.C. Lacher, Expert systems for computational chemistry, *MATH/CHEM/COMP 1987*, Elsevier Science Publishers, Amsterdam, 1988, 13-36.

6. R.C. Lacher, Estimating topological interlamellar connections in long-strand polymers, II, *MATH/CHEM/COMP 1987*, Elsevier Science Publishers, Amsterdam, 1988, 235-244.

7. R.C. Lacher and J.L. Bryant, Topological structure in copolymers of ethylene, *MATH/ CHEM/COMP 1988* (A. Graovac, ed.), Elsevier Science Publishers, Amsterdam, 1989, 309-316.

8. D. Edelson, R.C. Lacher, C.E. Martin, S. Varma, and B.-H. Wang, Expert systems for large-scale scientific and engineering computation, II. Design and implementation of a reactive flow simulator, *Expert System Applications in Chemistry,* ACS Symposium Series #408 (Bruce A. Hohne and Thomas H. Pierce, ed.), American Chemical Society, Washington, DC, 1989, 49-61.

9. R.C. Lacher and D.W. Sumners, Data structures and algorithms for computation of topological invariants of entanglements: Link, Twist, and Writhe, *Computer Simulation of Polymers* (R.J. Roe, ed.), Prentice Hall, Englewood Cliffs, NJ, 1990, 365-373.

10. R.C. Lacher, Node error assignment in expert networks, *Hybrid Architectures For Intelligent Systems* (A. Kandel and G. Langholz, ed.), CRC Press, Boca Raton and London, 1992, pp 29-48.

11. R.C. Lacher and K.D. Nguyen, Hierarchical architectures for reasoning, Chapter 4 of *Computational Architectures for Integrating Neural and Symbolic Processes* (R. Sun and L. Bookman, eds.), Kluwer Academic Publishers, Boston, 1994, pp 117-150.

Books

1. *College Mathematics* (R.C. Lacher and J.L. Bryant, authors). Prindle, Weber and Schmidt, Boston, 1982. 544 pages. A college textbook.

2. MATH/CHEM/COMP 1986 (A. Graovac, R.C. Lacher, and N. Trinajsti\'c, editors). Kemija u Industriji, volume 35, issue 12, December 1986. 71 pages. Special issue devoted to proceedings of an international course and conference on the interfaces between Mathematics, Chemistry, and Computer Science, Dubrovnik, June 23-25, 1986.

3. MATH/CHEM/COMP 1987 (R.C. Lacher, editor). Elsevier Science Publishers, Amsterdam, 1988. 378 pp. (No. 54 in the series Studies in Physical and Theoretical Chemistry.) Proceedings of the Dubrovnik Conference on the Interfaces between Mathematics, Chemistry, and Computer Science, June 22-26, 1987.

National and International Conference Proceedings

1. R.C. Lacher, Finiteness theorems in the study of mappings between manifolds, *Proc. Oklahoma Top. Conf.* (1972), U. of Oklahoma, 1972, 79-96.

2. M.A. Gutierrez and R.C. Lacher, Semifree group actions and homology spheres, *Proc. Utah Conf. Geom. Top*. 1974, Springer-Verlag Lectures in Mathematics #438, 1975, 240-244.

3. J.L. Bryant, R.C. Lacher, and B.J. Smith, Free spheres with mapping cylinder neighborhoods, *Proc. Utah Conf. Geom. Top.* 1974, Springer-Verlag Lectures in Mathematics #438, 1975, 58-65.

4. R.C. Lacher, k-Sphere mappings on S2k+1, *Proc. Utah Conf. Geom. Top. 1974*, Springer-Verlag Lectures in Mathematics #438, 1975, 332-335.

5. R.C. Lacher, Resolutions of generalized manifolds, *Proceedings of the International Conference on Geometric Topology,* Polish Scientific Publishers, PWN, 1980, 277-292.

6. R.C. Lacher, Qualitative mathematical phenomena in a model of decision making, *Proc. European Association of Institutional Research, Louvain-La-Neuve, 1981* (John R. Calvert, ed.), Management Studies, Loughborough University of Technology, England, 1982, 41-56.

7. R.C. Lacher and C.R. Braswell, Mass processing of randomly generated geometric information [SCRI Report # 87 05] *Proceedings Supercomputing '87 vol.II*, International Supercomputing Institute, St.Petersburg, 1987, 229-237.

8. R.C. Lacher, Loop entanglement in a constrained liquid region, *Polymer Preprints* **28** (2) (1987) 268-269. (Paper presented at the Spring, 1987, meeting of the American Chemical Society, New Orleans, LA.)

9. R.C. Lacher, Simulation and computation of topological structure trapped by crystallization, *Polymer Preprints* **30** (1989) 277-278. (Invited paper presented at the Fall, 1989, meeting of the American Chemical Society, Miami, FL.)

10. R.C. Lacher and D.W. Sumners, Algorithms for computation of topological invariants of entanglements, *Polymer Preprints* **30** (1989) 11-12. (Invited paper presented at the Fall, 1989, meeting of the American Chemical Society, Miami, FL.)

11. R.C. Lacher and J.L. Bryant, Molecular weight dependence in Flory's theory of crystallization of copolymers, *Polymer Preprints* **30** (1989) 320. (Paper presented at the Fall,1989, meeting of the American Chemical Society, Miami, FL.)

12. S.I. Hruska, D.C. Kuncicky, and R.C. Lacher, Hybrid learning in expert networks, *Proceedings IJCNN 91 – Seattle (vol. II)*, IEEE 91CH3049-4, July, 1991, pp 117-120.

13. S. Hruska, A.P. Dalke, J.J. Ferguson, and R.C. Lacher, Expert Networks in CLIPS, *Proceedings 2nd Annual CLIPS Conference* (J. Giarratano and C. Culbert, eds.), NASA Scientific and Technical Information Branch, Houston, 1991, pp 267-272.

14. M.E. Manausa and R.C. Lacher, Parameter sensitivity in the backpropagation learning algorithm, *Proceedings IJCNN 91 - Singapore*, IEEE 91CH3065-0, November, 1991, pp 390-395.

15. S.I. Hruska, D.C. Kuncicky, and R.C. Lacher, Resuscitation of certainty factors in expert networks, *Proceedings IJCNN 91 - Singapore*, IEEE 91CH3065-0, November, 1991, pp 1653-1657.

16. R.C. Lacher The symbolic/sub-symbolic interface: hierarchical network organizations for reasoning, *AAAI 92 Workshop on Integrating Neural and Symbolic Processes*, AAAI, 1992, pp 17-22.

17. U.M. Ziegler, L.M. Hawkes, and R.C. Lacher, Rapid learning with large weight changes and plasticity, *Proceedings IJCNN 92 - Baltimore* IEEE 92CH3114-6, Vol. II, June, 1992, pp 146-151.

18. K. Narita and R.C. Lacher, The FEN learning architecture, *Proceedings IJCNN 93 - Nagoya*, IEEE, October, 1993, pp 1901-1905.

