

Curriculum Vitae

Lakhdar Remaki, PhD

Associate Professor

Department of Mathematics and Computer Science, Alfaisal University

Member of BCAM- Basque Center for Applied Mathematics, Spain

Adjunct professor, Laval University, Quebec, Canada

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Citizenship: Canadian

Languages; English, French, Arabic, Amazigh

Education & Qualifications

- **Qualified for the Maître de conference (associate professor) position** (2004)
France government, section 26: Applied mathematics
- **PhD in Applied Mathematics** (1998)
Claude Bernard University, Lyon, France.
Title: Theoretical and numerical study of quasi-linear hyperbolic equations with discontinuous coefficients, and 2D linear acoustic.
- **Masters in Applied Mathematics** (1992)
Claude Bernard University, Lyon, France.
Title: Axes and orientation effects in biphasic motion simulation in a porous media.
- **B.Sc. in Mathematics** (1991)
USTHB University, Algiers, Algeria.
Specialization: Partial differential equations

Research Interests

- Computational Fluid Dynamic (CFD)
- Gas-Particles modeling
- Mesh Adaptation
- Delaunay Mesh Generation
- Aeroacoustics and Turbomachinery
- Homogenization
- Partial Differential Equations (PDEs) and Numerical Analysis:
 - Existence and uniqueness of solutions
 - Numerical methods
 - Finite Difference Methods for hyperbolic quasi-linear equations
 - Finite Element Methods for fluid mechanics
 - Discontinuous Galerkin Method for fluid mechanics
 - Finite volume method for fluid mechanics
- Image Processing

- 3D images reconstruction/camera calibration
- Shock filters for signal and image enhancement and restoration
- Multi-scale based approach for signal and image analysis
- Biomedical Applications
- Statistical and Chaotic Models for Information Retrieval from Tex Corpus
- Homogenization of heterogeneous media

Training

- Managing skills: BCAM, Feb 2013
- Star CCM+: CTA training, May 2011
- Parallel computing MPI: CLUMEQ training, August 2003.
- Object oriented concepts: CRIM training, January 1999.

Selected Courses Taught

- 2015 Graduate CFD course, IMUS, Seville University-BCAM, Spain
- Nov 2013 Graduate CFD course at Hitit University, Turkey
- Jan 2010 – June 2010 B099 Mathematics for finance. International College Wales Swansea (ICWS), UK
- Sept 2008 – Dec 2010 EG189 Engineering Analysis I. Swansea University, UK
EG190 Engineering Analysis II. Swansea University, UK
- 95-96 Math II Linear Algebra. Claude Bernard University, Lyon, France
- 94-95 Math II Analysis (calculus II). Claude Bernard University, Lyon, France
- 93-94 Math I Analysis (Calculus I). Claude Bernard University, Lyon, France

Advising

- Imanol Garcia (Master 2012), Thesis title “Aerodynamic Analysis of Axial Fan Unsteady Simulations ”
- Imanol Garcia (PhD candidate 2013-), Thesis title “Linearized Navier-Stokes for aero-acoustics simulations”
- Inigo Bidaguren Garcia (PhD candidate 2013-), Thesis title “POD and Genetic Algorithms for Turbo-machinery Design”
- Reda Mekhlouf (PhD candidate 2015-), Thesis title “Numerical Simulation of for Two-Fluid interfacial flows”
- Alptug Yatanbaba (PhD candidate 2014-), Thesis title “drying kinetics of tile-brick, dryer optimization”
- Goran Stipcich - Postdoctoral fellow, Project: High order methods and turbulent models for *BBiped*, a BCAM-BALTOGAR CFD platform.
- Carmen Alonso - Postdoctoral fellow, Project: Graphical user interface development and HPC for *BBiped*.
- Ali Ramezani - Postdoctoral fellow, Project: Multi-zone approach for rotating blades effect and turbulence for *BBiped*.

