

MANOLIS VAVALIS

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PERSONAL DATA

Born 1958 at Serres, Greece, lived in Greece (Sidirokastro, Thessaloniki, Patras and Heraklion), U.K. (Uxbridge) and USA (West Lafayette, IN). Currently in Volos Greece. Married with two daughters.

EDUCATION

Aristotelian University of Thessaloniki Thessaloniki, GREECE • Bachelor of Science in Mathematics, 1980

Brunel University Uxbridge, U.K. • Master of Science in Numerical Analysis, 1981

Aristotelian University of Thessaloniki Thessaloniki, GREECE • Philosophy Doctor in Numerical Analysis, 1984

RESEARCH INTEREST

Modeling & Simulation: Stochastic and deterministic mathematical models (differential equations or algebraic equations) for science and engineering problems (superconducting devices, air pollution systems ...).

Numerical Analysis & Scientific Computing: Development, analysis and implementation of high performance numerical methods for the numerical solution of differential equations and algebraic systems of equations (spectral methods, finite element and iterative methods).

Scientific Metacomputing: Multidomain multiphysics models and systems (interface relaxation, domain decomposition).

Problem Solving Environments for e-science: Design and implementation of advanced simulation engines on high performance computing systems.

Web Computational Systems: Web Services for high performance scientific computing. Scientific workflows and data management.

Semantic Web: Semantic organization of scientific objects, applied ontology engineering.

Information Management: Content based adaptive information filtering.

PROFESSIONAL EXPERIENCE

Professor (2012 –) Department of Electrical & Computer Engineering • University of Thessaly

Professor (Jan. – Feb 2015) Mathematics Department • Hong Kong University of Science and Technology

Associate Professor (2006 – 2012) Department of Computer & Communication Engineering • University of Thessaly

Associate Professor (2001 – 2006) Mathematics Department • University of Crete

Assistant Professor (1992 – 1996 & 1999 – 2000) Mathematics Department • University of Crete

Visiting Assistant Professor (1991 – 1992) Mathematics Department • University of Crete

Visiting Assistant Professor (1988 – 1991 & 1996 – 1999) Computer Science Department • Purdue University

Postdoctoral Research Fellow (1986 – 1988) Computer Science Department • Purdue University

Visiting Instructor (1984 – 1986) Mathematics Department • Purdue University

Senior Researcher (2003 –) Informatics and Telematics Institute and Institute for Research and Technology of Thessaly • Centre of Research and Technology Hellas (CERTH)

Senior Researcher (1990 – 2003) Institute of Computer Science and Institute of Applied & Computational Mathematics • Foundation for Research and Technology Hellas (FORTH)

ADMINISTRATION ACTIVITIES

Associate Head

- Department of Computer & Communication Engineering, University of Thessaly (2009 – 2011)
- Department of Mathematics, University of Crete (2003 – 2005)

Director

- Division of Applied Mathematics and Statistics, Department of Mathematics, University of Crete (2002 – 2003)

Senate Member

- University of Thessaly (2007 – 2008)
- University of Crete (1995 – 1996)

Editorial Board Memberships

- London Journal Press (2016 –)
- International Journal of Internet of Things and its Applications (2016 –)
- International Journal of Multimedia Technology (2014 –)
- International Journal of Computational & Neural Engineering (2013 –)
- International Journal of Intelligent Information Systems (2013 – 2014)
- Computer Science and Engineering (2012 – 2014)
- Advances of Internet of Things (2012 –)
- International Journal Heritage in the Digital Era (2011 –)
- Journal of Information Technology Research (2007 – 2011)

Reviewer

- Computing Reviews
- Mathematical Reviews
- Many Scientific Journals and International Conferences.

Evaluator & Examiner

- Internal Evaluation Committee at the Department of Computer & Communication Engineering, University of Thessaly (2009 – 2014)
- National, European (ICT, Marie Curie, PRACE, ...) and NSF Research Projects
- National Development Grands
- External examiner for 15 PhDs and 10 Masters defenses

International & National Committees

- Member of the European Technology and Innovation Platform Smart Networks for Energy Transition, Working Group 4 Digitalization of the the electricity system and customer participation” (2017 –)
- Coordinator of the National Task Force for the Hellenic Information Infrastructure of the Bureau of Career and Employment (2011 – 2014)
- IMACS Technical Committee on Computational Linear Algebra and Iterative Methods (1998 –)
- National Committee for GRID technologies (2002 – 2010)

University and School Committees

- Member of the Central Web Portal and Electronic Promotion Committee of the University of Thessaly (2016 –)
- Chairman of the Ethics Committee at the University of Thessaly (2014 – 2018)
- Member of the Course Digitization and on-line Learning Committee at the University of Thessaly (2012 – 2015)
- Member of the Quality Assurance Unit Committee at the University of Thessaly (2010 – 2014)
- Member (representing the School of Engineering) of the Career and Employment Office Committee at the University of Thessaly (2010 – 2015)
- Member of the Common Curriculum Development Committee of the School of Engineering at the University of Thessaly (2010 – 2014)
- Associate Member of the International Relations Committee at the University of Thessaly (2011 – 2014)
- Member of the Steering Committee of the Digital Data Laboratory of the School of Science at the University of Crete (1999 – 2005)
- Member of the Executive Committee of the Computer Center of the University of Crete and FORTH (1995 – 1997)

Interdepartmental Committees

Member of the Steering Committees of the following Intercollegiate Graduate Studies Programs:

- *High Performance Computing Systems*, Department of Electrical and Computer Engineering, General Department of the Medical School, Department of Musical Studies and Department of Mass Media Communications of the Aristotle University of Thessaloniki, Department of Finance and Economics of the University of Macedonia and Department of Computer & Communication Engineering of the University of Thessaly (2008 – 2013)
- *Mathematics and Their Applications*, Department of Mathematics and Department of Applied Mathematics of the University of Crete (2003 – 2005)
- *Optics and Vision*, Department of Mathematics, Department of Physics and School of Medicine of the University of Crete (2003 – 2005)

Departmental Committees

- Graduate Programs Steering Committee (2017 –)
- Procurement Committee (2011 –)
- The Graduate Students Adviser (2010 – 2012)

