

Curriculum Vitae – C.-H. Lai

Education and degrees

School of Mathematical Sciences, Queen Mary, University of London.

1981 **BSc** in Mathematics with Engineering (First Class).

Department of Aeronautical Engineering, Queen Mary, University of London.

1985 **PhD** in Aerodynamics and Parallel Computing, Supervisor: Professor G. J. Hancock.

Academic posts

1985-1987 Post-doctoral researcher, Department of Computer Science, Queen Mary, University of London.

1987-1989 Post-doctoral researcher, Centre for Parallel Computing, Queen Mary, University of London.

1989-1990 Lecturer, School of Computing and Mathematical Sciences, University of Greenwich.

1990-1999 Senior Lecturer, School of Computing and Mathematical Sciences, University of Greenwich.

1999- 2006 Reader in Scientific Computing, School of Computing and Mathematical Sciences, University of Greenwich.

2006 - Professor of Numerical Mathematics, School of Computing and Mathematical Sciences, University of Greenwich.

1991 (2 terms) Visiting Fellow, INRIA, Paris.

1992 (2 terms) Visiting Fellow, Rutherford Appleton Laboratory.

1992-1993 (2 terms) Visiting Fellow, Centre for Mathematics and Informatics, Amsterdam.

1998 (Autumn) Visiting Fellow, Department of Mathematics, University of Groningen, the Netherlands.

1999 (3 weeks) Visiting Fellow, Department of Mathematics, University of Bergen, Norway.

1999 (Summer) Visiting Fellow, Department of Civil and Structural Engineering, Hong Kong Polytechnic University.

2002- Visiting Professor, School of Information Technology, Jiangnan University, China.

2004- Adjunct Professor, College of Mathematics and Computer Science, Fuzhou University, China.

2008- Visiting Professor, Buckingham University, UK.

Membership of professional bodies

Fellow of Institute of Mathematics and its Applications, 1989-

(*Chartered Mathematician, 1992-*)

Member of London Mathematical Society, 1992-

Member of European Mathematical Society, 2000-

Member of European Mechanics Society, 2001-

Member of the British Computer Society, 1993-

(*Chartered Engineer - Information Systems Engineer, 1993-*)

(*Chartered IT Profession, 2004-*)

Member of American Society of Industrial and Applied Mathematics, 1991-

Senior Member of American Institute of Aeronautics and Astronautics, 1999-

Management of PhD and MSc theses

1993 (PhD) Y. Fryer, Unstructured mesh control volume methods for elasticity.

1998 (PhD) G. Djambazov, Numerical techniques for computational aeroacoustics.

2000 (PhD) C. J. Palansuriya, Domain decomposition based algorithms for some inverse problems.

2004 (PhD) Z.-K. Wang, A source-extraction based coupling method for computational aeroacoustics.

2005 (PhD) S. Rout, The mathematical modelling and numerical solution of options pricing problems.

2006 (PhD) K. Nageena, CFD modelling of fluid flow and contaminant transport in hydrological systems.

(PhD) L. Lai, Advanced numerical methods for computational aeroacoustics.

(PhD) A. L. Siahaan, Domain decomposition methods for multi-scale problems.

(PhD) N. Tian, High order methods for clothing and textile materials.

(PhD) X. Liu, Advanced numerical methods for image processing.

(MSc by Research) S. Guo, Domain decomposition methods for finite element methods.

1994 (MSc) S. Bababola, Applications of wavelets to some aeroacoustics problems.

1995 (MSc) C. Palansuriya, Distributed algorithms for some inverse heat conduction problem with applications to metal cutting. 1995 (MSc) R. Williamson, Parallel algorithms for unsteady boundary layers.

1999 (MSc) P. Stocks, Computational aeroacoustics - vortex blade interactions.

