Curriculum Vita of
Professor Elias Houstis

ACADEMIC POSITIONS

2002 - present	Professor and Chairman, Department of Computer and Communications Eng., University of Thessaly
2000 - 2002	Professor, Department of Computer Engineering and Informatics, University of Patras
1985 - 2006	Professor, Department of Computer Sciences, Purdue University
1996 - 2001	Director of Computational Science and Engineering Program
1990-93 & 1995-97	Associate Head, Department of Computer Sciences, Purdue University
1980-88	Professor, Department of Mathematics (Director of Computer Science Division during period 1982-84), Aristelion University of Thessaloniki (ΑΠΘ)
1987-88 & 1993-94	Acting Head, Department of Computer Sciences, Purdue University
1980-82	Associate Professor, Department of Computer Science, University of South Carolina
1978-79	Assistant Professor, Department of Mathematics, Statistics, and Computer Science, University of South Carolina
1975-78	Visiting Assistant Professor, Department of Computer Sciences, Purdue University
1974-75	Postdoc, Departments of Mechanical and Civil Engineering, Purdue University

EDUCATION

1969	BS. University of Athens
1974	Ph.D. Purdue University

Membeships

Association for Computing Machinery (ACM), IMACS, International Federation for Information Processing (IFIP) Working Group 2.5 in Numerical Software, Sigma Xi.

Editorial Boards

Journal of Neural, Parallel & Scientific Computations. (1992-present)
Journal of HPC Users web-based journal. (1996- present
Journal of Computing Engineering and Sciences. (1998- present

PUBLICATIONS

PROCEEDINGS (EDITOR)

1. Proceedings of *1st International Conference on Supercomputing*, (co-editors C.D. Polychronopoulos, T.S. Papatheodorou), Springer-Verlag (1988).

2. Proceedings of *3rd International Conference on Supercomputing*, (co-editor D. Gannon), ACM Press (1989).

3. *Intelligent Mathematical Software Systems*, (co-editors J.R. Rice, B. Vichnevetsky), North Holland (1990), 363 pages.

4. *Expert Systems for Scientific Computing*, (co-editors J.R. Rice, B. Vichnevetsky), North Holland, Amsterdam (1992), 461 pages.

5. *Artificial Intelligence, Expert Systems and Symbolic Computing*, (co-editors J.R. Rice and B. Vichnevetsky), North Holland (1992), 458 pages.

6. *Problem Solving Environments for High-Level Scientific Problem Solving*, (co-editors P.W. Gaffney), North Holland (1992), 401 pages.

7. *Problem Solving Environments for Computational Science, (*co-editors E. Gallopoulos, R. Bramley*)*, IEEE publication, in preparation (contract has been signed). The above co-editors organized and a special issue on PSEs published in the CS&E magazine in 1997 that contains a subset of these papers.

8. *E*nabling Technologies for Computational Science: Frameworks, Middleware, and Environments, (Houstis, Rice, Gallopoulos, Bramley, eds.), Kluwer Academic Publishers, Boston, March 2000.

9. Computational Science, Mathematics and Software (Elias Houstis and Ron Boisvert, eds.), Purdue University Publishing Press, 2002.

10. FGCS special issue on "Complex Problem-Solving Environments for Grid Computing" (D. Walter and E. Houstis eds), Vol 21 No. 6 (April 2005)

11. Proceedings of the 10th PCI conference (P. Mpozanis, E. Houstis, eds), Springer Verlag, 2005, 600 pages.

BOOK REVIEWS

1. *High Performance Computing Problem Solving with Parallel and Vector Machines* by G.W. Sabot, Math. Comp. (1995)

2. *Environments and tools for parallel scientific computing* Edited by J. Dongarra and B. Tourancheau, Math. Comp. (1995)

3. *Designing and building parallel programs* by Ian Foster, IEEE Comp. Science & Eng. (1997).

BOOK CHAPTERS

1. Performance evaluation of scientific software (with J.R. Rice and E.A. Vavalis). In *Mathematical Aspects of Scientific Software* (J. Rice, ed.), Springer-Verlag, New York (1988), 123-155.

2. An interactive symbolic-numeric interface to Parallel ELLPACK for building general PDE solvers (with S. Weerawarana and J.R. Rice). In *Symbolic and Numerical Computation for Artificial Intelligence* (B.R. Donald, D. Kapur, and J.L. Mundy eds.), Academic Press, New York (1992), 303-317.

3. Agent based systems to support multidisciplinary problem solving environments for computational science (with J.R. Rice, N. Ramakrishnan, T. Drashansky, S. Weerawarana, A. Joshi, and C.E. Houstis), in Advances in Computers, (M. Zelkowitz, ed.), (1998). Also available as Purdue University Technical Report CSD-TR-97-031.