OTHER SELECTIVE ACTIVITIES

- Representer (elected) for the University of Thessaly at the 13th Congress of the National Association of Faculty Members (February 2017)
- Associate Chairman (elected) of the Executive Board of the Association of Faculty Members at the University of Thessaly (2015 – 2017, and 2019 –)
- Member (elected) of the Executive Board of the Association of Faculty Members at the University of Thessaly (2007 – 2009)
- Member of the Wikipedia's Supporters Network (2011 –)
- Selected recent consulting and development actions for:
 - WSO2 Inc.
 - National Headquarters of the Fire Service Department
 - Municipality of Volos
 - "Thessalia" Newspaper

SHORT VISITS

- Howest University, Brugge, Belgium (one week in 2017)
- INSA de Rouen, Rouen, France (two weeks in 1995, two weeks in 2000)

Books and Articles in Books and Collections

1. Performance of Scientific Software with C.C. Christara, E.N. Houstis and J.R. Rice, *Mathematical Aspects of Scientific Software*, (J.R. Rice, ed.), IMA 14, Springer Verlag, ISBN:0-387-96706-0 (1988) 123-155.
2. Parallel Numerical Algorithms and Software E.N. Houstis, S. Gallopoulos, T. Papatheodorou and A. Sameh, for *Encyclopaedia of Electrical and Electronic Engineering*. (1998)
3. OnTour Network Concept (Software System and Pilots), *OnTour Network for Tourism*, (J. Zabel, D. Bnke, and C. Panse, eds.) Verlag Mainz, Aachen, ISBN:3-89653-925-6 (2002) 37-89.
4. Iterative Methods for Algebraic Linear Systems, guest editor with A. Hadjidimos and E. Houstis, *Applied Numerical Methods*, 45 (2003).
5. An Advanced Middleware for e-Science Applied to Environmental Integrated Systems with C. Houstis, S. Lalis, M. Pitikakis and G. Vasilakis, *Information Systems for Sustainable Development*, (L. Hilty, E. Seifert and R. Treibert, eds.), Idea Group Publ., ISBN: 1-5914-0342-1,(2005) 76-93.
6. Collective Information Filtering for Web Observatories with N. Nanas, L. Kellis, D. Koutsaftikis and E. Houstis, In: *Collaborative Search and Communities of Interest: Trends in Knowledge Sharing and Assessment* (P. Francq, ed.) IGI Global, Hershey, MA (2010) 64-81.
7. On the impact of Knowledge Management of 3-Dimensional Archaeology & Cultural Heritage, In: *Heritage in the Digital Era*, ISBN 978-1-907132-25-4, MultiScience, (2010).
8. Dynamic Data Driven Partitioning of Smart Grid Using Learning Methods, with A. Nasiakou, M. Alamaniotis and E. Tsoukalas, Chapter 23 In: *Handbook of Dynamic Data Driven Applications Systems*, Springer Verlag, (2018).
9. *Topics in Computational and Informational Sciences and Engineering*, editor with C. Christara, University of Thessaly Press, (2018).
10. Recent Developments in Power Flow and Stability Modeling, with D. Zimeris, Chapter I.2 In: *Topics in Computational and Informational Sciences and Engineering* (C. Christara and M. Vavalis ed.), University of Thessaly Press, (2018).

in Scientific Journals (Refereed)

11. Convergence of an Cubic Spline Collocation Method for Elliptic Partial Differential Equations with E.N. Houstis and J.R. Rice, *SIAM J. Numer. Anal.*, 25(1988), 54-73.
12. // ELLPACK: A Numerical Simulation Programming Environment for Parallel MIMD Machines with E.N. Houstis, J.R. Rice, N. Chrisochoides, H. Karathanasis, P. Papachiou, K.Y. Wang and S. Weerawarana, *ACM SIGARCH Computer Architecture News*, 18(1990), 96-107.
13. Iterative Line Cubic Spline Collocation Methods for Elliptic Partial Differential Equations in Several Dimensions with A. Hadjidimos, E.N. Houstis and J.R. Rice, *SIAM J. Sci. Stat. Compt.*, 14, (1993), 715-734.
14. Performance of Iterative Methods on Distributed Memory Machines with D.C. Marinescu, and J.R. Rice, *Applied Numerical Mathematics*, 12(1993), 421-430.
15. A Virtual Parallel Environment for Implementing Neural Network Computations on Parallel Machines with H. Byun, S.K. Kortesis, and E.N. Houstis, *Neural Parallel and Scientific Computations*, 1(1993), 301-323.
16. A Semi-linear Elliptic PDE model for the Static Solution of Josephson Junctions with J-G. Caputo and N. Flytzanis, *Int. J. Modern Physics*, C6(1995), 241-262.
17. Effect of Geometry on Fluxon Width in a Josephson Junction with J-G. Caputo, and N. Flytzanis, *Int. J. Modern Physics*, C7, (1996) 191-216.
18. Two-dimensional Effects in Josephson Junctions: I Static Properties with J-G. Caputo, N. Flytzanis and Y. Gaididei, *Physical Review*, E54(1996) 2092-2021.
19. Analysis of a Non-Overlapping Domain Decomposition Method for Elliptic PDEs with J.R. Rice and D. Yang, *J. Applied and Computational Mathematics*, 87(1997) 11-19.
20. A.D.I. Methods of Cubic Spline Collocation Discretizations of Elliptic PDEs with P. Tsompanopoulou, *SIAM J. Scientific Computing*, 19(1998) 341-363.
21. Split Mode Methods for the Elliptic 2D Sine-Gordon Equation with J-G. Caputo, N. Flytzanis, Y. Gaididei and E. Moulitsas, *Int. J. Modern Physics*, C9(1998) 301-324.