19. F.W. Fang and R.C. Lacher, Network complexity and learning efficiency of constructive learning algorithms, *Proceedings IEEE International Conference on Neural Networks (World Congress on Computational Intelligence - Orlando)* IEEE 94CH3429-8, Vol. I, June, 1994, pp 366-369.

20. B. Yoon and R.C. Lacher, Extracting rules by destructive learning, *Proceedings IEEE International Conference on Neural Networks (World Congress on Computational Intelligence - Orlando)* IEEE 94CH3429-8, Vol. III, June, 1994, pp 1766-1771.

21. R.C. Lacher and D.A. Klotter, Reverbaprop: Simultaneous learning of credit and weight, *Applications and Science of Neural Networks, April,1995*, SPIE Vol.~2492, 1995, pp 550-559.

22. Lili Yuan and R.C. Lacher, Repetition induced incompetence in a reinforcement learning based control system, *Proceedings Joint Conference of Information Sciences, vol 2:Computational Intelligence* (Paul P. Wang, ed.), Duke University, Durham, NC, March, 1997, pp 106-109.

23. K.D. Nguyen and R.C. Lacher, Self-organization of hierarchical architectures, *Proceedings IASTED Conference of Artificial Intelligence and Soft Computing*, Banff, July 1997.

24. Allan Egbert, Jr, and R.C. Lacher, Building EMYCIN expert systems from raw data sources, *Proceedings International Conference on Artificial Intelligence*, CREA Press, Las Vegas, 1999, pp 571-573.

25. Cristi Gale, R.C. Lacher, Ernest L. McDuffie, Constance A. Buenafe, and Chris W. Baumgart, The adaptive multi-sensor security system, AMISS, *Proceedings International Conference on Artificial Intelligence*, CREA Press, Las Vegas, 1999, pp 574-577.

26. R.S. Renner, B.A. Juliano, and R.C. Lacher, A simulation tool for managing intelligent ensembles, *Proceedings International Conference on Artificial Intelligence*, CREA Press, Las Vegas, 1999, pp 578-584.

27. Huey Ling Toh and R.C. Lacher, Computerized Adaptive Student Help: Experiments in low-cost artificially intelligent automation of student-tutor interaction, WSEAS Transactions on Computer 3(5) (2004) 1576--1581. [ISSN 1109-2750]

28. Huey Ling Toh, Lois Wright Hawkes, and R.C. Lacher, Query-based model for improved ranking in closed domain factoid question answering, International Conference on Information Society (Proceedings i-Society 2010), London, July, 2010.

Regional Conference Proceedings and Supervised Student Papers

1. H.S. Liao and R.C. Lacher, A language for knowledge representation with frames, *Proc. 1989 Florida AI Research Symposium* (M.B. Fishman, ed.), Florida AI Research Society, St. Petersburg, FL, 1989, 181-183.

2. H.S. Liao and R.C. Lacher, Simulation of multi-layer neural networks on ETA-10, *Proc. 1989 Florida AI Research Symposium* (M.B. Fishman, ed.), Florida AI Research Society, St. Petersburg, FL, 1989, 261.

3. H.S. Liao, A. Kandel, and R.C. Lacher, Knowledge representation in Automatic COBOL Programmer, *Proc. International Conference on Knowledge Engineering and Software Engineering*, June 1989.

4. K. Kerce and F. Mueller, Heuristic link networks, *WNN-90 (First Workshop on Neural Networks: Academic/Industrial/NASA/Defense)*, February, 1990. (Oral presentation only.)

5. P.H. Smith, III and N. Kipp, Lunar lander controller, *WNN-90 (First Workshop on Neural Networks: Academic/Industrial/NASA/Defense)*, February, 1990. (Oral presentation only.)

6. M.E. Manausa and M. Miers, A feed-forward, back-propagation, user-friendly, neural network simulator for the IBM PC and compatibles, *WNN-90 (First Workshop on Neural Networks: Academic/Industrial/NASA/Defense*), February, 1990. (Oral presentation only.)

7. D.H. Lowe, L.P. O'Keefe, R.C. Lacher, and M.A. Berkley, A neural network model of feline vernier acuity: Comparison with psychophysical data, *WNN-90 (First Workshop on Neural Networks: Academic/Industrial/NASA/Defense)*, February, 1990. (Oral presentation only.)

8. D.C. Kuncicky, S.I. Hruska, and R.C. Lacher, Shaping the Behavior of Neural Networks [FSUCS Technical Report 90-051] *Proceedings WNN-91 (SPIE vol. 1515)*, Auburn University, February, 1991, pp 173-180.

9. S.I. Hruska, D.C. Kuncicky and R.C. Lacher, Learning in Acyclic Neural Networks [FSUCS Technical Report 90-052] *Proceedings WNN-91 (SPIE vol. 1515*), Auburn University, February, 1991, pp 181-186.

10. M.E. Manausa and R.C. Lacher, Chaos and the step-size dilemma in the back-prop learning algorithm [FSUCS Technical Report 90-053] *Proceedings WNN-91 (SPIE vol. 1515)*, Auburn University, February, 1991, pp 153-160.

11. M.J. Putriment and R.C. Lacher, Two-Stage learning, *Proceedings WNN-91*, Auburn University, February, 1991. (Oral presentation only).

12. R.R. Rocker, S.I. Hruska, and R.C. Lacher, TONGS: A tool for object-oriented neural network graphic simulation, *Proceedings WNN-91 (SPIE vol. 1515),* Auburn University, February, 1991, pp 765-771.

13. M.J. Putriment and R.C. Lacher, Two-stage learning in artificial neural networks, *Proceedings FLAIRS 91 (M.B. Fishman, ed.),* Florida AI Research Society, April, 1991, pp 52-55.

14. K.D. Nguyen and R.C. Lacher, Learning EMYCIN Semantics, *Proceedings International Symposium on Integrating Knowledge and Neural Heuristics,* May, 1994, pp 85-93.

15. R.C. Lacher, S.I. Hruska, and D.C. Kuncicky, Expert Networks: A neural network connection to symbolic reasoning systems, *Proceedings FLAIRS 91* (M.B. Fishman, ed.), Florida AI Research Society, April, 1991, pp 12-16.

16. M.E. Manausa and R.C. Lacher, Chaos in the back-propagation learning algorithm, *Proceedings FLAIRS 91* (M.B. Fishman, ed.), Florida AI Research Society, April, 1991, pp 47-51.

17. F.W. Fang and R.C. Lacher, An incremental learning algorithm for a constructive network, *Proceedings FLAIRS 91* (M.B. Fishman, ed.), Florida AI Research Society, April, 1991, pp 181-184.

18. J.S. Weaver and R.C. Lacher, A model for the total cost of software, *Proceedings Software Engineering Research Forum SERF-91*, Tampa, FL, November, 1991 (R.V. Rodriguez, ed.), pp 159-168.