- 2001 (MSc) X. Chen, Designing and implementation of a commercial web site for Jin Ping Ltd.
 2001 (MSc) P. Kanaksabee, A virtual environment for the Computational Science and Engineering Interest Group of the Institute of Mathematics and its Applications.
 2002 (MSc) T. Fan, Connecting database with web server – An example for estate agency.
 2003 (MSc) S. Y. Guan, A prototype electronic environment for a graphic design company.
 2003 (MSc) W. F. Chen, An investigation into a distance supervision system.
 2003 (MSc) T. Ayepe, Collaborating components in mesh-based packaging.
 2003 (MSc) M. Ouattara, Numerical methods for some computational finance problems.
 2004 (MSc) J. Cepeda, Object oriented approach to collaborating components.
 2004 (MSc) D. Osei-Kuffuor, Computational virology.
 2007 (MSc) M. J. George, Pricing options with nonlinear volatility.
 2008 (MSc) T. Bang, Mathematical modelling of the foreign exchange market.

Management of conferences and network

Conferences

- April 1996 UKPAR'96 – member of the organising committee.
 July 1998 11th International Conference on Domain Decomposition, Avery Hill Campus – Vice Chair of the organising committee. (<http://www.ddm.org/DD11/homepage/>)
 Oct 1999 Mini-symposium 'Nonlinear inverse problems' at 12th International Conference on Domain Decomposition Methods, Chiba, Japan – Organiser.
 July 2000 A 1-Day Meeting on Computational Aeroacoustics, Maritime Greenwich Campus – Organiser. (<http://cms1.gre.ac.uk/conferences/caa1day>)
 Sept 2001 London Mathematical Society Workshop on Domain Decomposition Methods for Fluid Mechanics, Maritime Greenwich Campus – Chair of the organising committee. (http://cms1.gre.ac.uk/conferences/lmsworkshop_ddm/lmsworkshop.html)
 April 2002 IMA Conference on Computational Aeroacoustics – Chair of the organising committee. (http://cms1.gre.ac.uk/conferences/lmsworkshop_ddm/lmsworkshop.html)
 July 2003 Minisymposium 'Collaborating subdomains for multi-scale and multi-physics modelling' at the 15th International Conference on Domain Decomposition Methods, Berlin – Organiser.
 Aug 2005 Joint DCABES and ICPACE Meeting on Distributed Algorithms for Science and Engineering, Maritime Greenwich Campus – Chair of the organising committee. (<http://cms1.gre.ac.uk/conferences/dcabes/dcabes2005/>)
 Dec 2006 International Workshop on Image Compression and Image Processing, Fuzhou, China – Chair of the organising committee. (<http://cmcs.fzu.edu.cn/wicap>)
 July 2007 Minisymposium 'Image processing – computation and applications' at the International Conference on Industrial and Applied Mathematics, Zürich – Organiser.

Network

- 1995 -. University representative to the Institute of Mathematics and its Applications
 2001 -. IMA Special Interest Group in Computational Science and Engineering www.cms.gre.ac.uk/CSESoc/
 2001 - Co-chair of the Steering Committee, International Symposium on Distributed Computing and Applications in Business, Engineering, and Sciences (DCABES). (<http://www.dcabes.org>)
 2005-. Secretary of the British Computer Society Parallel Processing Specialist Group.

Management of research projects, academic impact and results

Grants and contracts listed above have been managed to support six main research topics producing high quality journal output (Appendix) and successful PhD theses (P. 3).

Topic 1: Coupling of multiphysics mathematical models and heterogeneous numerical methods [SERC GR/G 36265 £230,643, ERCIM Research Fellowship Grant £35,000, SERC Grant GR/J58312 £1200, EPSRC Grants GR/L54233 £4150, British Council UK – Dutch Joint Research Grant JRP433 – AMS/888/4 £1130, EPSRC Grant GR/L50600 £23260, LMS Grant EGR L0103 £4500, EPSRC Studentship £36000 allocated by the University, EPSRC Grant

GR/T10183/01 £6573, Fujitsu Laboratories of European Ltd consultancy contract £3000, University of Greenwich PhD Studentship £36000, Royal Society Grant CG/971/SG £870, LMS Scheme 4 Grant Ref 4222 £300, LMS Scheme 3 Grant Ref 3309 £300, DTI Grant £64,000]

Topic 2: Inverse problems and optimisation algorithms – cutting and welding, groundwater contamination, clothing materials.