4. Modern software techniques in computational finance (with K.N. Pantazopoulos). In *Modern Software Tools for Scientific Computing* (E. Arge, A-M Bruaset, and H-P Langtangen eds.), Birkhauser, Boston-Basel-Berlin (1997), 227-246.

5. On the Future of Problem Solving Environments, (with J.R. Rice), *Computational Science, Mathematics and Software* (Elias Houstis and Ron Boisvert, eds.), Purdue University Publishing Press, 2002.

6. The future of PSEs (with J. R. Rice, Japanese book on PSEs (editor Kawata), pp. 187-198 (2005).

JOURNAL PUBLICATIONS

1. Statistics on the use of mathematical subroutines from a computer center library (with T. Aird, D. Dodson and J. Rice). *SIGNUM Newsletter*, 8 (1973), 8-10.

2. Development, selection and evaluation of methods for elliptic partial differential equations (with R. E. Lynch, T.S. Papatheodorou and J.R. Rice). *Ann. Assoc. Calcul. Analogique* **2** (1975), 98-105.

3. A collocation method for systems of nonlinear ordinary differential equations. *Journal of Mathematical Analysis and Applications*, **62** (1978), 24-37.

4. Application of method of collocation on lines for solving nonlinear hyperbolic problems. *Mathematics of Computation*, **31** (1977), 443-455.

5. Collocation methods for linear elliptic problems. *BIT* **18** (1978), 301-310.

6. A collocation method for Fredholm integral equations of the second kind (with T. Papatheodorou). *Mathematics of Computation*, **32** (1978), 159-173.

7. Evaluation of numerical methods for elliptic partial differential equations (with R. E. Lynch, T. S. Papatheodorou and J. R. Rice). *Journal of Computational Physics*, **27** (1978), 323-350.

8. The complexity of numerical methods for elliptic partial differential equations. *Journal of Computational and Applied Mathematics*, **4** (1978), 191-197.

9. Uncertainty finite element dynamic analysis (with B. A. Dendrou). *Journal of Applied Mathematical Modeling,* **3** (1979), 143-150.

10. The effect of numerical integration in the finite element approximation of hyperbolic problem. *Serdica, Bulgaricae mathematicae publications*, **3** (1977), 371-380.

11. High order fast elliptic equation solver (with T. S. Papatheodorou). *ACM Trans. Mathematical Software*, **5** (1979), 431-441.

12. FFT9: Fast solution of Helmholtz type partial differential equations (with T. S. Papatheodorou*). ACM Trans. Mathematical Software*, **5** (1979), 490-493.

13. An inference - finite element method for field problems (with B. Dendrou). *Journal of Applied Mathematical Modeling*, **2** (1978), 109-114.

14. A system for performance evaluation of partial differential equations software (with R. F. Boisvert and J. R. Rice). *IEEE Transactions on Software Engineering*, **5** (1979), 418-425.

15. A population of linear, second order, elliptic partial differential equations on rectangular domains (with J. R. Rice and W. R. Dyksen). *Mathematics of Computation*, **36** (1981), 475-484.

16. Multiobjective decision analysis for engineering systems (with B. Dendrou and S. Dendrou*). Journal of Computer and Operations Research*, **7** (1980), 301-312.

17. A sixth order fast direct Helmholtz equation solver, (with R. E. Lynch and T. S. Papatheodorou). *Mathematics and Computers in Simulation*, **22** (1980), 91-97.

18. High order methods for elliptic partial differential equations with singularities (with J. R. Rice). *Inter. J. Numer. Meth. Engin*., **18** (1982), 737-754.

19. Performance evaluation of algorithms for mildly nonlinear elliptic partial differential equations (with W.F. Mitchell and T. S. Papatheodorou). *Inter. J. Numer. Meth. Engin*., **19** (1983), 665-709.

20. The performance of the collocation and Galerkin methods, with Hermite bicubics (with W. R. Dyksen, R. E. Lynch and J. R. Rice). *SIAM J. Numer. Anal*., **21** (1984), 695-715.

21. Adiabatic shearing of one-dimensional thermoviscoelastic flows caused by boundary and inertial forces (with N.C. Charalambakis) *Engineering Analysis*, **2** (1985), 205-210.

22. Collocation software for second order elliptic partial differential equations (with W.F. Mitchell and J.R. Rice). *ACM Trans. Math. Software*, **11** (1985), 379-412.