19. A.P. Schwarz, L.C. Deeb, R.C. Dougherty, and R.C. Lacher, Expert network for aiding in blood glucose control of type I diabetes patients, *Proceedings FLAIRS 92* (M.B. Fishman, ed.), Florida AI Research Society, April, 1992, pp 91-93.

20. K.D. Nguyen, K.S. Gibbs, R.C. Lacher, and S.I. Hruska, A connection machine based knowledge refinement tool, *Proceedings FLAIRS 92* (M.B. Fishman, ed.), Florida AI Research Society, April, 1992, pp 283-286.

21. F.W. Fang and R.C. Lacher, The Stack Neural Learning Architecture, *Proceedings FLAIRS 93* (M.B. Fishman, ed.), Florida AI Research Society, April, 1993, pp 223-227.

Technical Reports (unpublished)

1. *Catastrophe Theory: State of the Art and Potential Applications* (with F.C. Johnson), ONR Report Number NR 170-938, Organizational Effectiveness Research Program, Office of Naval Research (code 452), Arlington VA 22217, 1983. 137 pages.

2. *Computers In The Curriculum*, A report prepared for William D. Law, Jr., Vice President for Institutional and Program Planning, St. Petersburg Junior College, St. Petersburg, FL, 1985. 7 pages.

3. *The CROSSWALK Simulation: Design, Development, Verification, Analysis, and Data,* Discrete Mathematics Research Program, Office of Naval Research, 1989. 8 megabytes ascii.

4. *Software Engineering: The Applied Science of Computing* (with R. Salley), White paper on the Florida software industry and the need for cooperative university-industry programs in software engineering education, Department of Computer Science, Florida State University, 1989. 7 pages.

5. *Preliminary Assessment for a Masters in Software Engineering at FSU*, FSUCS Technical Report 92-111, November, 1992. 14 pages.

Conference Presentations∗

1. Topology of Manifolds Conference, University of Georgia, August, 1968 (1 hour) [R]
2. Conference in Geometrical Topology, University of Utah, March, 1971 (1 hour) [I]
3. Conference on Topology, University of Oklahoma, March, 1972 (1 hour) [I]
4. Special Session on Mapping Problems, AMS Annual Meeting (Dallas),January, 1973 [I]
5. Conference on Geometric Topology, Park City, Utah, February, 1974 (40 min.) [I]
6. Georgia Topology Conference, University of Georgia, July, 1974 (1 hour) [I]
7. Special Session on Shape Theory, AMS Regional Meeting (Mobile), March, 1975 [R]
8. Main Speaker, American Mathematical Society (Mobile), March, 1975 (1 hour) [I]
9. Special Session on Geometric Topology, AMS Regional Meeting (Tallahassee), March, 1976 [R]
10. Special Session on Modeling in Biological Systems, AMS Regional Meeting (Columbia, SC), November, 1976 [R]
11. Florida Student Symposium in Molecular and Cellular Biology, Florida State University, Tallahassee, May, 1977 (1 hour) [I]
12. Main Speaker, 1978 Conference for Undergraduate Mathematics (held at Wesleyan University, Connecticut) April, 1978 Conference on Geometric Topology, Warsaw, August, 1978 (1 hour) [I]
13. International Conference on Geometric Topology, Warsaw, August, 1978 (1 hour) [I]
14. National Science Foundation-CBMS Conference on Topology of Manifolds, October, 1978 (1 hour) [I]
15. Conference in Honor of R.H. Bing's 65th Birthday, Austin, TX, October, 1979 [I]
16. European Association for Institutional Research - FORUM 1981, Louvain-la-Neuve, Belgium, November, 1981 (45 min.) [R]
17. Georgia Topology Conference, University of Georgia, June, 1982 (1 hour) [R]
18. General address, Research Seminar in Science, Technology and Environmental Policy, Dubrovnik, June, 1986 (1 hour) [I]
19. Technical address, MATH/CHEM/COMP conference, Dubrovnik, June, 1986 (1 hour) [R]
20. Special Session in Geometric Topology, Meeting 828 of the American Mathematical Society (Logan), October, 1986 [R]
21. Second International Conference on Supercomputing, Santa Clara, May, 1987 [I]
22. MATH/CHEM/COMP 1987, Dubrovnik, June, 1987 (2 hour talks) [R]
23. MATH/CHEM/COMP 1988, Dubrovnik, June, 1988 (1 hour) [R]

∗ These are all either by invitation [I] or selected by peer review of advanced submission [R].

24. ACS Applied Polymer Science Award Symposium, Dallas, April, 1989 [I]

25. INNOVATION '89: Conference on University-Industry-Entrepreneurship, Gold Coast Venture Capital Club and University of Miami Venture Capital Forum (with David Edelson), Coral Gables, April, 1989 [I]

26. ACS Symposium: The Crystalline State, Miami, September, 1989 [I]

27. ACS Symposium: Computer Simulation of Polymers, Miami, September, 1989 [I]

28. WNN-90 (First Workshop on Neural Networks: Academic/Industrial/NASA /Defense), Auburn, February, 1990 (Panel member and workshop paper) [R]

29. FLAIRS 90 (Florida AI Research Symposium, 1990), Cocoa Beach, April, 1990, (Panel member) [I]

30. WNN-91 (Second Workshop on Neural Networks), Auburn University, February, 1991 (Invited Tutorial) [I]

31. FLAIRS 91 (Florida AI Research Symposium, 1991), Cocoa Beach, April, 1991, [R]

32. Symposium on Approaches to Cognition, University of North Carolina, Greensboro, April, 1991, (main speaker) [I]

33. International Joint Conference on Neural Networks (IJCNN 91 - Singapore), Singapore, November, 1991 (invited address) [I]

34. American Association for Artificial Intelligence, Workshop on Integrating Neural and Symbolic Processes (The Cognitive Dimension), July, 1992 [R]

35. World Congress on Neural Networks, Panel on Hybrid Intelligence, July, 1993 [I]

36. International Symposium on Integrating Knowledge and Neural Heuristics, Panel on Future Directions of AI (chair), May, 1994 [I]

37. IEEE International Conference on Neural Networks - World Congress on Computational Intelligence, Orlando, June, 1994 [R]

38. SPIE Conference on the Science and Applications of Neural Networks, April, 1995 [I]

39. R.C. Lacher and Gordon Davies, Solving the Inequality New SE Curriculum + Revised CS Curriculum + Distance Learning <= Resource Limits, IEEE Frontiers in Education Conference, Puerto Rico, November 1999 [R]

Invited Colloquia and Seminars

1. Seminar in Groups and Topology, Institute for Advanced Study, March, 1968

2. Seminar in Groups and Topology, Institute for Advanced Study, April, 1968

3. Colloquium, Department of Mathematics, University of Utah, March, 1972

4. Geometric Topology Seminar, Princeton University, April, 1972

5. Colloquium, Department of Mathematics, University of Georgia, May, 1972

6. Topology Seminar, University of Warwick, Coventry, England, July, 1972

7. Colloquium, Department of Mathematics, University of California, Los Angeles, March, 1973

8. Colloquium, Department of Mathematics, University of Florida, October, 1973

9. Lectures on Cell-like mappings, Inter-University Centre of Post-Graduate Studies, Dubrovnik, Yugoslavia, February, 1976 (6 hours)