[Techworld Ltd. Research contract £3080, Grant GR/L98862 £5018, British Council and Norwegian Research Council Grant EJ/RD/PMK £1000, British Council and Chinese Education Department visiting scholarship £6000, EPSRC GR/T10183/01 £6573, American Pacific Technology Group Ltd advanced algorithms research contract £4260, Royal Society Grant ART/CAN.SV/EXQ(0) £958]

Topic 3: Computational aeroacoustics

[EPSRC Grant GR/M60804 £6750, British Council Alliance: Franco-British Partnership Programme Grant PN04.043 £3,500, Dyson Ltd Consultancy Contract £4,000]

Topic 4: Computational finance

Topic 5: Image compression and restoration

[M21 Technology Ltd consultancy contract £70000, British Council and Chinese Education Department visiting scholarship £6000, Hands Design consultancy contract £5000]

Topic 6: System identification - Pharmacokinetic and supply chains.

Consultancy in scientific computing systems

Technical consultant, Techworld Ltd, Hong Kong, 1996-.

Computer technology consultant, M21 Technology PLC, Hong Kong, 1999 -.

Chief technology consultant, CluComp Ltd, the Netherlands, 2000-2003.

Computer system consultant, Hands Design Ltd, London, 2001-2002.

Co-Director, Fuzhou – Greenwich R & D Centre for Applied Computing, Fuzhou University, China, 2004 -.

<http://www.fzu.edu.cn/h03/zhongxin/00.htm>

Editorial

Associate editor, International Series on Advances in High Performance Computing, Computational Mechanics Publications, 1997-2001.

Member of the Editorial Board, *International Journal of Computer Mathematics*, ISSN 0020-7160, 2005-2006.

Editor for the Computational Methods Section, *International Journal of Computer Mathematics*, ISSN 0020-7160, 2006-.

Founding editor and editor-in-chief, *Journal of Algorithms and Computational Technology*, Multi-Science Publishing Co. Ltd., 2006-.

CRC Press Numerical Analysis and Scientific Computing Book Series Editor, 2006-.

University of Greenwich AMCE Press, Chief Editor, 2007-.

Proceedings editorship – see [P.9 – Section (4) : 1, 5], 1999-.

Journal special issues guest editorship: – see [P.9 – Section (4) : 2 - 4, 6 - 10], 2000-.

Member of the Editorial Board, Workshop on High Performance Scientific and Engineering Computing with Applications, (<http://www.stfx.ca/people/lyang/activities/icpp02-hpseca/>), 2004.

Member of the Editorial Board, Proceedings of the International Conference on Engineering Computational Technology (Chief editor: Barry Topping), 2005.

CIT2008 International Committee Advisor, 2007-2008.

International Conference on Computer and Information Technology in Pharmacy, Scientific Committee, 2009.

External examiner services

(2002) PhD thesis external examiner, School of Computing, University of Sunderland.

(2002) Member of the Membership Assessment Panel of the British Computer Society.

(2002 & 2005) Master thesis external examiner to Department of Civil and Structural Engineering, Hong Kong Polytechnic University.

(2003) PhD thesis external examiner, School of Computing, University of Leeds.

(2003) PhD thesis external examiner, School of Engineering, University of Wales, Swansea.

(2004) PhD thesis external examiner, School of Mathematical Science, University of Durham.

(2005) Habilitation viva panel member, Department of Mathematics, University Paris VI.

(2006) MPhil thesis external examiner, School of Information Systems, Computing and Mathematics, Brunel University.

(2006) Master theses external examiner, School of Mathematics and Computer Science, Fuzhou University, China

(2006) MSc Finance and Computation validation panel member, School of Physics, Astronomy, and Mathematics, Hertfordshire University.

(2007) External advisor to the MSc Financial Analysis validation panel at Hertfordshire University.

(2008) PhD thesis external examiner, School of Physics, Astronomy, and Mathematics, Hertfordshire University.

(2009-2012) External examiner: MSc in Financial Market Analysis, Hertfordshire University.