23. Algorithm 637 GENCOL: Collocation on general domains with bicubic Hermite polynomials (with W.F. Mitchell and J.R. Rice). *ACM Trans. Math. Software*, **11** (1985), 413-415.

24. Algorithm 638 INTCOL and HERMCOL: Collocation on rectangular domains with bicubic Hermite polynomials (with W.F. Mitchell and J.R. Rice). *ACM Trans. Math. Software*, **11** (1985), 416-418.

25. Partitioning PDE computations: Methods and performance evaluation (with C.E. Houstis and J.R. Rice). *J. Parallel Comp.*, **4** (1988), 143-163.

26. Quadratic spline collocation methods for two point boundary value problems (with C.C. Christara and J.R. Rice). *International Journal for Numerical Methods in Engineering*, **26** (1988), 935-952.

27. Convergence of an $O(h^4)$ cubic spline collocation method for elliptic partial differential equations (with E.A. Vavalis and J.R. Rice). *SIAM Journal of Numerical Analysis*, **25** (1988), 54-74.

28. An $O(h^6)$ quintic spline collocation method for fourth order two point boundary value problems (with M. Irodotou-Ellina). *BIT*, **28** (1988), 288-301.

29. Parallel ELLPACK: An expert system for parallel processing of partial differential equations (with J.R. Rice and T.S. Papatheodorou). *Math. Comp. Simulation Journal*, **31** (1989), 487-508.

30. Iterative line cubic spline collocation methods for elliptic partial differential equations in several dimensions (with A. Hadjidimos, J.R. Rice, and E. Vavalis). *SIAM J. Sci. Stat. Comp.*, **14** (1993), 715-734.

31. A workload partitioning strategy for PDE computations by a generalized neural network (with H. Byun and S.K. Kortesis). *Journal on Neural, parallel, and scientific computations*, **1** (No. 2), (1993), 209-226.

32. A virtual parallel environment for implementing neural network computations on parallel machines (with H. Byun, S.K. Kortesis and E.A. Vavalis). *Neural, parallel & scientific computations*, **1** (No. 3), (1993), 301-323.

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34. Mapping algorithms and software environment for data parallel PDE iterative solvers, (with N. Chrisochoides, and J.R. Rice). *Journal of Parallel and Distributed Computing*, **21** (1994), 75-95.

35. Softlab - A virtual laboratory for computational sciences (with C.M. Hoffman, J.R. Rice, A.C. Catlin, M.G. Gaitatzes, S. Weerawarana, N.-H.L. Wang, C. Takoudis, and D.G. Taylor). *Math. Comp. Simulation,* **36** (1994), 479-491.

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38. Multi-parameterized Schwarz splittings (with S.B. Kim, A. Hadjidimos, and J.R. Rice). to appear in *Math. Comp. Simulation*, **42** (1996), 47-76.

39. Workshop on problem-solving environments: Findings and recommendations (with E. Gallopoulos and J. R. Rice). *Computing Surveys*, **27** (1995), 277-279.

40. Parallel optimization based electronic prototyping of physical parts (with Poting Wu). *Parallel Algorithms and Applications,* **9** (1996), 237-263.

41. SciencePad: Scientific computing in a ubiquitous environment (with T.T. Drashansky, A. Joshi, and S. Weerawarana). *Inter. J. Microcomputer Applications*, **15** (1996), 85-92.

42. Neuro-fuzzy support for problem solving environments: A step toward automated solution of PDEs (with A. Joshi, S. Weerawarana, N. Ramakrishnan and J.R. Rice), *Special Joint Issue of IEEE Computer and IEEE Comp. Sci. Engr*., **V3** (No. 1), (1996), 44-56.

43. Parallel adaptive mesh generation and decomposition (with Poting Wu). *Engineering with Computers*, **12** (1996), 155-167.

44. Notebook interfaces for networked scientific computing: Design and WWW Implementation (with Weerawarana, S., Joshi, A., Houstis, E.N., Rice, J.R., and Catlin, A.) accepted for publication in *Concurrency: Practice & Experience,* Vol. **9** (No. 7) July 1997, 675-695.

45. PYTHIA: A knowledge based system to select scientific algorithms (with Weerawarana, S., Rice, J.R., Joshi, Anupam and Houstis, C.), *ACM Trans. Math. Software*, **22** (1996), 447-468.

46. Software architecture of ubiquitous scientific computing environments (with Drashansky, T., Weerawarana, S, Joshi, Anupam, and Weerasinghe, R.) accepted for publication in *ACM - BALTZER MOBILE NETWORKS AND NOMADIC APPLICATIONS*.