22. Collaborative Agents for Modelling Air Pollution with J.R. Rice, *Systems Analysis Modelling Simulation*, 32(1998) 93-101.
23. Analysis of Iterative Line Spline Collocation Methods for Elliptic PDEs with A. Hadjidimos, E.N. Houstis and J.R. Rice, *SIAM J. Matrix Analysis and Applications*, 21 2(1999) 508-521.
24. An effective Sine-Gordon model for the static properties of narrow window junctions with J-G. Caputo, N. Flytzanis, V. Yurin and N. Lazaridis, *J. Appl. Physics*, 85 10(1999) 7291-7301.
25. Interface Relaxation Methods for Elliptic Differential Equations with J.R. Rice and P. Tsompanopoulou, *Applied Numerical Methods*, 32(1999) 219-245.
26. Agent Based Networks for Scientific Simulation and Modelling with L. Boloni, D.C. Marinescu, J.R. Rice and P. Tsompanopoulou, *Concurrency: Practice and Experience*, 12(2000) 845-861.
27. Stability Analysis of Static Solutions in a Josephson Junction with J-G. Caputo, N. Flytzanis, Y. Gaididei and N. Stefanakis, *Superconductor Science and Technology*, 13 4(2000) 423-438.
28. Static Properties of a Wide Lateral Window Josephson Junction with J-G. Caputo, N. Efraimidis, N. Flytzanis, Y. Gaididei and E. Moulitsas, *Int. J. Modern Physics*, C11 3(2000) 493-517.
29. An Agent-Based Netcentric Framework for Multidisciplinary Problem Solving Environments with S. Markus, E. Houstis, A. Catlin, J. Rice, P. Tsompanopoulou, D. Gottfried, K. Su and G. Balakrishnan, *Int. Journal of Computational Engineering Science*, 1(2000), 33-60.
30. Fine Tuning Interface Relaxation Methods for Elliptic Differential Equations with J.R. Rice, and P. Tsompanopoulou, *Applied Numerical Methods*, 43(2002), 459-481.
31. Runtime Support for Collaborative Air Pollution Models, *Systems Analysis Modelling Simulation*, 42(2002), 1575-1600.
32. Analysis of a Semi-linear PDE for Modelling Stationary Solutions of Josephson Junctions with J-G. Caputo, N. Flytzanis and A. Tersenov, *SIAM J. on Mathematical Analysis*, 34(2003), 1355-1378.
33. An Experimental Study of Interface Relaxation Methods for Composite Elliptic Differential Equations with P. Tsompanopoulou, *Applied Mathematical Modelling*, 32(2008), 1620-1641.
34. Analysis of an Interface Relaxation Method for Composite Elliptic Differential Equations with P. Tsompanopoulou, *Journal of Computational and Applied Mathematics*, 226(2009), 370-387.
35. Personalized News and Scientific Publications Aggregation with N. Nanas and E. Houstis, *Information Processing & Management* 46(3) 2010, 268-283.
36. Knowledge-Based Representation of 3D Media with G. Vasilakis, A. Garcia-Rojas, L. Papaleo, C. Catalano, F. Robbiano, M. Spagnuolo, M. Pitikakis, *International Journal of Software Engineering and Knowledge Engineering*, 20 5(2010) 739-760.
37. Words, Antibodies and their Interactions with N. Nanas and Anne De Roeck, *Swarm Intelligence* 4 4(2010) 275-300.
38. Semantically Interoperable 3D Scientific Objects with M. Pitikakis and C. Houstis, *The Knowledge Engineering Review*, 27 1(2012) 33-55.
39. Finite Element Simulations of Window Josephson Junctions, with M. Mo and G. Sarailidis, *Journal of Computational and Applied Mathematics* 236, 13(2012), 3186-3197.
40. Electronic editor-in-chief platforms, with I. Koutsaftikis and N. Nanas, <http://firstmonday.org> 18(2013).
41. Real Valued Block SOR Iterative Methods for the Helmholtz Equation, *International Journal of Numerical Methods and Applications*, 10, 2(2013) 99- 126.
42. Simulations of all Electric Vehicles on Fixed Routes, with R. Fainti, A. Nasiakou and E. Tsoukalas, *Int. J. of Electric and Hybrid Vehicles* 5, 4(2013), 296-316.
43. Design and Early Simulations of Next Generation Intelligent Energy Systems, with R. Fainti, A. Nasiakou and E. Tsoukalas, *Int. J. of Monitoring and Surveillance Technologies Research* (2014), 2(2), 58-82.
44. Intelligent Biding on Smart Electricity Markets, with Magda Foti, *Int. J. of Monitoring and Surveillance Technologies Research* (2015), 3(3), 68-90.
45. Schwarz Splitting for the Steady State Problem of Saltwater Intrusion in Coastal Aquifers, with M. Maroudas, N. Vilanakis, M. Mathioudakis, Ch. Antonopoulos and Y. Saridakis, *International Journal of Mathematical Models and Methods in Applied Sciences*, (2015), 7, 733-739.

46. On the Stochastic/Deterministic Numerical Solution of Composite Deterministic Elliptic PDE Problems, with G. Sarailidis, *International Journal of Mathematical Models and Methods in Applied Sciences*, (2015), 7, 740–747.
47. On PDE problem solving environments for multidomain multiphysics problems, with M. Maroudas and Ch. Antonopoulos, *Journal of Mathematics and Statistical Science* (2016), 2(3), 111–123.
48. Smart Energy for Smart Irrigation, with A. Nasiakou and D. Zimeris, *Computers and Electronics in Agriculture*, (2016), 129(1), 74-83.
49. On Visualizing Distribution Systems for Next Generation Power Distribution Grids, With M. Foti, A. Nasiakou, L. Vasilaki, *Int J Comput Neural Eng.* (2016), 3(1), 16–27.
50. Monitoring an Institutions Research Activities, with M. Foti and E. Pappa, *International Journal of Information and Education Technology*, (2017), 7(5), 350–356.
51. Blockchain Based Uniform Price Double Auctions for Energy Markets, with M. Foti, *Applied Energy*, (2019), to appear.

in Proceedings (Refereed)