Grants

- CDTI grant (**Local PI**), 2015-2017 (80,000 Euros)
- Spanish Ministry of Economy and Competitiveness with reference MTM2013-40824 (**Partner**), 2014-2017 (47,955 Euros).
- Severo Ochoa Excellence grant (**Group grant**), 2014-2018 (4M Euros)
- Plan de Ayudas a Proyectos de Investigación en Centros de Excelencia 2012 grant (**PI**), 2012-2014 (235K Euros)
- Leonard Da Vinci Project Grant (**Local PI**), 2012-2014 (300K Euros)
- BERC Grant (**Group grant**) 2013-2014 (1.3M Euros)
- FQNRT Grant (**Partner**), 2012-2015 (120K Canadian Dollars)

Projects

- FRACTAL: Laser-feeder coating system design and optimization. Funded by CDTI grant, 2015-2017
- BCAM-BALTOGAR CFD Platform for Simulation and Design of Turbo-machinery. Funded by Plan de Ayudas a Proyectos de Investigación en Centros de Excelencia 2012 (programa financiado por el Departamento de Promoción Económica de la diputación Foral de Bizkaia).
- Knowledge Transfer of Numerical Analysis and 3D Simulation Technologies Applied on Engineering Research. Funded by European Leonard Da Vinci Project, 2012-2014.
- APC project: Aerodynamic optimization and heat management for a new generation of BRP hybrid recreational vehicle (Spyder). Funded by NSERC (Canada) and Bombardier
- Supersonic Bloodhound Vehicle project: In charge of solver stability and accuracy improvement for supersonic speeds and Spray-Drag modeling (Ended January 2011). Funded by EPSRC(UK) (<http://www.bloodhoundssc.com>)
- Surface Mesh generation using local mesh transformations: Project with the European Aeronautic Defense and Space Company EADS (Ended May 2010)
- Aero-Numerics project: Responsible for the industrial Bombardier chair of the mesh adaptation development (Ended September 2007). Funded by NSERC (Canada) and Bombardier
- 3Dspine project: 3D stereoscopic images reconstruction. Funded by Sainte-Justine Hospital (Montreal) and BIORTHEX Inc. (<http://www.biorthex.com>)

Membership

- ASME, ECMI

Committees and Services

- International Workshop organizer on “Mathematics and its Applications”, BCAM 27-29 May, 2015
- Special session organizer on Immersing Approaches in Computational Fluid Dynamics for the Applied Mathematics, Modeling and Computational Science (AMMCS 2015) conference, Waterloo, Ontario, Canada, June 07-12, 2015
- Doctoral course coordinator, IMUS, Seville University-BCAM 2015
- Committee member for PhD student selection (BCAM 2014)

- BCAM-BALTGAR workshop organizer on Turbomachinery and Aerodynamic Shape Optimization, March 28, 2014
- Mini-symposium organizer on Gas-Particles Modeling and Simulation for the WCCM-ECCM-ECFD 2014 conference, Barcelona, Spain
- Committee member for Post-docs selection (BCAM,NUMERIWAVES, 2013)
- Special session organizer on CFD for the Applied Mathematics, Modeling and Computational Science (AMMCS 2013) conference, Waterloo, Ontario, Canada, August 26-30, 2013
- Scientific member of BCAM Workshop on Computational Mathematics, BCAM, Spain, October 02-2012
- Session co-organizer on Finite element methods for convection-diffusion problems for the international congress on numerical methods (CMN2013), June 25-28, 2013, Bilbao, Spain
- Co-Organizer of the Tetrahedron Workshop III: The Third International Workshop on Grid Generation for Numerical Computations, September 14–15, 2010, Swansea University, UK
- **Reviewer for the following journals**
 - ✓ Journal of Aircraft
 - ✓ Communications in Numerical Methods in Engineering (CNM)
 - ✓ International Journal for Numerical Methods in Fluids (IJNMF)
 - ✓ International Journal of Computational Fluid Dynamics (IJCFD)
 - ✓ Journal of Engineering Systems Modeling and Simulation (IJESMS).

Current Collaborators

- **Academic**
 - Prof. J.M Blanco: UPV University, Basque country, Spain
 - Prof. D. Pardo, UPV/EHU, Spain
 - Dr. F. Taghaddousi, University of Kentucky , USA
 - Prof. Halil Aykul, Hitit University, Turkey
 - Prof. A. Baggag, Laval University, QC, Canada
 - Prof. S. Moreau: Sherbrooke University, QC, Canada
 - Prof. David Lannes, Bordeaux University, France
 - Dr. B. Evans, College of Engineering, Swansea University, UK
 - Prof. O. Hassan, College of Swansea University, UK
 - Dr M Hakki Eres, School of Engineering Sciences Southampton University, UK
 - Pr. Markus Bause Helmut Schmidt University University of the Federal Armed Forces Hamburg Faculty of Mechanical Engineering, Germany

Industrial

ETXE-TAR (Spain), BLATOGAR (Spain), OCEANTEC (Spain)