47. On neuro-biological, neuro-fuzzy, machine learning and statistical pattern recognition techniques (with A. Joshi, N. Ramakrishnan and Rice, J.R.), *IEEE Transactions on Neural Networks*, Special Issue on "Neural Networks and Statistical Pattern Recognition", Vol. **8** (No.1), 18-31.

48. Financial prediction and trading strategies using neuro-fuzzy approaches (with K.N. Pantazopoulos, L.H. Tsoukalas, N.G. Bourbakis, and M.J. Brun), CSD-TR 97-002, Computer Science Dept., Purdue University, December 1996 (accepted the Special Issue on Neural Networks Applications of the *IEEE Transactions on Systems, Man, and Cybernetics*), (1998).

49. Parallel ELLPACK: A problem solving environment for PDE based applications on multicomputer platforms (with J.R. Rice, S. Weerawarana, A.C. Catlin, P. Papachiou, K.-Y. Wang, and M. Gastatzes), *ACM Trans. Math. Soft.,* **24**, (1998), 30-73. Abridged version in *Enabling Technologies for Computational Science, (E.N. Houstis, J.R. Rice, E. Gallopoulos, and R.Bramley, eds.), Kluwer, Boston, (2000), 171-185.*

50. Scientific computing via the web: The net Pellpack PSE server (with Markus, S., S. Weerawarana, and J.R. Rice), *IEEE Comp. Sci. & Engr*. **4** (No. 3), (1997), 43-51.

51. Problem solving environments for computational science: Guest Editors' Introduction (with E. Gallopoulos, R. Bramley, and J.R. Rice), *IEEE Comp. Sci. & Engr*. **4** (No. 3), (1997), 18-21.

52. Multi-agent systems to support networked scientific computing (with Joshi, A., N. Ramakrishnan), in *IEEE Internet Computing*, (1998) **2** (3), 69-83.

53. Collaborative environments for scientific computing: The task of algorithm/software selection (with Ramakrishnan, N., A. Joshi, and J.R. Rice), to appear in *Mathematical Modeling and Scientific Computing*, **8** (1999).

54. Multi-agent simulation of complex heterogeneous models in scientific computing (with Joshi, A., T. Drashansky, J.R. Rice, S. Weerawarana), *Math. Computers Simulation*, **44** (1997), 43-59.

55. EPPOD: A problem solving environment for parallel electronic prototyping of physical object design (with P. Wu), *Journal of parallel and distributed computing,* **42** (1997), 157-172.

56. Analysis of iterative line spline collocation methods for elliptic partial differential equations (with A. Hadjidimos, E.N. Houstis, J.R. Rice, and E. Vavalis), *SIAM J. Matrix Anal. Appl*., (1997), Vol. 19,(1998), pp. 341-363.

57. Neurofuzzy motion planners for intelligent robots (with L.H. Tsoukalas and G.V. Jones). In *Journal of Intelligent and Robotic Systems* (1998), 1-18.

58. Towards multidisciplinary problem solving environments (with A. Joshi, J.R. Rice, T. Drashansky, and S. Weerawarana). *HPCU Journal*, Vol. 1, Issue 1 (May 1997), http://www.hpcu.org/hpcunews/vol1/issue1

59. Network based scientific problem solving environments, (with J.R. Rice, S. Markus, and S. Weerawarana). *HPCU Journal*, Vol. 1, Issue 1 (May 1997), http://www.hpcu.org/hpcunews/vol1/issue1

60. Front-Tracking Finite Difference Methods for the Valuation of American Options, (with K. N. Pantazopoulos and S. Kortesis Computational Economics (1999), 101-124.

61. The Future of Problem Solving Environments (with J.R. Rice) to appear in a special issue of IMACS (2001).

62. An Agent-based Netcentric Framework for Multidisciplinary Problem Solving Environments (MPSE), (with S. Markus, A. C. Catlin, J. R. Rice, P. Tsompanopoulou, E. Vavalis, D. Gottfried, Ke Su, Ganesh Balakrishnan), Int. Journal of Computational Engineering Science, Vol 1, (2000), pp 33-60.

63. Network-based Scientific Computing (with Ganesh Balakrishnan, Ann Catlin, Nitesh Dhanjani, Spyros Lalis, Manolis Stamatogiannakis, John R. Rice, and C. Houstis), *The Architecture of Scientific Software*, (Ronald F. Boisvert and Ping Tak Peter Tang, eds.), Kluwer Academic Publishers, Norwell, MA, 2001, pp 3-28.

64. PYTHIA-II: A knowledge/database system for managing performance data and recommending scientific software, (with A. Catlin, J.R. Rice, V.S. Verykios, N. Ramakrishnan, and C. Houstis), ACM Transactions for Scientific Software, Vol.26, No. 2, June 2000, pp 227-253.