Article review and grant application review

- Review of manuscripts for Applied Mathematical Modelling, Advances in Engineering Software, IMA Journal of Numerical Analysis, AIAA Journal, the Computer Journal, Parallel Algorithms and Applications, Parallel Computing, Numerical Heat Transfer, International Journal of Computer Mathematics.
- Book review for the Institute of Mathematics and its Applications, JISC.
- Review of conference abstracts and articles.
- Review EPSRC, Leverhulme Trust, and Australian Research Council grant proposals.

Teaching experience and curriculum development

1989-1999 Mathematical and Numerical Methods I, 1st year course (8 years of experience)
Mathematical and Numerical Methods II, 2nd year course (8 years of experience)
Engineering Mathematics II, 2nd year course (3 years of experience)
Parallel Computing, 3rd year course (8 years of experience)
Computer Methods for Civil Engineering, 3rd year course (1 year experience)
Numerical Methods for Partial Differential Equations, MSc (8 years of experience)

1999- Computer Algorithms and Techniques I, 1st year (3 years of experience)
Computer Algorithms and Techniques II, 2nd year (2 years of experience, current responsibility)
Advanced Algorithms, 3rd year (7 years of experience, current responsibility)
Algorithms for Scientific Computing, 3rd year (5 years of experience, current responsibility)
Core Technologies for CSE, MSc (4 years of experience, current responsibility)

Extra-curricular

(1994-1996) SEL-HPC (South-East London High Performance Computing Centre) - Development of parallel computing courses.

(1994-1997) EPSRC MSc High Performance Computing Course – Development and delivery of course material on high performance computing.

(1999 summer) Postgraduate summer school on inverse problems and distributed processing, Department of Applied Mathematics, Fudan University, China – Development and delivery of courses.

(1999-) Short Courses on High Performance Computing in Far East – Organiser and course delivery.

(2005-) CSE Short Courses at Greenwich. Two image processing and compression short courses and one computational aeroacoustics short course <http://aeroacoustics.cms.gre.ac.uk/>.

Guest lectures

Seminar - (June 1994) Domain decomposition and parallel processing. Atlas Centre, Rutherford Appleton Laboratory, Didcot.

Invited lecture - (May 1995) Quasi-Newton methods for the solution of some coupling problems. CFDCC Meeting: Solution Strategies for CFD, Rutherford Appleton Laboratory, Didcot.

Seminar - (November 1996) On an extension of Purcell's method and its application to panel element equations. Department of Mathematics, Hertfordshire University.

Invited lecture - (December 1996) Domain decomposition and coupling techniques for some CFD problems. A Short Course on Domain Decomposition, Department of Computer Science, Catholic University of Leuven, Belgium.

Keynote - (May 1997) A decomposition hierarchy for computational modelling. Applications of High Performance Computing in Engineering V, Centro de Supercomputacion de Galicia, Spain.

Seminar - (May 1999) Parallel computers and algorithms. Department of Mathematics, University of Hertfordshire.

Invited lecture - (June 1999) Numerical methods for computational aeroacoustics. ICFD One-Day Workshop on Computational Aeroacoustics, University of Reading

Invited lecture - (August 1999) Parallel algorithms for inverse problems. Summer School, Department of Applied Mathematics, Fudan University, China.

Invited lecture - (August 2000) Distributed processing using MPI. A One-Week Seminar on Distributed and Parallel Computing for e-Business and Sciences, Hong Kong Polytechnic University.

Invited lecture - (June 2001) Defect correction methods for multi-scale acoustic problems. ETH Workshop on Domain Decomposition Methods, Zurich.

Keynote - (October 2001) A distributed algorithm for the estimation of heat generation in a welding process. DCABES2001, Wuhan University of Technology, China.

Seminar - (July 2002) Collaborating components in a component-based manufacturing process. Hong Kong University.

Seminar - (August 2002) Use of CFD for ground water and solute transport modelling. University of Bergen.

Seminar - (April 2004) A distributed algorithm for option pricing with nonlinear volatility Fuzhou University, China.

Keynote - (September 2004) A distributed algorithm for computational finance. DCABES2004, Wuhan University of Science and Technology, China.