Main Contributions to research

- **Computational Fluid Dynamic (CFD):**
 - *Dual mesh finite volume immersed domain approach for rigid body movement*
 - *Virtual Multiple Rotating Frame technique for Turbomachines simulation*
 - *New limiter design for high order finite volume methods using HLLC Riemann solver applied to high speed flows simulation.*
 - *New method for gradient reconstruction.*
 - *New Riemann solver for scalar hyperbolic equations*
 - *Spray Drag simulation for bloodhound supersonic car in fluidised desert.*
 - *Proposition of a new artificial viscosity for a 3D Euler and Navier-Stokes equations and its implementation in a finite element code FENSAP.*

- **Mesh generation and Adaptivity:**
 - *New techniques for anisotropic Delaunay mesh generation and application to CFD*
 - *Improvement of mesh adaptation performance in the case of weak and multiple shocks.*
 - *A new functional mesh adaptation method based on Hermite interpolation to better predict Drag and lift coefficients*
 - *Development of an acoustic-inspired approach and a fast Euler solver to design an optimal initial grid for Navier-Stokes equations.*
- **Partial Differential Equations (PDEs) and Numerical Analysis:**
 - *Riemann solution for hyperbolic equations with discontinuous coefficients*
 - *Proof of Existence and uniqueness of a generalized solution for quasi-linear hyperbolic equations with discontinuous coefficients.*
 - *Proposition of a new numerical scheme of Godunov type and analysis of its stability and convergence. Numerical study of 2D acoustical wave's propagation in a heterogeneous media (liquid-solid)*
- **Image Processing:**
 - *3D images reconstruction/camera calibration (e.g. Development of a nonlinear optimization method to reconstruct 3D scoliotic spines).*
 - *Shock filters for signal and image enhancement and restoration (e.g. Proposition of a 1-D and 2-D (images) shock filter models (hyperbolic quasi-linear equations) for signals enhancement and restoration).*
 - *Multi-scale based approach for signal and image analysis (e.g. Introduction of a new family of kernels with a compact support in a multi-scale analysis of 2D signals).*
 - *Biomedical Applications (e.g. Mathematical modeling of the micro-array genetic expression)*
- **Statistical and Chaotic Models for Information Retrieval from Textual Corpus:**
 - *Development of an HMM model to extract complex words from a textual corpus.*
 - *Proposition of a chaotic model to the automatic categorizing and summarizing of a textual corpus.*
 - *Application of Markovian based model in information retrieval from textual corpus using N-Grams decomposition method.*
- **Homogenization of heterogeneous media:**
 - *Homogenization of a hyperbolic model and its numerical approximation.*

Employment History

- 2016- **Associate professor**
Alfaisal University, Riyadh 11533, Saudi Arabia
- 2012-2015 **Research professor, CFD group leader, Severo Ochoa guarantor**
BCAM: Basque center for applied mathematics, Spain
Main duties: Research, Teaching, Advising, Administration
Adjunct professor
Laval University, Quebec, Canada
Main duties: Research, Teaching, Advising
- 2011- 2012 **Researcher**
CTA: Center of Advanced Technologies BRP (Bombardier) –
Sherbrooke University (www.cta-brp-udes.com), Canada
Main duties: Research

- 2010 **Academic Teacher**
International College Wales Swansea (ICWS), UK
Main duties: Teaching

- 2007- 2011 **Research officer**
Civil and Computational Engineering Center,
School of Engineering. Swansea University, UK
Main duties: Research, Teaching

- 2001- 2007 **Research associate**
McGill University, Canada
NSERC-J. Armand Bombardier Industrial Research Chair.
Main duties: Research

- 98- 2001 **Postdoctoral Fellow**
 - ✓ School of Engineering (E.T.S) at Montreal
Laboratory for Imagery, Vision and Artificial Intelligence (LIVIA)
 - ✓ LIS3D Laboratory, Polytechnic School of Montreal, Sainte-Justine
Hospital
 - ✓ Lady Davis Institute (LDI)
 - ✓ Université du Québec à Montreal (UQAM)
Information Cognitive Analysis Laboratory (LANCI)

- Jan 97 -Dec 97 **Research Assistant**
Université du Québec à Montreal (UQAM), Canada
Information Cognitive Analysis Laboratory (LANCI), Canada

- 92 –94 **Research Assistant**
Claude Bernard University, Lyon, France
Applied Mathematics Laboratory of Lyon (MAPLY)