65. A knowledge discovery methodology for the performance evaluation of scientific software, (V.S. Verykios, and J.R Rice), Neural, Parallel and Sci. Comp., (2000), pp 115-132. Abridged version in *Enabling Technologies for Computational Science*, (E.N. Houstis, J.R. Rice, E. Gallopoulos, and R. Bramley, eds.), Kluwer, Boston, (2000), 171-185.

66. GasTurbnLab: A problem solving environment for gas turbine engine simulation with S. Fleeter, J.R. Rice, and C. Zhou), *J. Comp. Engr. Sci.*, (2000).

67. POEMS: End-to-end performance design of large parallel adaptive computational systems (with E. Deelman, A. Dube, A. Hoisie, Y. Luo, R.L. Oliver, D. Sundaram-Stukal, H. Wasserman, V.S. Adve, R. Bagrodia, J.C. Browne, O. Lubeck, J.R. Rice, P.J. Teller, and M.K. Vernon), *Proc. 1st Int'l. Workshop on Software and Performance*, (10/98). Also in IEEE *Trans. Soft. Engr.*, Vol. 26, (2000), pp 1027-1048.

68. MyPYTHIA: a recommendation portal for scientific software and services (with Ann Christine Catlin, Nitesh Dhanjani, John R. Rice, Naren Ramakrishnan, Vassilios S. Verykios), *Concurrency and Computation: Practice and Experience* 14(13-15):1481-1505 (2002)

69. Smart VideoText: a video data model based on conceptual graphs (with F. A. Kokkoras, Haitao Jiang, Ioannis P. Vlahavas, Ahmed K. Elmagarmid, Walid G. Aref)*: Multimedia Syst. 8(4): 328-338 (2002)*

70. InterBaseKB: Integrating a Knowledge Base System with a Multidatabase System for Data Warehousing (with N. Bassiliades, I. Vlahavas, and A.K. Elmagarmid), *IEEE Trans. Knowl. Data Eng. 15(5): 1188-1205 (2003)*

71. OptionStream: An Automated System for Tracking Derivative Effects on Equity Prices (T. Stef, V, Rego and E. Houstis) accepted in *Expert Systems with Applications, Elsevier.*

PROCEEDINGS

1. Software for linear elliptic problems on general two dimensional domains (with J. R. Rice), In *Advances in Computer Methods for Partial Differential Equations II* (R. Vishnevetsky, ed.), IMACS, New Brunswick, NJ (1977), 7-12.

2. Comparison of fast methods for elliptic problems (with T. S. Papatheodorou), In *Advances in Computer Methods for Partial Differential Equations II* (R. Vishnevetsky, ed.), IMACS, New Brunswick NJ (1977), 46-52.

3. Piecewise C^1cubic interpolation and applications (with T. S. Papatheodorou), Proceedings of the *International Conference on Constructive Function Theory*, Blagoevgroud, Bulgaria, June (1977).

4. An experimental design for the Computational evaluation of partial differential equation solvers (with J. R. Rice). In *The Production and Assessment of Numerical Software*, (M. Delves and M.A. Hennell, eds.), Academic Press (1980), 57-66.

5. A C^1 - Collocation method for mildly nonlinear elliptic equations on general 2-D domains (with W. Mitchell and T.S. Papatheodorou). In *Advances in Computer Methods for Partial Differential Equations, III* (R. Vishnevetsky, ed.), IMACS, New Brunswick, NJ (1979), 13-17.

6. A sixth order fast Helmholtz equation solver and its performance (with T.S. Papatheodorou). In *Advances in Computer Methods for Partial Differential Equations, III* (R. Vishnevetsky, ed.), IMACS, New Brunswick, NJ (1979), 18-27.

7. Spline-collocation methods for elliptic partial differential equations (with J.R. Rice and M. Vavalis), in *Advances in Computer Methods for Partial Differential Equations V* , (R. Stepleman, ed.), IMACS,Rutgers University (1984), 191-194.

8. Parallelization of a new class of cubic spline collocation methods (with J.R. Rice and E.A. Vavalis). In *Advances in Computational Methods for Partial Differential Equations* , VI, (Stepleman and Vishnevetsky), IMACS (1987), 167-174.

9. A Schwarz splitting variant of cubic spline collocation methods for elliptic PDEs (with J.R. Rice and E.A. Vavalis). In *3rd Conf. Hypercube Concurrent Computers & Applications* (G. Fox, ed.), ACM Press, New York (1988), 1746-1754.