Seminar - (December 2004) On the coupling of components in electronic packaging industry. Université des Sciences and Technologies de Lille, France.

Invited lecture - (September 2005) Distributed fractal image compression algorithms. Southern Yangtze University, China.

Seminar - (March 2006) On a time domain parallel algorithm for the solution of nonlinear transient parabolic problems with applications. University of Nottingham Business School.

Invited lecture - (March 2007) On transformation methods and parallel time domain decomposition methods. Third Workshop on Computational Sciences, University of Houston, U.S.A.

Keynote - (September 2007) On transformation methods and parallel time domain decomposition methods. International Workshop on Applied Mathematics and Computational Science, Electro-Communication University, Tokyo, Japan.

Seminar - (February 2008) Gradient computation in image inpainting. University of Buckingham.

Invited lecture - (March 2008) Computational textile and methodologies. Jiangnan University, China.

Seminar - (July 2008) Some new results of the acoustic correction method for the extraction of sound signals, Dalian University of Technology, China.

Keynote - (July 2008) On the use of gradients for image processing, IWIP2008/DCABES2008, China Criminal Police University, Shenyang, China.

Seminar - (March 2009) On the acoustic correction method for extracting sound signals, Dundee University, Scotland.

Seminar - (May 2009) On the acoustic correction method for extracting sound signals, Leicester University.

Institutional contribution

- School research seminar organiser (http://www.cms.gre.ac.uk/school_seminars/) (1996 -).
- Key research member of the Centre for Numerical Modelling and Process Analysis (1989 -).

- Scientific Computing and Algorithms Research Group leader (1999 -).
- e-Science, Grid computing, and computational science and engineering (CSE) applications and development team leader (2000 - 2005).
- School Research Degree Committee member (2005 - 2008).
- School Technical Resources Committee member (2005 - 2008).
- Lead the development of courses for the MSc programme in Computational Sciences and Engineering (2000 - 2006).
- MSc Computational Sciences and Engineering year tutor (2001 - 2006).
- MSc Applied Mathematical Modelling and Scientific Computing programme leader (2006 -).
- BSc Mathematics related programmes development team (2001 -).
- CSE-Good-Style-Writing – Translation services (2007 -).
- Mentoring junior lecturing staff of the Department of Mathematical Sciences (2003 – 2004).
- Adviser to Greenwich Mathematical Society (<http://mathsoc.cms.gre.ac.uk>) (2005-).
- School research contact with China (including Hong Kong, Macau and Taiwan) (1998 -).
- IMA Membership Committee (2008 -).