10. Special Guest Lecturer in Mathematics, University of North Carolina, Greensboro, April, 1977 (3 hours)

11. Interdepartmental Physics Colloquium, Westinghouse Research and Development Center, Pittsburgh, November, 1977

12. Colloquium, Department of Mathematics, Memphis State University, March, 1978

13. Topology Seminar, Kent State University, May, 1978

14. Colloquium, Department of Mathematics, Kent State University, May, 1978

15. Topology Seminar, Pennsylvania State University, May, 1978

16. Colloquium, Department of Mathematics, Pennsylvania State University, May, 1978

17. Interdisciplinary Lecture series in Catastrophe Theory, Florida State University, April, 1980. (The second hour lecturer in a series of three.)

18. Colloquium, Department of Mathematics, University of Tennessee, May, 1980

19. Bicentennial Speaker in Mathematics, University of Georgia, April, 1985 (commemorating the Bicentennial of the University, 1785-1985)

20. Colloquium, Department of Mathematics, University of Ljubljana, November, 1985

21. Mathematics Seminar, University of Ljubljana, November, 1985

22. Topology Seminar, University of Zagreb, November, 1985

23. Joint Mathematics-Chemistry Seminar, University of Zagreb, November, 1985

24. MARTECH Solid State Physics Seminar, Florida State University, October, 1986

25. Materials Seminar, IBM-Almaden Research Center, May, 1987

26. Macromolecules Seminar, University of California at San Francisco, May, 1987

27. National Bureau of Standards, Polymers Division, November, 1987

28. The Effect of Supercomputer Resources at FSU on Scientific Research in Florida, US Department of Energy Review, Tallahassee, March, 1988

29. Colloquium, Sante Fe Institute, October, 1990

30. Colloquium, School of Computer Science, University of West Florida, November, 1990

31. Colloquium, Chaos Study Group, UNCG, April, 1991

32. Colloquium, Department of Mathematics, Auburn University, May 1991

33. Colloquium, Department of Computer Science and Engineering, University of South Florida, June 1991

34. Colloquium, Department of Mathematics, University of Georgia, June 1993

35. Colloquium, School of Computer Science, University of Oklahoma, June 1993

36. Colloquium, Department of Computer Science, Florida State University, October, 1993

37. Colloquium, Department of Chemical Engineering, FAMU/FSU College of Engineering, January 1996

38. Colloquium, Department of Computer Science, University of New Mexico, June, 1998

Editorships

Associate Editor, *IEEE Transactions on Neural Networks*, 1992-96

Editorial Board, *Neurocomputing - An International Journal*, 1994-97

Editorial Board, Snyder Communications, publisher of *Computer NewsBoards* (large format info-displays) and consumer-informational pamphlets for computer retailers, 1994-97

Editorial Board, *International Journal of Computational Intelligence and Organizations* (founding member), 1995-97

Reviews and Refereeing

Referee for the following journals: *Topology; General Topology and its Applications; Transactions of the American Mathematical Society; American Mathematical Monthly; Proceedings of the American Mathematical Society; Michigan Mathematics Journal; Duke University Journal of Mathematics; Pacific Journal of Mathematics; Science (American Association for the Advancement of Science); Journal of Atmospheric Sciences; Topology Proceedings (Proc. Annual Spring Topology Conference); Indiana University Mathematics Journal; Inventiones Mathematicae; Computers in Chemistry; Macromolecules; IEEE Transactions on Man, Machine and Cybernetics; IEEE Transactons on Neural Networks; IEEE Computer; Connection Science; Neurocomputing; IEEE Transactions on Fuzzy Systems; International Journal of Computational Intelligence and Organizations.*

Reviewer of several NSF proposals each year. Reviewer for Supercomputing '89 conference. Proposal Reviewer for South Carolina Experimental Program to Stimulate Competitive Research (EPSCoRE), 1989. Chair of review committee, National Institute of Neurological Disorders and Stroke, National Institutes of Health, 1993. NINDS/NIH Review Committee, Human Brain Project, Spring 1996. NSF CDA/CISE Review Committee, Research Instrumentation, Fall 1996. SIGCSE Conference 2007. IJCNN Conference 2007.

External Funding and Support

Principal Facilitator for Capital Gifts				
Amount	*Type*	*Source*	*Recipient*	*Date*
$10,000	Cash [1]	R.C. and Kathleen T. Lacher	Florida State University	1990
$10,000	Cash [1]	Daido Steel Company	FSU Computer Science Department	1991
$335,000	Equipment [2]	Harris Corporation	FSU Computer Science Department	1992

All gifts through FSU Foundation
[1] President's Club Membership
[2] Harris Night Hawk HN3800 multiprocessor/shared memory computer system

External Funding and Support (Cont.)

Research Grants					
Agency	*Grant Number*	*Project Budget Period*	*Position*	*Budget*	*No. of PIs*
NSF	GP 11943	1969-70	JI	?	?
NSF	GP 19964	1970-71	PI	$49,900	8
NSF	GP 19964	1971-72	PI	52,100	8
NSF	GP 19964	1972-73	PI	28,000	6
NSF	GP 19964	1973-74	PI	25,700	4
NSF	GP 19964	1974-75	PI, A	24,500	3
APSF	Sloan Fellowship	1970-72	PI, A	16,100	1
NSF	MPS75 06363	1975-76	PI, A	23,300	2
NSF	MPS75 06363-A01	1976-78	PI, A	50,500	2
NSF	Foreign Travel	1976	PI, A	1,000	1
NSF	MCS78 00405	1978-81	PI, A	64,957	2
NSF	MCS81 02155	1981-84	PI, A	89,167	2
ONR	N00014-82-G-0065	1982-83	PI	19,980	2
ONR	N00014-84-K-0761	1984-85	PI	200,000	4
ONR	N00014-84-K-0761	1985-87	PI	305,000	4
FHTIC		1988-89	PI, A	20,000	2
ONR	N00014-84-K-0761	1988-91	PI	200,000	3
FHTIC		1990	PI, A	27,000	1
FHTIC		1991	PI	20,000	2
FHTIC		1991	PI, A	15,000	1
FHTIC		1992	PI	28,000	2
FHTIC		1993	PI	24,000	2
FTRIF		1994	PI	32,600	2
LANL/DOE		1998-99	PI, A	200,000	2
FLDoE/MML		1999-2000	PI	54,000	2
DOEd	P116Z010124	2001-2003	PI	170,000	1

NSF = National Science Foundation
APSF = Alfred P. Sloan Foundation
ONR = US Office of Naval Research
LANL = Los Alamos National Laboratory
DOE = US Department of Energy
DOEd = US Department of Education
MML = Mote Marine Laboratory
FLDoE = Florida Department of Education
FHTIC = Florida High Technology and Industry Council
FTRIF = Florida Technology Research Investment Fund
JI = Junior Investigator, PI = Principal Investigator, A = Administrator

Doctoral Students Directed

Dusan Repovs (PhD April 1983), *Generalized Three-Manifolds with Zero-Dimensional Singular Set*, 113 pp. Currently Professor of Mathematics and Associate Dean for Research, College of Arts and Sciences, University of Ljubljana, Ljubljana, Slovenia. Dr. Repovs is Ambassador at Large for Science of the Republic of Slovenia.