52. Spline-Collocation Methods for Elliptic Partial Differential Equations with E.N. Houstis and J.R. Rice, *Advances in Computer Methods for Partial Differential Equations*, V, (R. Stepleman, ed.), IMACS, New Brunswick, N.J. (1984), 191-194.
53. Parallelization of a New Class of Cubic Spline Collocation Methods with E.N. Houstis, and J.R. Rice, *Advances in Computer Methods for Partial Differential Equations*, VI, (Stepleman and Vichnevetsky, eds.), IMACS, New Brunswick, N.J. (1987) 167-174.
54. A Schwarz Splitting Variant of Cubic Spline Collocation Method for Elliptic PDEs with E.N. Houstis and J.R. Rice, *Hypercube Concurrent Computers and Applications*, vol. 2, ACM Press , (1988), 1746-1754.
55. 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*, vol. 2, (H. Niki and M. Kawahara, eds.), Univ. of Okayama, Japan (1988), 175-182.
56. Semi-Iterative Methods on Distributed-Memory Multiprocessor Architectures with A. Hadjidimos, E.N. Houstis, J.R. Rice, and M.K. Samartzis, *Supercomputing 89*, vol. 2, ACM Press, (1989), 82-90.
57. An Efficient Finite Element Method for the PE with V.A. Dougalis and N. Kampanis, *2nd European Conference on Underwater Acoustics*, (1994), 123-129.
58. Linear Systems Solvers for Finite Element Discretizations of the Helmholtz Equation with V.A. Dougalis, N.A. Kampanis, and P. Tsompanopoulou, *Proceedings of the 3rd European Conference on Underwater Acoustics*, (1996), 279-284.
59. Collaborating Problem Solving Agents for Multi-physics Problems with T. Drashansky, J.R. Rice, E. Houstis, S. Weerawarana, P. Tsompanopoulou and A. Joshi, *Proceedings of IMACS World Congress*, Vol. 4, (1997) 541-546.
60. Non Local Effects in Window Type Josephson Junctions with J. G. Caputo, N. Flytzanis, V. Kurin and N. Lazarides, *online Proceedings of the 10th Conference on Solitons and Coherent Structures in Physics and Biology*, (1997).
61. A Collaborative Framework for Air Pollution Simulations NATO-ASI series, (1999) 349-358.
62. A Service Infrastructure for e-Science: The Case of the ARION System, with C. Houstis, S. Lalis, V. Christophides, D. Plexousakis, M. Pitikakis, K. Kritikos, A. Smardas, X. Gikas, *In Lecture Notes in Computer Science*, 2512(2002) 175-187.
63. Building Ontologies of Environmental Applications for a Digital Library of Scientific Collections with C. Stefanakos, T. Gerostahis, G. Athanasoulis, C. Houstis, *In Environmental Communication in the Information Society*, (Enviro Info 2002), Vol 1, (2002) 436-439.
64. A Data, Computation and Knowledge Grid: the case of the ARION system, with C. Houstis, S. Lalis, V. Christophides, D. Plexousakis, M. Pitikakis, K. Kritikos, A. Smardas, *Proceedings of the 5th International Conference on Enterprise Information Systems (ICEIS2003)*, 1(2003) 359-365.
65. Towards Semantics of Digital Shapes: the AIM@SHAPE approach, with B. Falcidieno, M. Spagnuolo, P. Alliez, E. Quak, C. Houstis, *Proceedings of the 1st European Semantic Web Symposium (ESWS 2004)*, (2004).

66. Semantic Web Technologies for Searching, Retrieving and Adding Value to Large Scale Scientific Data, with M. Pitikakis, C. Houstis, G. Vasilakis, Proceedings of the Ensuring the Long-Term Preservation and Adding Value to the Scientific and Technical Data Workshop, ESA WPP-232, (2004) 151-158.
67. Providing Support for Integrated Scientific Computing: Metacomputing meets the Semantic Web and the Grid, with S. Lalis. C. Houstis, M. Pitikakis, G. Vasilakis, Proceeding of the Cluster Computing and GRID (CCGrid 2005), (2005) 631-637.
68. A Knowledge Management Architecture for 3D Shapes and Applications, with M. Pitikakis, C. Houstis, G. Vasilakis, Proceedings of the 10th Panhellenic Conference on Informatics (PCI05), Lecture Notes in Computer Science, Springer-Verlag, (2005) 360-370.
69. A Semantic Based Search Engine for 3D Shapes: Design and Early Prototype Implementation, with G. Vasilakis, M. Pitikakis and C. Houstis, Proceedings of 2nd European Workshop on the Integration of Knowledge, Semantics and Digital Media Technologies (EWIMT05), (2005) 391-394.
70. The AIM@SHAPE DSW: semantic-centric usage scenarios, Proceedings of the 6th International Congress on Industrial and Applied Mathematics (ICIAM 2007), (2007).
71. A common ontology for multi-dimensional shapes, with G. Vasilakis, A. Garcia-Rojas, L. Papaleo, C. Catalano, M. Spagnuolo, F. Robbiano and M. Pitikakis, Proceedings of the 2nd International Conference on Semantics And digital Media Technologies (SAMT07), (2007).
72. A "Bag" or a "Window" of Words for Information Filtering? with N. Nanas and E. Houstis, Lecture Notes in Artificial Intelligence, Proceedings of the 5th Hellenic conference on Artificial Intelligence, Springer-Verlag, (2008) 182-193.
73. FOCUS K3D: Promoting the Use of Knowledge Intensive 3D, with B. Falcidieno, M. Pitikakis, M. Spagnuolo and C. Houstis, Proceedings of the 14th International Conference on Virtual Systems and Multimedia - Project Papers (VSMM 2008) (2008) 329-333.
74. What Happened to Content-Based Information Filtering?, with N. Nanas and A. De Roeck, proceedings of the 2nd International Conference on the Theory of Information Retrieval (ICTIR), (2009) 249-256.
75. Web Observatories: Concepts, State of the Art and Beyond with N. Nanas, J. Koutsaftikis, E. Kelis and E. Houstis, proceedings of the 4th Mediterranean Conference on Information Systems (MCIS), (2009) 147-159.
76. Immune Learning in a Dynamic Information Environment, with N. Nanas and L. Kellis, Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), proceedings of the 8th International Conference on Artificial Immune Systems, 6209 LNCS, (2010) 47-60.
77. LAPACK WS: Offering Lapack over the Web, with D. Benis and E. Houstis, Proceedings of the NumAn2010 Conference in Numerical Analysis,(2010).
78. Revisiting evolutionary information filtering, with N. Nanas and S. Kodovas, Proceedings of the 2010 IEEE World Congress on Computational Intelligence, WCCI 2010 - 2010 IEEE Congress on Evolutionary Computation, CEC 2010, art. no. 5586070,(2010).
79. Immune Inspired Information Filtering in a High Dimensional Space, with N. Nanas, S. Kodovas, and E. Houstis, 9th International Conference on Artificial Immune Systems (ICARIS 2010), Springer, (2010)
80. A Network-Based Model for High-Dimensional Information Filtering, with N. Nanas, and A. De Roeck, Proceedings of the Annual International ACM SIGIR Conference on Research and Development in Information Retrieval, LNCS 6290(2010) 47-60.
81. Models and Systems for Simulating Full Electric Trains,with A. Nasiakou, N.Faidi and L. Tsoukalas, Proceedings of the 16th National Energy Conference, 2013.
82. Hybrid PDE solvers, Proceedings of the Workshop on PDE Software Frameworks, with G. Sarailidis, (2013).
83. Large Scale Simulations for Electric Energy Markets, with A. Nasiakou, N.Faidi and E. Tsoukalas, 5th IEEE International Conference on Information, Intelligence, Systems and Applications, 160165, 2014.
84. Towards Next Generation Intelligent Energy Systems: Design and Simulations Engines, with E. Tsoukalas, G. Papavassilopoulos, Ch. Nikolaou, E. Sarri, A. Nasiakou, N.Faidi, G. Koutras and E. Houstis, 5th IEEE International Conference on Information, Intelligence, Systems and Applications 412418, 2014.
85. Software Platforms for Multi-Domain Multi-Physics Simulations, with Ch. Antonopoulos and M. Maroudas, 6th International Conference on Numerical Analysis, 2014.
86. Simulating Active and Reactive Energy Markets, with A.Nasiakou and D.Bargiotas, 6th IEEE International Conference on Information, Intelligence, Systems and Applications, 2015.