List of Publications

(1) Journal papers

1. C.-H. Lai, H.M. Liddell. A review of parallel finite methods on the DAP. *Appl Math Modelling*, **11**, 330 - 340, 1987.
2. C.-H. Lai, H.M. Liddell. Finite elements using long vectors of the DAP. *Parallel Computing*, **8**, 351 - 361, 1988.
3. C.-H. Lai. A parallel algorithm for transonic flow calculations. *Appl Math Modelling*, **14**, 495 - 500, 1990.
4. Y.D. Fryer, C. Bailey, M. Cross, C.-H. Lai. A control volume procedure for solving the elastic stress-strain equations on an unstructured mesh (with Y D Fryer, C Bailey and M Cross). *Appl Math Modelling*, **15**, 639 - 645, 1991.
5. C.-H. Lai. A non-overlapped domain decomposition for a class of convection diffusion problems. *Appl Math Modelling*, **16**, 101 - 106, 1992.
6. C.-H. Lai. Shooting methods for some diffusion and convection problems. *Appl Math Modelling*, **16**, 638 - 644, 1992.
7. C.-H. Lai, H.J.J. Te Riele. Solving some 1-D semiconductor device problems on a Matrix Coprocessor using a domain decomposition method. *Supercomputer*, **53**, 24 - 32, 1993.
8. C.-H. Lai. Domain decomposition methods for some semiconductor device problems on a Cray S-MP. *Int J Super Comp App*, **7.4**, 337-348, 1994.
9. C.-H. Lai. On Purcell's method and Gauss-Jordan method. *Int J of Math & Education*, **25**, 775 - 778, 1994.
10. C.-H. Lai. Diakoptics, domain decomposition and parallel computing. *The Computer Journal*, **37**, 840 - 846, 1994.
11. A.M. Cuffe, C.-H. Lai, K.A. Pericleous. An adaptive truncation technique for viscous/inviscid coupling, *ZAMM*, **76-1**, 385-387, 1996.
12. C.-H. Lai, A.M. Cuffe, K.A. Pericleous. A domain decomposition algorithms for viscous/inviscid coupling. *Advances in Engineering Software*, **26**, 151 - 159, 1996.
13. C.-H. Lai. A parallel algorithm for the simulation of temperature distribution in metal cutting. *Engineering Analysis and Boundary Elements*, **18**, 245 - 250, 1996.
14. C.-H. Lai. On an extension of Purcell's vector method with applications to panel element equations. *Computers and Mathematics with Applications*, **33**, 101 - 114, 1997.
15. C.-H. Lai. An application of quasi-Newton methods for the numerical solution of interface problems. *Advances in Engineering Software*, **28**, 333 - 339, 1997.
16. C.-H. Lai, A.M. Cuffe, K.A. Pericleous. A defect equation approach to the coupling of subdomains in domain decomposition methods. *Computers and Mathematics with Applications*, **35**, 81 - 94, 1998.
17. C. Ierotheous, C.H. Lai, C.J. Palansuriya, K.A. Pericleous. Simulation of 2-D metal cutting by means of a distributed algorithm. *The Computer Journal*, **41**, 57 - 63, 1998.
18. G.S. Djambazov, C.-H. Lai, K.A. Pericleous. Development of numerical techniques for near-field aeroacoustic computations. *International Journal for Numerical Methods in Fluids*, **29**, 719 - 731, 1999.
19. C.-H. Lai, C.S. Ierotheou, C.J. Palansuriya, M.S. Espedal, X.-C. Tai. Accuracy of a domain decomposition method for the recovering of discontinuous heat sources in metal sheet cutting. *Computing and Visualisation in Science*, **2**, 149 - 152, 1999.
20. G.S. Djambazov, C.-H. Lai, K.A. Pericleous. Staggered-mesh computation for aerodynamic sound. *AIAA Journal*, **38**, 16 - 21, 2000.
21. G.S. Djambazov, C.-H. Lai, K.A. Pericleous. On the coupling of Navier-Stokes and linearised Euler equations for aeroacoustics simulation. *Computing and Visualisation in Science*, **3**, 9 - 12, 2000.
22. C.W. Chueng, C.-H. Lai. On a flexible elimination algorithm with applications to panel element equations. *IMA Journal of Numerical Analysis*, **21**, 603-619, 2001.
23. C.-H. Lai, C.S. Ierotheou, C.J. Palansuriya, K.A. Pericleous. Performance evaluation of a distributed algorithm for an inverse heat conduction problem. *Computer Journal*, **44**, 214-220, 2001.
24. C.-H. Lai, C.S. Ierotheou, C.J. Palansuriya, K.A. Pericleous. A domain decomposition algorithm for inverse welding problems. *Computing and Visualisation in Science*, **4**, 105-109, 2001.
25. K. Chen, C.-H. Lai. Parallel algorithms of the Purcell method for direct solution of linear system. *Journal of Parallel Computing*, **28**, 1275-1291, 2002
26. J. Cao, C.-H. Lai. Numerical experiments of some Krylov subspace methods for black oil model. *Computers and Mathematics with Applications*, **44**, 125-141, 2002.
27. G.S. Djambazov, C.-H. Lai, K.A. Pericleous, Z.K. Wang. A coarse grid extraction of sound signals for computational aeroacoustics. *International Journal for Numerical Methods in Fluids*, **40**, 1515 - 1525, 2002.
28. Z.K. Wang, G.S. Djambazov, C.-H. Lai, K.A. Pericleous. An acoustic correction method for extracting sound signals. *Computers and Mathematics with Applications*, **47**, 57 - 69, 2004.
29. P. Chow, C.-H. Lai. Collaborating components in electronic packaging simulation. *Scientific Programming*, **12** (2), 65-70, 2004.
30. C.-H. Lai, A.K. Parrott, S. Rout, and M.E. Honour. A distributed algorithm for European options with nonlinear volatility. *Computers and Mathematics with Applications*, **49**, 885-894, 2005.