Keith D. McCroan (PhD August 1990), D*isplaying Geographic Information: efficient Methods for Raster Displays*, 172 pp. Currently Chief Software Engineer, Environmental Protection Agency NAREL Environmental Radiation Laboratory, Montgomery, AL.

David C. Kuncicky (PhD April 1991), *Isomorphism of Reasoning Systems with Applications to Autonomous Knowledge Acquisition*, 89 pp.

Byungjoo Yoon (PhD April 1994), *Rule Extraction using Destructive Learning in Artificial Neural Networks*, 140 pp. Currently Associate Professor of Computer Science, Department of Computer Science, Myong-Ji University, Seoul, Korea.

Frank Wenzhen Fang (PhD August 1994*), Constructive Neural Network Learning for Autonomous Rule Acquisition*, 155 pp. Currently Software Engineer, Image Technology Inc., Greensboro, NC.

Lilly Yuan (PhD April, 1997), *Aging in Artificial Neural Networks: Causes and Prevention of Repetition Induced Incompetence in Reinforcement Learning*, 125 pp.

Renee Renner (PhD April, 1999). *Improving Generalization of Constructive Neural Networks Using Ensembles*, 248 pp. Currently Associate Professor of Computer Science (Tenured), California State University, Chico, CA. See `http://www.ecst.csuchico.edu/~renner`

Larry Weinstein (PhD December, 1999). *The Image Node: An Image Processing Neural Network Component*, 120 pp. Currently in his second startup: BitPlayer, a 3D Multimedia Entertainment Company.

Huey Ling Toh, Lightweight artificially intelligent Q/A systems. Passed Qualifiers Fall 2004. (Transferred to Dr Lois Hawkes.)

Masters Students Directed (Thesis option [T] Project option [P] Course option [C])

Whitted, M.E.	Mathematics Education [C]	June 1975
Hitt, Richard	Mathematics [C]	June 1975
Repovs, Dusan,	Mathematics [C]`	June 1979
Braswell, Clinton	Computer Science [T]	April 1987
Liao, Holmes (H.-S.)	Computer Science [T]	December 1988
Martin, Cynthia	Computer Science [P]	December 1988
Wang, Bai-Heng,	Computer Science [T]	April 1989
Myers, Mitch	Computer Science [P]	December 1989
Diehl, John	Computer Science [T]	April 1990
Kellett, Nancy	Computer Science [P]	April 1990
Sloderbeck, Michael	Computer Science [P]	April 1990
Lou, Chi	Computer Science [P]	April 1990
Hopkins, Richard	Computer Science [P]	April 1990
Hue-Hsiung (Ellen) Cheng	Computer Science [P]	August 1990
Peng, Xiantu	Computer Science [T]	August 1990
Tobiassen, Tom	Computer Science [P]	August 1990
Manausa, Michael E.	Computer Science [T]	April 1991
Weaver, Jill	Computer Science [T]	August 1991
Sharma, Shanker	Computer Science [T]	August 1991
Marx, Stephen	Computer Science [P]	August 1991
Putriment, Mark	Computer Science [T]	December 1992

Kerce, Kingsley F.	Computer Science [T]	August 1993
Hu, Ke	Computer Science [T]	April 1994
Dwyer, Frank	Computer Science [T]	August 1994
Stuy, Alex	Computer Science [T]	December 1994
Choi, Bumghi	Computer Science [T]	April 1995
Shores, Dennis,	Computer Science [T]	August 1995
Eger, Robert	Computer Science [T]	December 1995
Schwarz, Anne P.	Computer Science [T]	April 1996
Caldwell, James	Computer Science [P]	December 1996
Taylor, Michele M	Computer Science [T]	April, 1997
Baldauf, Ken	Computer Science [P]	August, 1997
Lloyd, Justin	Computer Science [P]	August, 1997
Stitts, Brock	Computer Science [T]	April 1999
Proshy, Pramad	Computer Science [T]	April 1999
Egbert, Allan	Computer Science [T]	April 2000
Toh, Huey-Ling	Computer Science [T]	December 2002
Gilman, George	Computer Science [T]	April 2006
Ayers, Kenneth	Software Engineering [T]	Fall 2008

Undergraduate Honors Thesis Students Directed

Subrahmanyam, Prem	Computer Science	Spring 1992
Shore, Mathew	Computer Science	Spring 1994
Kramer, Zacharia	Computer Science	Spring 2001
Shumaker, Aaron	Computer Science	Summer 2006

Doctoral Committees

Yeh, C.M.	Statistics	Spring 1970
Wackerly, Dennis	Statistics	Spring 1971
Robertson, James	Mathematics	Spring 1973
Hitt, Richard	Mathematics	Spring 1977
Parsons, R.	Physics	Spring 1978
Leon, Ramon V.	Statistics	Spring 1979
Lacayo, Herbert	Statistics	Spring 1979
Pass, Martha	Chemistry	Spring 1979
Dowlen, Mary	Mathematics	Spring 1982
Kutter, Mary	Mathematics	Spring 1982
Irvin, Benjamin	Chemistry	Spring 1983
Duckwall, Julia	Institutional Research	Spring 1986
Carney, Paul	Institutional Research	Spring 1984
Berenson, Sarah	Mathematics Education	Spring 1985
Hall, Laurence O.	Computer Science	Fall 1986
Cunningham, Steven R.	Economics	Spring 1989
Hodson, Robert F.	Computer Science	Fall 1989
Liekhus, Kelvin	Chemical Engineering	Fall 1990
Ziegler, Uta	Computer Science	Spring 1991
Sharieh, Ahmad	Computer Science	Summer 1991
Holmes, Dawn	Computer Science	Summer 1991
Ellman, Brian	Computer Science	Spring 1992
Edelstein, Eric E.	Mathematics	Spring 1992
Poling, Don J.	Computer Science	Summer 1992
Lu, Lida	Chemistry	Fall 1992
Posey, Chlotia	Computer Science	Fall 1992
Mayne, William	Computer Science	Fall 1992
Griffen, Bryan	Institutional Research	Spring 1993