87. A Learning Approach for Strategic Consumers in Smart Electricity Markets, with Magda Foti, 6th IEEE International Conference on Information, Intelligence, Systems and Applications, 2015.
88. Linking Smart Energy and Smart Irrigation: Integration, System Architecture, Prototype Implementation and Experimentation, with D. Zimeris, A. Nasiakou and Elias Houstis, 3rd International Congress on Energy Efficiency and Energy Related Materials (ENEFM2015) (A. Y. Oral and Z. B. B. Oral editors), Springer, 143-149, 2017.
89. Real time data analytics platform for power grid smart applications, with N. Akram, M. Dayarathna, S. De Silva, M. Foti, M. Jayasinghe, 14th International Conference on the European Energy Market (EEM2017), 2017.
90. Viability analysis of a decentralized energy market based on blockchain, with M. Foti and D. Greasidis, 15th International Conference on the European Energy Market (EEM2018), 2018.

Selected and Recent Published on-line papers

1. Distributed and Adaptive Collaborative Filtering, with E. Lelis.
<http://dx.doi.org/10.6084/m9.figshare.1037368>
2. Semantically Enriched Web Services for 3D Objects. with M. Pitikakis
<http://dx.doi.org/10.6084/m9.figshare.1037369>
3. Web Services for Energy Markets: An Annotated Bibliography, with A. Nasiakou.
<http://dx.doi.org/10.6084/m9.figshare.1483352>
4. A Web information platform for sports inactivity, with V. Bouglas and A. Papaioannou.

Working Notes and Submitted Papers

1. GitCV: A GitHub Based Electronic CV, with D. Greasidis (submitted to First Monday)
2. Inspecting and Analyzing Blockchain Applications, with Ch. Antonopoulos, M. Foti and D. Greasidis (to be submitted to Empirical Software Engineering)
3. Cryptocurrency Analysis & Predictions Utilizing Machine Learning, with E. Houstis and Th. Zoumpikas (to be submitted to PLOS One)
4. Blockchain Design and Implementation for Decentralized Optimal Power Flow, with M. Foti and K. Mavromatis (to be submitted to Applied Energy)
5. What blockchain can do for power grids? with M. Foti (to be submitted to Renewable and Sustainable Energy Reviews)

Lecture Notes and Translations

- Exercises and Problems in Linear Algebra (2018)
- Applications of Linear Algebra (2018)
- Introduction to Applied Linear Algebra (2017)
- A Collection of Solved Problems in Differential Equations (2014)
- Introduction to Differential Equations (2006)
- Elements of Sparse Linear Algebraic Systems (2006)
- Introduction to Scientific Computing by Mike Heath (2000 with A. Hadjidimos)
- Stating with Matlab by the Univ. of Indiana (1999 with Ch. Katelani)
- Introduction to Linpack and BLAS (1998)
- A subset of Fortran 77 (1994)

ACM Computing Book Reviews

1. Blockchain applications: A Hands-On Approach, August 2017.
2. Computational Methods in Power System Analysis, August 2014.
3. Accelerating MATLAB with GPU Computing, May 2014
4. Semantic Web services, March 2012
5. Validated Numerics: A short introduction to rigorous computations, December 2011
6. Scientific Computations, February 2010

7. A Compendium of Partial Differential Equation Models: method of lines analysis with MATLAB, June 2009
8. Computational Mathematics : models, methods, and analysis with Matlab and MPI, February 2004.
9. Applied Numerical Methods in C, May 1994
10. Numerical Computation using C, January 1994.