10. Benchmarking of bus multiprocessor hardware on large scale scientific computing. In *Advances in Computational Methods for Partial Differential Equations*, VI, (Stepleman and Vishnevetsky) IMACS, (1987), 136-141.

11. Computing about physical objects (with C. Bajaj, C. Hoffmann, J.T. Korb, and J.R. Rice). *Proc. 12th World Congress on Scientific Computing,* IMACS, **4** (1988), 642-644.

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13. //ELLPACK: A numerical simulation programming environment for parallel MIMD machines (with J.R. Rice, N.P. Chrisochoides, H.C. Karathanasis, P.N. Papachiou, M.K, Samartzis, E.A. Vavalis and S. Weerawarana). *Proceedings of ICS 90* (J. Sopka, ed.), ACM Press (1990), 96-107.

14. Geometry based mapping strategies for PDE computations, (with N.P. Chrisochoides and C.E. Houstis). *Proceedings of ICS 91*, Cologne-Germany, 1991.

15. Parallel ELLPACK: A development and problem solving environment for high performance computing machines (with J.R. Rice). In *Programming Environments for High-Level Scientific Problem Solving* (P. Gaffney and E. Houstis, eds.), North-Holland, Amsterdam (1992), 229-241.

16. On the iterative solution of collocation equations (with T. S. Papatheodorou and R. Balourt). *10th IMACS World Congress*, **1** (1982), 98-100.

17. Partitioning and allocation of PDE computation in distributed systems (with C. E. Houstis and J. R. Rice). In *PDE Software: Modules, Interfaces and Systems* (B. Engquist and T. Smedsaas ed.), North-Holland (1984), 67-85.

18. Vector ELLPACK: Domain mappings and parallel geometric discretizations (with J. R. Rice). In *Advances in Computer Methods for Partial Differential Equations, V* (R. Stepleman, ed.), IMACS, New Brunswick, NJ (1984), 191-194.

19. Geometry decomposition based methods for solving elliptic PDEs, (with C.C. Christara, A. Hadjidimos, E.N. Houstis and J.R. Rice), *Comp. Methods in Flow Analysis* , (H. Niki and M. Kawahara, eds.), Univ. of Okayama, 2 Japan (1988), 175-182.

20. A parallel quadratic spline collocation-capacitance method for elliptic problems (with C.C. Christara and J.R. Rice). *Proc. 2nd Intl. Conf. Supercomputing,* ACM Press, New York (1988), 375-385.

21. A domain decomposition spline collocation method for elliptic partial differential equations (with C.C. Christara), In *Proceedings of the 4th Conference on Hypercubes, Concurrent Computers and Applications* , March (1989), 115-123

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23. Semi-iterative methods on distributed memory multiprocessor architectures, (with A. Hadjidimos, M. Samartzis and J.R. Rice). In *Proceedings of the Third International Supercomputing Conference*, (E. Houstis and D. Gannon, eds.), ACM Press (1989), 82-90.

24. The algorithm mapper: A system for modeling and evaluating parallel application/architecturepairs (with C.E. Houstis, J.R. Rice, S.M. Samartzis and D.L. Alexandrakis). In *Intelligent Mathematical Software*, (E.N. Houstis, J.R. Rice and B. Vichnevetsky, eds.) (1990), 87-101.

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26. The engineering of modern interfaces for PDE solvers (with J.R. Rice). In *Artificial Intelligence, Expert Systems and Symbolic Computing,* (E. Houstis and J.R. Rice eds.), North-Holland, Amsterdam (1992), 89-94. Extended abstract in *Proc. IMACS World Congress,* IMACS, Rutgers University, New Brunswick, NJ, **3** (1991), 1037-1038.

27. Domain Decomposer: A software tool for mapping PDE computations to parallel architectures (with N.P. Chrisochoides, C.E. Houstis, P.N. Papachiou, S.K. Kortesis and J.R. Rice). *In Fourth International Conference on Domain Decomposition Methods* (R. Glowinski, Y. Kuznetsov, G. Meurant, J. Periaux, and O. Widlund, eds.), SIAM Publications, (1991), 341-357.

28. Athena: A knowledge base system for //ELLPACK (with C.E. Houstis, J.R. Rice, T.S. Papatheodorou and P. Varodoglou). In *Symbolic-Numeric Data Analysis and Learning* (E. Diday and Y. Lechevallier, eds.), Nova Science, New York (1991), 459-467.

29. An interactive symbolic-numeric interface to parallel ELLPACK for building general PDE solvers (with S. Weerawarana). In *Symbolic and Numerical Computation for Artificial Intellligence*, (Donald, Kapur and Mundy, eds.), Academic Press, (1992), 303-321.