Stitts, Kevin Brock	Philosophy	Fall 1993
Ward, Lilly	Computer Science	Fall 1994
Ford, Charles	Computer Science	April 1995
Smith, Faustina Lee	Chemistry	August 1996
White, Randall	Computer Science	April 1997
Murillo, Alice	Institutional Research	April 1999
Murphy, James	Communications	April 1998
McDonald, Jeffrey E.	Physics	August 1999
Blake Whitten	Statistics	August 2001
Warren Davis	Computer Science	August 2009
Huey Ling Toh	Computer Science	August 2010

Masters Committees

Williams, D.C.	Statistics	Spring 1975
Chen, C.C.	Statistics	Spring 1976
Zinmeister, Allen	Statistics	Spring 1976
Hvostick, C.	Statistics	Spring 1976
Lacayo, Herbert	Statistics	Spring 1977
Davidson, G.	Mathematics Education	Spring 1977
McArthur, Robert	Meteorology	Spring 1979
Traynam, Kathy	Computer Science	Spring 1987
McGinnis, Michael I.	Computer Science	Spring 1987
Schow, Peter H. III	Computer Science	Spring 1988
Druding, Dino A.	Computer Science	Fall 1988
Raavi, Ravendra Prasad	Computer Science	Fall 1988
Liang, Yith-Jun	Computer Science	Spring 1989
Jobe, Jason	Computer Science	Spring 1989
Vagi, Jon Curtis	Computer Science	Fall 1989
Lowe, David	Computer Science	Fall 1989
Smith, Paul	Computer Science	Fall 1989
Kipp, Niel	Computer Science	Spring 1990
Maheshwari, Rajiv	Computer Science	Summer 1990
Shin, Young	Computer Science	Fall 1990
El-Haran, Mohammed	Computer Science	Fall 1990
Rocker, Raymond R.	Computer Science	Summer 1991
White, Randall	Computer Science	Fall 1991
Reimer, Kim	Computer Science	Summer 1992
Ferguson, Jamie	Computer Science	Summer 1992
Gibbs, Kimberly	Computer Science	Summer 1992
Harbin, Rusty	Computer Science	Fall 1992
Saltzgeber, Michael	Computer Science	Spring 1993
Marsden, Jonathon	Computer Science	Spring 1993
Sadhukhan, Debashis	Mechanical Engineering	Spring 1994
Walters, Glen	Computer Science	Fall 1994
Walsh, Burt John	Computer Science	Fall 1994
Franke, Jerry	Computer Science	Summer 1995
Adair, Christie	Computer Science	Summer 1996
Chengyou Chi	Chemical Engineering	Fall 1997
Diana Orrick	Computer Science	Fall 2000
Nikhil Mhatre	Computer Science	Spring 2002
Valentina Malaxa	Computer Science	Spring 2003
Haitao Wu	Computer Science	Current
Alain Coutou	Computer Science	Spring 2003

Undergraduate Honors Thesis Committee: Franke, Jerry L., Computer Science, Spring 1992

Teaching Assignments (Fall 1982 - present)

Term	*Course*	*Hours*	*Description*
Fall 1982	MAC 1132	4	College Algebra and Trigonometry
	MTG 6939	1	Advanced Seminar in Topology
Spring 1983	MAC 2311	5	Calculus I
Fall 1983	MAC 3312	5	Calculus II
Spring 1984	CDA 3120	3	Digital Networks
	MAD 3104	3	Discrete Math I
Fall 1984	MAD 3401	3	Numerical Analysis I
	MAD 3104	3	Discrete Math I
Spring 1985	MAD 3401	3	Numerical Analysis I
	MAD 3105	3	Discrete Math II
Summer 1985	MAP 3302	3	Ordinary Differential Equations
Fall 1985	MAD 3104	3	Discrete Math I
	COP 3001	3	Programming II (LL)
Spring 1986	MAD 3105	3	Discrete Math II
	COP 4530	3	Data Str. and Algorithm Anal.
Fall 1986	COP 4020	3	Programming Languages
Spring 1987	COP 5632	3	Software Engineering
Fall 1987	(no courses - on sabbatical)		
Spring 1988	CDA 4102	3	Computer Organization
	EEL 4930	3	Special Topics in Electrical Eng.
	CIS 5930	3	Computer Graphics
Fall 1988	CDA 4101	3	Computer Organization
Spring 1989	CDA 4101	3	Computer Organization
Fall 1989	COP 3001	3	Programming II (LL)
	CIS 5930	3	Neural Networks
	CIS 4930	3	Neural Networks
Spring 1990	COP 4530	3	Data Structures and Algorithm Analysis
	CIS 6930	3	Neural Computing
Fall 1990	CIS 6930	1	Case-Based Reasoning
Spring 1991	(no courses - paid in advance)		
Fall 1991	CAP 5615	3	Artificial Neural Networks
	CIS 4930	3	Artificial Neural Networks
Spring 1992	CAP 6616	3	Autonomous Behavior
Fall 1992	CIS 5935	1	Introduction to Research
Spring 1993	CAP 5615	3	Artificial Neural Networks
	CIS 4930	3	Artificial Neural Networks
Fall 1993	COP 3510	3	Programming II (LL)
Spring 1994	CIS 4930	3	Genetic Algorithms
Fall 1994	COP 2000	4	Computer Programming I (LL)
	CIS 4930	3	Neural Networks for Undergraduates
	CAP 5615	3	Neural Networks
	CIS 5920	1	Colloquium
Spring 1995	COP 2000	4	Computer Programming I (LL)
	CIS 5920	1	Colloquium
	CIS 6935	1	Research Manuscript Evaluation
Summer 1995	CAP 6616	3	Autonomous Behavior
	CIS 5930	3	Expert Networks
	CIS 6935	1	Research Manuscript Evaluation
Fall 1995	COP 2000	4	Computer Programming I (LL)
	CIS 5920	1	Colloquium
	CIS 6935	1	Research Manuscript Evaluation