Technical Reports

More than 50

Member of the Organizing, Scientific or Technical Committee

- 16th International Conference on Open Source Systems, (OSS 2020), Innopolis, Russia, May 2020
- 9th International Conference on Educational and Information Technology, Oxford, England, February 2020
- 2nd International Conference on Electronics & Electrical Engineering, ICEEE 2019, Rome, Italy, July 2019
- 8th International Conference on Educational and Information Technology, (ICEIT 2019), Cambridge, England, March 2019.
- ICT 2018: Imagine Digital - Connect Europe, Towards Next Generation European Digital Cyber-Robustness and Cybersecurity Networking Session, (ICT 2018), Vienna, Austria, December 2018.
- Blockchain & Ballerina - A Workshop on Technologies for Next-Generation Applications, B&B, Volos, Greece, June 2018
- 14th International Conference on Open Source Systems, (OSS 2018), Athens, Greece, June 2018
- 7th International Conference on Educational and Information Technology, (ICEIT 2018), Oxford, England, March 2018.
- 3rd Conference on Internet of Things and Smart City, (IoTSC 2017), Shenzhen, China, May 2017.
- Computation and Information Science and Engineering Conference (enh2016), Portaria, Volos, Greece, June 2016.
- 4th World Conference on Information Systems and Technologies (WorldCIST'16), Recife, Brazil, March 2016.
- 5th International Conference on Educational and Information Technology (ICEIT 2016), Paris, France, March 2016.
- International Workshop on Next Generation Smart Energy Systems (Hephaestus'15), Volos, Greece, September 2015.
- Conference on Internet of Things and Smart City (IoTSC 2015), Beijing, China, May 2015.
- 3rd World Conference on Information Systems and Technologies (WorldCIST'15), Azores, Portugal, April 2015.
- 8th National Conference of Students of Electrical and Computer Engineering, (EuroMed 2014), Patra, Greece, April 2015.
- 5th International Euro-Mediterranean Conference (EuroMed 2014), Lemesos, Cyprus, November 2014.
- Recent Approaches to Numerical Analysis: Theory, Methods and Applications (NumAn 2014), Chania, Greece, September 2014
- Workshop on INformation Driven Applications for Smart Power and Energy Systems (WINDASPES 2014), Chania, Greece, July 2014
- 2nd World Conference on Information Systems and Technologies (WorldCIST'14), Madeira, Portugal, April 2014
- 8th National Conference of Computer Science Education (in Greek), (NCCS 2014), Volos, Greece, March 2014
- 3rd International Conference on Consumer Electronics, Communications and Networks (CECNet 2013) Xianning, China, November 2013
- 1st World Conference on Information Systems and Technologies (WorldCIST'13), Algarve, Portugal, March 2013
- Recent Approaches to Numerical Analysis: Theory, Methods and Applications (NumAn 2012), Ioannina, Greece, September 2012
- 4th International Euro-Mediterranean Conference (EuroMed 2012), Lemesos, Cyprus, November 2012
- Recent Approaches to Numerical Analysis: Theory, Methods and Applications (NumAn 2010), Chania, Greece, September 2010
- 4th National Conference of Computer and Communication Engineering Students, (sfhmy4), Patras, Greece, November 2010
- FOCUS K3D Conference on Semantic 3D Media and Content (FK3D 2010)
- 2nd Annual World Congress of BioSoft (BioSoft 2010), Dalian, China, June 2010

- 3rd International Euro-Mediterranean Conference (EuroMed 2010), Lemesos, Cyprus, November 2010
- Workshop on 3D Knowledge Technologies for Cultural Heritage Applications (VSMM'09), Vienna, Austria, September 2009
- Modern Mathematical Methods in Science and Technology (M3ST'09), Poros, Greece, September 2009
- 21st International Conference on Tools with Artificial Intelligence (ICTAI 2009), Newark, USA, August 2009
- VIII-th edition of the Symposium on Mechanics (SIMEC 2009), Bucharest, Romania, May
- International Workshop on Multi-Core Computing Systems ((MuCoCoS'08), Barcelona, Spain, March 2008
- 1st HellasGrid User Forum (HellasGrid), Athens, Greece, May 2008
- Recent approaches to Numerical Analysis: Theory, and Applications (NumAn2008), Patras, Greece, September 2008
- Workshop on Promoting Semantic 3D Media (VSMM'08), Limassol, Cyprus, October 2008
- Advanced Course on Grid Technologies (EGGE'07), Volos, Greece, May 2007
- Recent approaches to Numerical Analysis: Theory, and Applications (NumAn2007), Patras, Greece, September 2007
- 2nd international conference on Semantics And digital Media Technologies (SAMT2007), Genova, Italy, September 2007
- Collaboration Workshop for the Future Semantic Web (ESWC 2005), Heraklion, Greece, May 2005
- 10th Panhellenic Conference on Informatics (PCI2005), Volos, Greece, November 2005
- Summer Schools in Mathematics (SSM), Heraklion, Greece, Summers of 2002, 2003, 2004 and 2005
- Advance Research Workshop on "Advances in Air Pollution Modeling for Environmental Security" (ARW2004), Borovetz, Bulgaria, May 2004
- Workshop on Federated and Scalable Systems for the Environment (), Madrid, Spain, 2003
- 5th IMACS Conference on Iterative Methods (IMACS01), Heraklion, Greece, May 2001
- Advance Research Workshop on "Large Scale Computations for Air Pollution" (ARW'98), Sofia, Bulgaria, July 1998
- 3rd ERCIM Conference on "Air Pollution Modeling" (ERCIM ENV), Madrid, Spain, May 1997
- HERMIS mini-symposia on "Iterative Methods for Linear Algebraic Linear Systems" (), Athens, Greece, 1994, 1996 and 1998

Plenary, Keynote or Invited Speaker

- 9th International Conference on Educational and Information Technology, Oxford, England, February 2020
- 2nd International Conference on Computer Science & Cloud Computing (ICCSCC-2019), Rome, Italy, June 2019
- 8th International Conference on Educational and Information Technology, Cambridge, England, March 2019
- 3rd International Conference on Intelligent Computing, Communication & Devices Guangzhou, China, December 2018
- 7th International Conference on Educational and Information Technology, Oxford, England, March 2018
- 6th HEDNO Info Day on Smart Grids, Athens, Greece, March 2016.
- Advanced School on Service Oriented Computing (SummerSoc-2015), Hersonissos, Crete, Greece, June 2015
- Advanced School on Service Oriented Computing (SummerSoc-2014), Hersonissos, Crete, Greece, July 2014
- 3rd Annual World Congress of InfoTech-2014 (InfoTech-2014), Dalian, China, June 2014
- HellasHPC Workshop, Thessaloniki, Greece, September 2010
- Workshop on 3D Knowledge Technologies for Cultural Heritage Applications, Vienna, Austria, September 2009
- 6th International Congress on Industrial and Applied Mathematics, Zurich, Switzerland, July 2007
- EGEE Workshop "Advanced Topics on GRIDS", Volos, Greece, May 2007
- EGEE Workshop "Introduction to GRIDS", Heraklion, Greece, November 2006