31. M. Wang and C.-H. Lai. A hybrid fractal video compression method. *Computers and Mathematics with Applications*, **50**, 611 – 621, 2005.
32. C.-H. Lai, G.S. Djambaziv, K.A. Pericleous, and Z.K. Wang. A distributed algorithm for flow induced acoustics. *Journal of Computational Acoustics*, **14** (1), 131 – 141, 2006.
33. M. Wang, Z. Huang, C.-H. Lai. Matching search in fractal video compression and its parallel implementation in distributed computing environments. *Applied Mathematical Modelling*, **30**, 677 - 687, 2006.
34. M. Wang, R. Liu, C.-H. Lai. Adaptive partition and hybrid methods in fractal video compression. *Computers and Mathematics with Applications*, **51** (11), 1715 – 1726, 2006.
35. L. Lü, M. Wang, C.-H. Lai. Image denoise using fourth-order partial differential equations combined with minimal surfaces. *Journal of Information and Computational Science*, **3** (4), 837 – 842, 2006.
36. J.-S. Leng, Z.-X. Cheng, T.-Z. Huang, C.-H. Lai. Construction and properties of multiwavelet packets with arbitrary scale and the related algorithms of decomposition and reconstruction, **51** (11), 1663 – 1676, 2006.
37. H. Peng, M. Wang, C.-H. Lai. Design of parallel algorithms for fractal video compression. *International Journal of Computer Mathematics*, **84**, 193 – 202, 2007.
38. Q. Guo, D. Shen, Y. Guo, C.-H. Lai. Parallel genetic algorithms for the solution of inverse heat conduction problems. *International Journal of Computer Mathematics*, **84**, 241 – 250, 2007.
39. A.J. Davies, D. Crann, S.J. Kane, C.-H. Lai. A hybrid Laplace transform/finite difference boundary element method for diffusion problems. *Computer Modelling in Engineering and Sciences*, **18**, 79 – 86, 2007.
40. Z.K. Wang, G.S. Djambazov, C.-H. Lai, K.A. Pericleous. Numerical simulation of flow-induced cavity noise in self-sustained oscillations. *Computer and Visualisation in Science*, **10**, 123 – 134, 2007 (DOI 10.1007/s00791-006-0039-4).
41. M. Wang, C.-H. Lai. Gray video compression methods using fractals. *International Journal of Computer Mathematics*, **84**, 1567 – 1590, 2007 (DOI 10.1080/00207160601178299).
42. N.K. Frost, M.K. Patel, C.-H. Lai. CFD analysis of one-dimensional infiltration in vadose zone. *Journal of Algorithms and Computational Technology*, **1**, 477 – 494, 2007.
43. Z.K. Wang, G.S. Djambazov, C.-H. Lai, K.A. Pericleous. Numerical investigation of a source extraction technique based on an acoustic correction method. *Computers and Mathematics with Applications*, **55** (3), 441 – 456, 2008 (10.1016/j.camwa.2004.08.017).
44. L. Lü, C.-H. Lai, M. Wang. Image denoise by fourth-order PDE based on the changes of Laplacian. *Journal of Algorithms and Computational Technology*, **2** (1), 99 – 110, 2008.
45. F. Chen, C.-H. Lai and M. Wang. An Algorithm for Total Variation Inpainting Based on Nonlinear Multi-grid Methods. *Journal of Algorithms and Computational Technology*, **2** (1), 15 – 34, 2008.
46. L.S. Lai, C.-H. Lai, K.A. Pericleous, G.S. Djambazov. Comparison of Higher-order Numerical Schemes and Several Filtering Methods Applied to Navier-Stokes Equations with Applications to Computational Aeroacoustics. *Journal of Algorithms and Computational Technology*, accepted.