Spring 1996	CIS 5930	3	X-Windows
	CIS 5920	1	Colloquium
	CIS 6935	1	Research Manuscript Evaluation
Summer 1996	CIS 4930	3	X-Windows Programming
	YSP		Young Scholars Program (supervise 2 classes)
Fall 1996	CIS 5930	3	Object-Oriented Programming for Computation
	CIS 5920	1	Colloquium
	CIS 6935	1	Research Manuscript Evaluation
Spring 1997	(no courses - paid in advance)		
Summer 1997	CIS 4930	3	Software Engineering Project
	YSP		Young Scholars Program (supervise 2 classes)
Fall 1997	COP 3510	4	Computer Science II (LL)
Spring 1998	COP 3510	4	Computer Science II (LL)
Fall 1998	COP 3531	4	Computer Science II (LL)
Spring 1999	COP 3531	4	Computer Science II (LL)
Fall 2000	COP 4530	3	Data Structures, Algorithms, and Generic Programming (L & D)
Spring 2001	COP 4530	3	Data Structures, Algorithms, and Generic Programming (L)
Fall 2001	COP 4530	3	Data Structures, Algorithms, and Generic Programming (L)
Spring 2002	COP 4530	3	Data Structures, Algorithms, and Generic Programming (D)
Spring 2003	COP 4530	3	Data Structures, Algorithms, and Generic Programming (L & D)
Summer 2003	CAP 5615	3	Artificial Neural Networks (C)
Fall 2003	CAP 5605	3	Artificial Intelligence (C)
	COP 4020	3	Programming Languages (C & D)
Spring 2004	CIS 5930	3	Reactive Systems Programming (C)
	COP 4530	3	Data Structures, Algorithms, and Generic Programming (C & D)
Fall 2004	COP 3330	3	Object Oriented Programming (C & D)
	CAP 4601	3	Artificial Intelligence (C & D)
	COT 5410	3	Advanced Algorithms (C)
Spring 2005	CIS 5930	3	Advanced Generic Programming (C)
	COP 4530	3	Data Structures, Algorithms, and Generic Programming (C & D)
	COP 4531	3	Analysis of Data Structures and Algorithms
Fall 2005	CIS 5930	3	Programming Language Foundations (C)
	CAP 5605	3	Artificial Intelligence (C)
	CAP 4601	3	Artificial Intelligence (C)
	COP 4020	3	Programming Language Foundations (C & D)
	COP 3330	3	Object Oriented Programming (C & D)
Spring 2006	CIS 5930	3	Advanced Generic Programming (C)
	COP 4530	3	Data Structures, Algorithms, and Generic Programming (C & D)
	COP 4531	3	Analysis of Data Structures and Algorithms
Fall 2006	CIS 5935	2	Introduction to Research (C)
	CIS 5930	3	Generic Programming (C)
	COP 4531	3	Analysis of Data Structures and Algorithms (C & D)
	COP 3330	3	Object Oriented Programming (C & D)
Spring 2007	COT 5405	3	Advanced Algorithms (C)
	COP 4530	3	Data Structures, Algorithms, and Generic Programming (C & D)
	MAD 3105	3	Discrete Mathematics II (C & D)
Fall 2007	CIS 5930	3	Generic Programming (C)
	COP 4531	3	Analysis of Data Structures and Algorithms (C & D)
	COP 3330	3	Object Oriented Programming (C & D)
Spring 2008	COP 5385	3	HSM and Reactive Systems (C)
	COP 4530	3	Data Structures, Algorithms, and Generic Programming (C & D)
	COP 4380	3	Reactive Systems Programming (C & D)
Fall 2008	CIS 5935	2	Introduction to Research (C & D)
	COP 4020	3	Programming Languages (C & D)
	COP 3330	3	Object Oriented Programming (D)

Spring 2009	COT 5405	3	Advanced Algorithms (C & D)
	COP 4530	3	Data Structures, Algorithms, and Generic Programming (C & D)
Fall 2009	COT 5405	3	Advanced Algorithms (C & D)
	CIS 5935	2	Introduction to Research (C & D)
	COP 4531	3	Analysis of Data Structures & Algorithms (C & D)
	COP 3330	3	Object Oriented Programming (C & D)

(C = Classroom, L = Large Lecture, D = Distance)

Courses Developed

CAP 5615	Artificial Neural Networks	Approved August 1990
CAP 6616	Autonomous Behavior in Artificial Neural Systems	Approved August 1990
CIS 5930	Genetic Algorithms and Evolutionary Computation	Offered Spring 1994
CIS 5930	Object-Oriented Programming for Computation	Fall 1996
COP 2000	Computer Science 1 - redesign with C++ and objects	Fall 1994 – Fall 1995
COP 3531	Computer Science 2 – redesign with C++ and objects	Spring 1996 – Spring 1999
COP 4530	Data Structures, Algorithms, and Generic Programming	Fall 1999 -- Spring 2000
COP 4380	Reactive Systems Programming	Approved Spring 07
COP 5385	Hierarchical State Machines and Reactive Systems	Approved Spring 07
COP 5517	Generic Programming	Approved Spring 08

Curricula Designed

I was the lead designer for two new undergraduate majors that were offered beginning Fall 1999, delivered to residential students in traditional mode and to distance students as materials-based, mentor-supported courses. One of these, Software Engineering, was new, and the other, Computer Science, was a significant revision of the existing residential major. These curricula are 60-hour, upper-division majors. The approaches are new, and appropriate for modern computing, taking an objects-first, systems view as recommended by the ACM.

Both these majors underwent ABET accreditation review during the 2001-02 academic year and have been accredited effective Fall 2002.

In Spring and Fall 2006, working with Drs Sara Stoecklin and Steve Leach, we have designed new undergraduate and graduate Software Engineering majors. These new curricula will be offered beginning Fall 2007.

During 2007, Dr Stoecklin and I completed the design and rollout schedule for the MS/SE Online. In 2008 we completed the proposal for formal approval of MS/SE as an Online Degree. This has been approved by the FSU Graduate Policy Council in November 2008. Final university approval is pending.

Professional Service: State, National and International

Advisory Committee, 12th Annual Spring Topology Conference (1978), 1977-78 (held in Norman, Oklahoma)
Organizer, Special Session on Manifolds with Singularities, Fall, 1979 meeting of American Mathematical Society
State of Florida College Level Academic Skills Test, item reviewer, Spring, 1982
Local Advisory Committee, 19th Annual Spring Topology Conference (1985), 1984—85 (held in Tallahassee, Florida)
Organizer, MATH/CHEM/COMP 1986, Dubrovnik, June, 1986. (An international conference devoted to the interfaces between mathematics, chemistry, and computer science.) (First Annual.)
Organizer, MATH/CHEM/COMP 1987, Dubrovnik, June, 1987 (Second Annual)
MATH/CHEM/COMP Policy Board Member and Conference Coordinator, 1986-91
Florida High Technology and Industry Council, Software and Computer Science Subcommittee, 1990, 1991, 1992, 1993
Session Chair, IJCNN 91 - Singapore; invited by IEEE to organize and chair session on Learning in Hybrid Systems at the International Joint Conference on Neural Networks, November, 1991
Advisory Committee, Florida DOE Chapter 1, PL 100-297 Facilitation Project, 1991-93
Associate Editor, *IEEE Transactions on Neural Networks*, 1992-96
Florida SchoolYear 2000 Mission Team, 1992-94
Florida SchoolYear 2000 Training Standards Committee, 1993-94
Founding Member, Board of Directors, Tallahassee Free-Net, Inc. 1993-99
Enterprise Florida Innovation Partnership, Software and Computer Science Advisory Committee, 1993-94, 1994-95
Florida Nominating Committee for 1993 National Science Scholars Program, 1993-94, 1994-95
Editorial Board, *Neurocomputing - An International Journal*, 1994-97
Co-chair, International Symposium on Integrating Knowledge and Neural Heuristics, May, 1994
Chair, Special Session on Hybrid Computational Intelligence, IEEE World Congress on Computational Intelligence/International Conference on Neural Networks, July, 1994
Editorial Board, *Computer NewsBoards* (Snyder Publications) - large format info-displays for computer retailers, 1994-97
IBM Florida Education Council, 1995
Editorial Board (founding member), *International Journal of Computational Intelligence and Organizations*, 1995-97
National Institutes of Health Review Panel, Human Brain Project, April, 1996.
National Science Foundation Review Panel, Instrumentation Grants for Research in Computer and Information Science and Engineering and Office of Cross-Disciplinary Activities (CISE/CDA), October, 1996.
Reviewer, ACM SIGCSE Conference 2007 (2 papers)
Review Coordinator, IEEE and International Neural Network Society Joint Conference IJCNN 2007 (two topics)
Associate Editor, Proceedings of IJCNN2007
Session Chair, IEEE and International Neural Network Society Joint Conference IJCNN 2007 (Supervised Learning)