- Department of Agricultural Engineering & Agronomy Colloquium, University of Naples Federico II, Naples, Italy, March 2006
- EGEE Workshop “Introduction to GRIDS” Thessaloniki, Greece, July 2005
- Numerical Analysis Conference, Ioannina, Greece, June 2005
- Advances in Air Pollution for Environment. Security, Borovetz, Bulgaria, May 2004
- ESA, ESRIN Colloquium, Frascati, Italy, January 2004
- Summer School in Mathematics, Heraklion, Greece, July 2002 & July 2004
- Earth Observation Systems Workshop, ESA - ESTEC, The Netherlands, January 2003
- Universal Information Ecosystems Workshop, BT-Exact, UK, January 2003
- Mathematical Methods in the Sciences, Academic Village of Anogia, Greece, June 2000
- 3rd ERCIM Workshop on Air Pollution Modeling, Paris, France, June 1999
- J.R. Rice Computational Sciences Conference, West Lafayette, IN, USA, May 1999
- Air Pollution Advanced Workshop, Sofia, Bulgaria, June 1998
- 1st ERCIM Workshop on Air Pollution Modeling, Berlin, Germany, April 1997
- Applied Mathematics Department Colloquium, INSA de Rouen France, November 1992 & November 1994
- International Seminar on Sea Technologies Heraklion Greece, November 1991
- Mathematics Department Colloquium, University of Ioannina Greece, May 1989 & May 1995
- 3rd SIAM Conference on Applied Linear Algebra Madison, WI, USA, May 1988
- Computer Science Department Colloquium, University of Minnesota USA, April 1988

Speaker

- 5th International Conference on Educational and Information Technology, Paris, France, March 2016.
- Mathematical Methods & Computational Techniques in Science & Engineering, Bratislava, Slovakia, November 2015.
- 14th International Conference on WWW/INTERNET, Maynooth, Greater Dublin, Ireland, October 2015.
- 3rd International Congress on Energy Efficiency and Energy Related Materials (ENEFM), Oludeniz, Turkey, October 2015
- 5th IEEE International Conference on Information, Intelligence, Systems and Applications, Chania, Greece, July 2014
- Eleventh International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, Lueven, Belgium, April 2014
- PDE Software Frameworks, Munster, Germany, June 2012
- IEEE World Congress on Computational Intelligence, Barcelona, Spain, July 2010
- Workshop on Promoting Semantic 3D Media, Lemessos, Cyprus, November 2008
- 6th International Congress on Industrial and Applied Mathematics, Zurich, Switzerland, July 2007
- 10th Panhellenic Conference in Informatics, Volos, Greece, September 2005
- PV-2004 Workshop, European Space Agency, Frascati, Italy, October 2004
- Supercomputing 98 Orlando, USA, November 1998
- 11th International Conference on Domain Decomposition, London, UK, June 1998
- 9th International Conference on Domain Decomposition, Bergen, Norway, June 1996
- 9th Parallel Circus, New York, USA, April 1990
- 6th Parallel Circus, New York, USA, November 1989
- 4th Conference on Hypercube Concurrent Computing and Applications, Monterey, USA, July 1989
- 3rd International Conference on Supercomputing, Crete, Greece, June 1989
- 3rd Conference on Hypercube Concurrent Computing and Applications, Pasadena, USA, July 1988
- Computing About Physical Objects Workshop, W. Lafayette, USA, May 1988

- Copper Mountain Conference on Iterative Methods, Copper Mountain, USA, April 1988
- 6th IMACS World Congress, Bethlehem, USA, July 1987
- SIAM National Meeting, Boston, USA, July 1986

Public Lectures

- Towards ePicasso, Pint of Science, Volos, Greece, May 2019.
- Block Chain Technologies IEEE Volos Student Branch Seminar, Volos, Greece, March 2019.
- Technological Achievements in Modern Greek History 3rd Lyceum of Volos, Volos, Greece, April 2018.
- History of Linear Algebra Hellenic Mathematical Society - Annex of Volos, Volos, Greece, March 2018.

Undergraduate Courses Taught

- Calculus courses (Purdue, Crete at various levels), Linear Algebra courses (Crete, Thessaly at various levels), Differential Equations courses (Crete, Thessaly at various levels), Partial Differential Equations (Crete), Numerical Analysis (Purdue, Crete), Scientific Computing (Crete), Numerical Linear Algebra (Crete), Symbolic Computations (Crete), Linear Programming (Thessaly)
- Introduction to Computing and Programming (Crete) Programming II with C++ (Purdue), Fortran Programming (Crete), Theory of Computation (Thessaly, Purdue), WWW Technologies (Thessaly), Parallel Computing (Thessaly), Data Structures (Purdue), Computer Architecture (Purdue), Web Information Systems (Thessaly), , Computer Graphics (Thessaly), Blockchain Technologies and Decentralized Applications (Thessaly)
- Electrical Installations (Thessaly), Robotics (Thessaly)
- Several reading and/or special courses

Graduate Courses Taught

- Computational Methods in Analysis (Purdue), Numerical Linear Algebra (Crete), Numerical Solution of Partial Differential Equations (Purdue, Crete), Iterative Methods for Linear Algebraic Systems (Crete)
- Web Information Systems (Thessaly), Advance Topics in Artificial Inteligence (thessaly), Advanced Topics in WWW (Thessaly), Symbolic and Scientific Computing (Crete)

THESIS SUPERVISING (MAIN ADVISOR)