30. Parallel iterative methods (with N.P. Chrisochoides, E.N. Houstis, S.B. Kim, and M.K. Samartzis). In *Computer Methods for Partial Differential Equations VII* (R. Vichnevetsky, ed.), IMACS, New Brunswick, NJ (1992), 134-141.

31. The architecture of PDE solving systems,(with J.R. Rice). In *Computer Methods for PDEs VII* (R. Vichnevetsky, D. Knight and G. Richter, eds.), IMACS, New Brunswick, NJ (1992), 363-370.

32. Geometry as a basis for parallel analysis and design of physical objects, (with Poting Wu, E.N. Houstis, and J.R. Rice). *Second US National Congress on Computational Mechanics* (A.N. Noor Ed), (1993) (abstract).

33. The architecture of PDE solving systems,(with J.R. Rice). In *Computer Methods for PDEs VII* (R. Vichnevetsky, D. Knight and G. Richter, eds.), IMACS, New Brunswick, NJ (1992), 363-370. (ίδια με την 99, παρακαλώ να αγνοηθεί).

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GRANTS

SOURCE	**TITLE PROJECT**	**BUDGET**	**DURATION**
1. NSF	Nonlinear partial differential equations	$35,729	7/78-7/80
2. NSF	Numerical solutions of partial differential equations (with T.S. Papatheodorou)	$80,000	8/79-8/81
3. NATO	Parallel computing (with J.R. Rice)	$6,000	7/1/82-6/30/84
4. AFOSR	Parallel PDE algorithms and supercomputer architectures (with J.R. Rice and K. Hwang)	$452,389	9/30/84-9/30/87
5. ARO	Numerical solution of partial differential equations and software integration tools (with J.R. Rice).	$57,472	7/1/82-6/30/84
6. NATO	Neuro-computing (with S. Kortesis)	$6,000	8/85-8/86
7. ESPRIT	(SPAN (Parallel Processing), PADMAVATI (AI), PYGMALLION (Neural Computing), GENESIS I (Supercomputing), GENESIS II (Supercomputing), GALATEA (Neural Computing), PPPE (Portable Parallel Processing Environments), PEPS (Performance Evaluation)		
8. PRF	Multi-domain approximations of partial differential equations	$15,000	8/87-8/89
9. NSF	A hypercube multiprocessor (with J.R. Rice)	$65,000	7/87-6/88
10. NSF	Computing about physical objects (with C. Bajaj, C. Hoffmann, J.R. Rice),	$4,000,000	9/1/87-8/30/92
11. PRF	Summer David Ross Grant	$1,600	6/88-8/88
12. PRF	Summer David Ross Grant	$2,300	6/88-8/88
13. NSF	Conference on expert systems for numerical computing	$4,519	11/88-10/89
14. NSF	Conference on expert systems for numerical computing (with J.R. Rice)	$10,000	4/90-9/91
15. AFOSR	Parallel methods and systems for solving partial differential equations (with J.R. Rice	$295,000	8/1/88-4/30/91
16. PRF	Design an artificial neural network for implementing the automatic parallelization of scientific computations	$15,000	6/90-6/93
17. NASA	NASA graduate student researchers program: PDE solving kernels for parallel machines	$22,000	7/91-6/92
18. AFOSR	High performance computing (HPC) methods and systems for partial differential equations (with J.R. Rice)	$410,746	12/1/91 - 5/31/95
19. PRF	Problem solving environments for the development of PDE based applications on parallel machines	$9,900	8/92-8/93
20. NSF	Problem solving environments and methods for the development of PDE based applications on parallel machines	$300,000	9/15/92-9/14/94
21. NSF	SoftLab -- A laboratory for computational science (with C. Hoffmann and J.R. Rice)	$1,700,000	10/1/92-9/30/97