Professional Service: Public Schools

Judge, Florida NW Regional Science Fair, 1985, 1989, and 1991
Research Advisor, FSU Summer Science and Math Camp Research Project, 1989
Regional Secondary School Lecturer, 1991
Coordinator, Partners in Excellence, Hartsfield Elementary School, 1992-93, 1993-94
Organizer, Young Scholars Program in Computer Science, 1996, 1997, 1998

Professional Service: Florida State University

Faculty Senate, 1969-71 (elected by Department of Mathematics)
Sigma Xi Nominating Committee, 1971
FSU SCUBA Program Coordinator, 1975-79
University Salary Committee, 1977 (Chair, Subcommittee on Merit)
University Salary Committee, 1978
Humanities Liberal Studies Committee (Science Area Representative), 1978-80

German MA program review committee, 1979
Science Area Promotion, Tenure, and DDS Committee, 1978-79
Computer Resource Center Committee (Student Union), 1984
Faculty Senate, 1985-93 (elected by Department of Computer Science)
Strategic Planning and Budgeting Review Team, 1986
Resource Allocations Subcommittee (FSU Computing Center Policy Board), 1987—91 (Chair)
FSU Computing Center Policy Board, 1988-91
SCRI Publicity and Public Relations Committee, 1988-89, 1989-90, 1990-91
SCRI Proposal Review Committee, 1989
Search Committee, FSCW/Conradi Chair in Cognitive Psychology, 1990-92
Phi Beta Kappa Audit Committee, 1991-92, 1992-93, 1994-95
Computing and Information Resources Committee, 1991-94; Interim Chair, Summer 1992;
Chair (elected), 1992—93; Chair (elected), 1993—94
Senate Professional Relations and Welfare Committee, 1991-94
Provost's Ad Hoc Committee on Management of Information, 1992
SACS Self-Study Committee on Educational Support Services, 1992-94
Provost's Computer Technology Advisory Committee 1992-93
Chair Selection Committee, Department of Mathematics, 1992-93
Search Committee, TMC Chair in High Performance Computing, 1993-95
Internet-Based Research Instruction Committee, 1994-95; Chair
Director of Applied Mathematics Nominating Committee (outside member), 1995
Provost's Committee on Data Generation and Management, 1995
Administrative Computing Advisory Committee, 1995-98
IBM Consulting Steering Committee, 1995-96
Arts & Sciences Teaching Incentive Program Evaluation Committee, Fall 1995
Chair Selection Committee, Department of Mathematics (outside member), Spring 1996
Council of Advisors, School of Library and Information Studies, 1996-98
Harris Corporation Endowment Committee, 1996-
I/T Plan Implementation Steering Committee, 1996-97
Interactive Voice Response Proposal Evaluation Committee, Summer/Fall 1996
Blackboard Coordinating Committee, 1999-2002
Student Email Committee, 2001-2002
Electronic Thesis and Dissertation Committee, 2002-2003

Professional Service: FSU Department of Mathematics

Faculty Senator, 1969-71 (elected by department)
Bylaws Committee, 1973 (elected by department)
Faculty Evaluation Procedures Committee, 1974 (elected by department)
Faculty Evaluation Committee, Fall 1975
Curriculum Committee, 1976-77 and 1984-85
Chairman Nominating Committee, 1976-77 (elected by department)
Faculty Evaluation Committee, 1977-78 (elected by department)
Organizer, Topology Days Conference, Fall, 1978
Author, Departmental Procedures for Determination of Summer Teaching
Teaching Evaluation Committee, 1979-80 (elected by department)
Calculus and Pre-Calculus Committee (transition to semester system), 1980
Executive Committee, 1980-81, 1981-82, 1982-83
Engineering Impact Committee, 1981-82
College Algebra and Trigonometry Review Committee, 1982 (Chair)
Graduate Admissions Committee, 1983-84
Graduate Financial Aid Committee, 1983-84
Oversight Committee, Mathematics and Computer Science Division, 1983-84
Supercomputer Grant Committee, 1984
Graduate Admissions Committee, 1984-85

Applied Mathematics Director Nominating Committee, 1986 (elected by department)
Chair Selection Committee (outside member), Department of Mathematics, 1992-93
Director of Applied Mathematics Nominating Committee (outside member), 1995
Chair Selection Committee, Department of Mathematics (outside member), Spring 1996

Professional Service: FSU Department of Computer Science

Faculty Evaluation Procedures Committee, 1984
Bylaws Committee, 1984
Faculty Evaluation Committee, 1984, 1985, 1986, 1987, 1988, 1989, 1990 (elected annually by department)
(resigned effective 1/90 to accept Acting Chair)
Faculty Senator, 1985-87, 1987-89, 1989-91, 1991-93 (elected biennially by department)
Chairman Review and Nominating Committee, 1986-87 (elected by department)
Equipment Committee, 1987-88, 2001-02
Curriculum Committee, 1988-89 (Chair), 1989-90, 1999-00, 2000-01, 2001-02
Panama City Branch Committee, 1989-90, 1990-91
Acting Department Chair, January-August, 1990 (elected by department)
Software Engineering Degree Committee, 1990-91
Ad Hoc Salary Compression Study Committee, 1990-91 (Chair)
Faculty Evaluation Committee, 1991 (elected by department) (Chair)
Department Chair, 1991-94, 1994-97, 1997-98
Interim Computing Resources Manager, 1995-96
Numerous departmental committees not specifically enumerated; for example, in 1995-96:
Executive Committee (chair); Equipment Committee (chair); Graduate Admissions Committee (co-chair); Financial Aid Committee (co-chair); and Colloquium chair
Chair Search Committee, 2000-2001 (chair)
Chair Search Committee, 2001-2002 (chair)
Portfolio Evaluation Committee, 2002-2003 (chair)
Graduate Curriculum Committee, 2002-2005
Undergraduate Curriculum Committee, 2004-present

Professional Service: FSU Panama City Campus

Faculty Facilitator (Spring 2004)
Dean Search Committee (2004 and 2005)
Assistant Dean Search Committee (chair) (2005)