PhDs

- Athina Ayfanti (2022 expected)
- Athanasios Zoumpekas (2021 expected)
- Dimitrios Zimeris (2021 expected)
- Magda Foti (2019) Postdoctoral Teaching Associate, Department of Electrical and Computer Engineering, Univeristy of Thessaly
- Antonia Nasiakou (2018) Software Engineer, Intarsoft International
- Marios Pitikakis (2010) Lab Teaching Staff (), Computer Science Department, University of Crete
- Panagiota Tsompanopoulou (2000) Associate Professor, Department of Electrical and Computer Engineering, Univeristy of Thessaly

Masters

2019 expected Athansios Zoumbekas

2018 Dimitris Greasidis

2015 Maria Markou, Dimitris Zimeris

2014 Orestis Meikopoulos

2013 Nikol Christou, Antonia Nasiakou, Rafik Fainti, Theodoros Economou

2012 Dimitrios Koutsaftikis, Stefanos Kodovas (with N. Nanas), Magda Foti (with K. Papadakis)

2011 Ioannis Koutsaftikis (with N. Nanas)

1995-2010 Eleni Papaioannou, Sofia Kyritsi (with C. Houstis), Michael Kagiadakis (University of Crete), Panagiota Tsompanopoulou (University of Crete), Cien Wang (Purdue University)

External Advisory and Intern Hosting

2017 Matthieu Stephant, Intern, Ecole Centrale de Lyon, FRANCE

2016 Maurizio Scognamiglio, Intern, PhD thesis, University of Perugia, ITALY

2015 Daniela Cabiddu, External Adviser, PhD thesis, University of Cagliari, ITALY

2009 Miguel Angel Cano Santizo, Intern, BEng thesis, Universidad de Sevilla, SPAIN

Diploma Thesis

2 at the University of Crete and more than 50 at the University of Thessaly.

Coordinator or co-coordinator

- HEPHAESTUS: Towards Next Generation Intelligent Energy Systems, Aristeia project, General Secretary for Research and Development, 400KEuro, 2012 – 2016 (with E. Tsoukalas)
- A web observatory for research activities, Research Committee, University of Thessaly, 15KEuros, 2012 – 2013
- Iterative Methods for the Numerical Solution of Linear Algebraic Systems, Herakletus project, General Secretary for Research and Development, 34KEuros 2002 – 2006
- iCities: Information Cities, IST FET project, 2400KEuros 2000 – 2003 (with Ch. Nikolau)
- Collaborative Solvers for Composite PDE Problems, PENED project, General Secretary for Research and Development, 20KEuros 1996 – 1998

Local Coordinator or co-coordinator

- SME Clinic, GSRT project, 2018 – 2020
- Machine Learning and Stochastic Processes for Energy Systems, ELIDEK PhD fellowship project (Mrs M. Foti) 2017 – 2018
- RETOUR: Remedial and Rehabilitation Tourism in Thessaly, Synergasia project, General Secretary for Research and Development, 100KEuro, 2013 – 2016
- Smart Energy Networks, Kripis project, General Secretary for Research and Development, 40KEuro, 2013 – 2016 (with Prof. E. Houstis)
- Continuing Education Programm in Web Development and Hardware Design, General Secretary for Research and Development, 2013 – 2016 (with P. Bozanis)
- HellasHPC: High Performance Computing for Greece, ESFRI project, 3KEuros 2010 – 2011
- An integrated web information system for career and development, General Secretary for Research and Development, 30KEuro, 2010 – 2011
- FOCUS K3D: Knowledge intensive technologies for coding and sharing 3D media content, ICT Coordinated Action project, 130KEuro, 2008 – 2010 (with Prof. C. Houstis)
- A Textile Knowledge System for the Regional Innovation Pole of Thessaly, Operational Programme Competitiveness project, General Secretary for Research and Development, 40KEuro, 2005 – 2009
- EGEE: Enabling Grids for e-Science in Europe, IST Capacities project, 25KEuros EURO 2004 – 2006
- DECAIR: Development of an earth observation data converter with application to air quality forecast, ICT ENV4 project, 130KEuros 1999 – 2001 (with Prof. C. Houstis)
- TEASE: Telematics Architecture Study for Environment and Security (with Prof. C. Houstis), IST Coordinated Action project, 80KEuros 2000 – 2001 (with Prof. C. Houstis)
- OnTour: Develop new ways of workflow between the business partners in the tourist value chain, ESPRIT project, 310KEuros 1999 – 2001

Senior Researcher

- ARGO: An Integrated Tourism platform, GSRT project, 2018 – 2020
- IMPACT: Identifying and Motivating youth who mostly need Physical ACTivity, Erasmus+: Sport 2016, Collaborative partnerships project, 2017 – 2019
- An Advance Mathematical and Software Platform for the Numerical Solution of Multi-domain, Multi-Physics problems, Thales project, General Secretary for Research and Development, 2012 – 2016
- AIM@SHAPE: Advanced and Innovative Models And Tools for the development of Semantic-based systems for Handling, Acquiring, and Processing knowledge Embedded in multi-dimensional digital objects ICT Network of Excellence project, 600KEuros 2004 – 2007 (with Prof. C. Houstis)
- Non-overlapping Domain Decomposition Methods for the Numerical Solutions of PDEs, PENED project, General Secretary for Research and Development, 20KEuros 1996 – 1998
- Numerical Solution of the Helmholtz Equation in Hydro-acoustics by Finite Element Methods, PENED project, General Secretary for Research and Development, 25KEuros 1996 – 1998
- Modeling Window Josephson Junctions, PENED project, General Secretary for Research and Development, 40KEuros 1996 – 1998

REFERENCES

- Elias N. Houstis Former Director of the Institute for Research and Technology Thessaly, Former Head, Former Professor and now Professor Emeritus at Purdue University, Computer Science Department and at the University of Thessaly, Electrical and Computer Engineering Department.
- Vassilios Dougalis Professor Emeritus at the University of Athens, Director of The Institute of Applied and Computational Mathematics at FORTH, Former Director of FORTH.
- Mo Mu Professor at Hong Kong University of Science and Technology
- Apostolos Gerasoulis Professor at Rutgers University, former Executive Vice President at <http://ask.com>

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