22. NSF	NSF Grant, "Third international conference on expert systems for numerical computing (with J.R. Rice)	$7,000	5/93-4/94
23. DARPA	PDE solving kernels and systems for scalable MIMD multiprocessors (with J.R. Rice and C. Ribbens)	$1,027,272	7/1/93-8/31/96
24. NSF	SciencePad: A mobile and intelligent problem solving environment for PDE based applications (CS&E Postdoctoral Associateship/Anupam Joshi)	$46,200	06/01/94 - 05/31/96
25. NSF	Research opportunity for David Maharry (Prof. from Wabash College)	$35,986	05/01/94 - 04/30/96
26. NSF	REU supplement to problem solving environments and methods for the development of PDE based applications on parallel machines (with J.R. Rice)	$10,000	09/01/94 - 05/30/95
27. NSF	Conference on expert systems for numerical computing (with E.N. Houstis)	$7,000	5/15/93- 4/30/94
28. NSF	REU supplement to Softlab- A laboratory for computational science', (with C. Hoffmann and J.R. Rice),	$25,000	09/01/94 - 08/31/95
29. NSF	REU supplement to problem solving environments for PDE based applications, (with J.R. Rice),	$10,000	09/01/94 - 05/31/95
30. Intel	Mobile computing	$10,000	01/95 - 12/95
31. IBM	24 ThinkPads	$125,000	01/96 - 12/96
32. Intel	SciencePad equipment	$120,000	01/96 - 12/96
33. Intel	SciencePad research	$150,000	01/96 - 12/98
34. AT&T	Classroom of the future	$23,000	06/94 - 12/95
35. NSF	High performance networks and visualization (with C, Bajaj, E.N. Houstis, D.C. Marinescu and V. Rego)	$150,000	7/1/95- 6/30/96
36. NSF	Workshop on scalable software and problem solving environments (with E.N. Houstis)	$5,000	6/1/95- 5/31/96
37. Kozo Keikaku	Engineering contract (with E.N. Houstis)	$80,000	6/1/96- 7/31/98
38. Class of 1941	Virtual classroom	$12,000	06/95 - 7/96
39. Special Initiation Grant	Computational finance	$10,000	06/96 - 06/97
40. Purdue re-investment grant	Purdue-On-Line: A facility for developing and delivering internet based courses	$123,000	8/96 - 8/99
41. Purdue re-investment grant	MS degree in computational finance	$22,000	8/96 - 8/97
42. AT&T	Purdue-On-Line	$22,000	8/96 - 8/97
43. PRF grant	Numerical methods and software for pricing American options	$12,000	8/97-8/98

44. Intel	Synchronous Internet Based Facility	$128,000	8/97-8/2000
45. Intel	HPC cluster (Hardware)	$920,000	8/97-8/2000
46. NSF	SGI Origin 2000 with 32 processors (with Rice, Sameh, Grama, Hoffmann)	$780,000	8/98-8/99
47. PRF	Computational Science & Engineering Program	$47,000	8/98 - recurring
48. DARPA	POEMS - End-to-end performance modeling of large heterogeneous Adaptive parallel/distributed computer/communication systems Purdue Group: Elias Houstis, John R. Rice, and Kihong Park Collaborators: Jim Browne - University of Texas at Austin, Vikram Adve - Rice University, Rajive Bagrodia - UCLA, Olaf Lubeck - Los Alamos Nat. Lab., Pat Teller – University of Texas at El Paso and Mary Vernon - University of Wisconsin	$1,836,000	6/97-6/2000
49. Indiana 21st century program	Incubator for Telemedicine Industry (Large consortium headed by Elmagarmid in computer science)	$1,500,000	6/99-6/2002
50. DOE	GasTurblab (with Rice, Fleeter, Zhou)	$3,000,000	6/99-6/2002
51. Indiana 21st century program	e-Bussiness (large consortium headed by Mehta in the Business School)	$1,200,000	6/00-6/2003
52. NSF	Scalable Enterprice Production Systems (with Mehta, Alibrantis)	$100,000	6/00-6/2001
53. DOD	Synthetic environment for computational experimentation	$450,000	6/00-6/2003
54. GGET	Polos kaitomias Thessalias	5,000,000 Eyro	1/07-12/2008

SUPERVISION OF GRADUATE STUDENTS AND RESEARCHERS

PH.D.

Purdue University: C.C. Christara (1989), N. Chrisochoides (1991), H. Byeun (1994), Sang Bae Kim (1993), Yu-ling Lai (1994), Sanjiva Weerawarana (1994), Poting Wu (1995),Shahani Markus (1999), Tzvetan Drashansky (1997, co-advisor J.R. Rice), K. Pantazopoulos (1998), Naren Ramakrishnan (1997), Vassilis Verykios (1998), G. Zhuang (2000, co-advisor J.R. Rice)
ΑΠΘ: Α. Βάβαλης (1986), Μ. Ηροδότου-Ελλίνα (1987)
Univ. of Thessaly: 5 active Ph.D. students.

Masters of Sciences (MS)

Chang-Hyeon Song (1996), Shu Cheng Zang (1996), Vassilios Verykios (1997), Ge Song (1997), Anand Sigh (1998), Kostas Pantazopoulos (1995), Anna Gleissner (1981), S. Wang (1979), D. Fang (1980), Grace Lo (1980), Yea-Sem Lin (1980)

Postdocs

Sang Bae Kim, Sanjiva Weerawarana, David Maharry, Anupam Joshi, Naren Ramakrishnan