(2) Books

1. M. Wang, C.-H. Lai. **A Concise Introduction to Image Processing using C++**. Chapman & Hall CRC, Numerical Analysis and Scientific Computing Series, ISBN 9781584888970, 2008.
2. X. Jiang, C.-H. Lai. **Numerical Techniques for Direct and Large-Eddy Simulation**. Chapman & Hall CRC, Numerical Analysis and Scientific Computing Series, ISBN 9781420075786, 2008.

(3) Contributions to edited books

1. C.-H. Lai. An acceleration technique for a non-overlapped domain decomposition method, in **Computational and Applied Mathematics I - Theory and Algorithms**, ed C Brezinski and U Kulisch, Elsevier, North-Holland, 289 - 292, 1992.
2. C.-H. Lai. Domain decomposition for parallel computers, in **High Performance Computing in Engineering: vol 1**, ed C A Brebbia and H Power, Computational Mechanics Publication, 153 - 188, 1994.
3. G.S. Djambazov, C.-H. Lai, K.A. Pericleous, Z.K.Wang. A defect correction method for multi-scale problems in computational aeroacoustics, in **Lecture Notes in Computational Science and Engineering Vol 23**, ed L Pavarino *et al*, ISBN: 3-540-43413-5, Springer-Verlag, 147 – 156, 2002.
4. P. Chow, C.-H. Lai. Electronic packaging and reduction in modelling time using domain decomposition, in **Lecture Notes in Computational Science and Engineering Vol 40**, ed. R. Kornhuber *et al*, ISBN: 3-540-22523-4, Springer-Verlag, 193-200, 2004.
5. C.-H. Lai. Numerical solutions of certain nonlinear models in European options on a distributed computing environment, in **Nonlinear Models in Mathematical Finance: New Research Trends in Option Pricing**, ed Matthias Ehrhardt, ISBN: 978-1-60456-931-5, Nova Science Publisher, 283 – 298, 2008.

(4) Refereed contributions

1. C.-H. Lai, H.M. Liddell. Preconditioned conjugate gradient methods on the DAP, in **The Mathematics of Finite Elements & Applications VI**, ed J R Whiteman, Academic Press, 145 - 156, 1988.
2. C.-H. Lai. Applications of SIMD system. *Parallel Update*, 7, 1988.
3. C.-H. Lai. A parallel panel method for the solution of fluid flow past an aerofoil, in **CONPAR88**, ed C R Jesshope and K D Reinartz, Cambridge University Press, 711 - 781, 1989.
4. C.-H. Lai. Some experiences of computational aerodynamics on highly parallel processors, in **Applications of Supercomputers in Engineering II**, ed C A Brebbia and A Peters, Computational Mechanics Publications, 43 - 56, 1989.
5. C.-H. Lai. The DAP finite element library. *Parallel Update*, 8, 31 - 34, 1989.
6. C.-H. Lai. An acceleration technique for a non-overlapped domain decomposition method. **Proceedings of the 13th World Congress on Computation and Applied Mathematics**, vol 1, 219 - 220, Dublin, 22 - 26 July, 1991.
7. C.-H. Lai. A parallel domain decomposition algorithm for semiconductor simulation, in **Applications of Supercomputers in Engineering III**, ed C A Brebbia and H Power, 47 - 62, 1993.
8. C.-H. Lai. An iteration scheme for non-symmetric interface operator, in **Contemporary Mathematics**, American Mathematical Society, 157, 279 - 285, 1993.
9. C.-H. Lai. On domain decomposition and shooting methods for two-point boundary value problem, in **Contemporary Mathematics**, American Mathematical Society, 180, 257 - 264, 1994.
10. C.-H. Lai. Domain decomposition methods and massively parallel computing, in **Proceedings of the 6th Benin Conference on Scientific Computing**, ed S O Fatunla, Benin University Press, 1994.
11. C.-H. Lai. Massively parallel domain decomposition algorithms for some aerodynamic problems, in **EUROSIM Massively Parallel Processing**, ed J C Zuidervaar and L Dekker, Elsevier, North-Holland, 599 - 608, 1994.
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