Publications

Journals

1. L. Remaki, “Waves Speed Averaging Impact on Godunov type Schemes for Hyperbolic Equations with Discontinuous Coefficients: The linear scalar case” submitted to International Journal of Computational Fluid Dynamics
2. L. Remaki, A. Ramezani, J.M. Blanco, I. Garcia, “New Simplified Algorithm for the Multiple Rotating Frame Approach in CFD” submitted to Journal of Fluid Engineering
3. J.M. Blanco, L. Remaki and F. Peña, “New investigation on global efficiency in thermal power plants, addressing the environmental impact of burning alternative fuels through CFD”, Accepted in International Journal of Energy and Environment, 2015
4. Carmen Alonso Montes , Ibai Diez, Lakhdar Remaki, Iñaki Escudero, Beatriz Mateos, Yves Rosseel, Daniele Marinazzo, Sebastiano Stramaglia, Jesus M Cortes, “Lagged and instantaneous dynamical influences related to brain structural connectivity, Frontiers in Psychology, section Quantitative Psychology and Measurement, volume 6, 2015, doi:[10.3389/fpsyg.2015.01024](https://doi.org/10.3389/fpsyg.2015.01024)
5. L. Remaki, O. Hassan and K. Morgan, “Sand Particles Effect on a Supersonic Vehicle Performance,” *JCSMD*, Volume 2, Number 3, October 2014, pp. 169-177(9)

6. T. Drian, L. Remaki, H. Fellouah, S. Moreau, A. Desrocher, "Aerodynamic Study of a Tricycle Wheel Sub-System for Drag Reduction", *Journal of Fluids Eng. volume 136, issue 1, 014502 Nov 06, 2013. doi:10.1115/1.4025644*
7. T. Drian, H. Fellouah, S. Moreau, A. Desrocher, L. Remaki, "Numerical Simulations and Wind Tunnel Measurements on a Tricycle Wheel sub-System Wheel", *Int. J. Engineering Systems Modelling and Simulation*, vol. 5, Nos. 1/2/3, 2013 pp.159-169
8. L. Remaki, O. Hassan, K. Morgan, "Aerodynamic Computations Using a Finite Volume Method with an HLLC Numerical Flux Function," *Journal of Mathematical Modeling of Natural Phenomena*, Vol. 6, No. 3, 2011, pp.189-212 DOI: 10.1051/mmnp/20116308
9. B.J. Evans, J.W. Jones, K. Morgan, O. Hassan, L. Remaki "Computational Fluid Dynamics Applied to the Aerodynamic Design of a Land-Bases Supersonic Vehicle", *Journal of Partial Differential Equation*, volume 27, issue 1, pages. 141-159, January 2010. DOI 10.1002/num.20644
10. L.Remaki and W.G. Habashi "Hermite-Based Mesh Adaptation for Functional Outputs Improvement in Fluid Flow Simulation," *AIAA Journal*, Vol. 47, No .8, pp. 1965-1976, 2009. DOI: 10.2514/1.33437
11. L.Remaki and W.G. Habashi "A Posteriori Error Estimate Improvement in Mesh Adaptation for CFD Applications," *Proc. IMechE, Part C: J. Mechanical Engineering Science*, 2009, 223(C5), 1117-1126 DOI: 10. 1243/09544062JMES1165.
12. L.Remaki and W.G. Habashi "3-D Mesh Adaptation on Multiple Weak Discontinuities and Boundary Layers," *SIAM J. Sci. Comupt.* Vol. 28, No. 4, pp. 1379-1397 2006.
13. L. Remaki and W.G. Habashi, "Automatic mesh adaptation as an efficient tool to improve CFD accuracy," *International Journal of Computational Fluid Dynamic*, Vol. 19, No. 8, November 2005, 571-580.
14. L. Remaki, H. Beaugendre and W.G. Habashi "ISOD - An Anisotropic Isovalues-Oriented Diffusion Artificial Viscosity. Formulation and Application to Euler and Navier-Stokes Equations," *Journal of Computational Physics*. Vol.186, No 1, pp. 279-294 2003.
15. L. Remaki and M. Cheriet, "Numerical Scheme of Shock Filter Models for Image Enhancement and Restoration," *Journal of Mathematical Imaging and Vision* Vol 18: p. 129-143, 2003.
16. L. Remaki and M. Cheriet, "Enhanced and Restored Signal as a Generalized Solution for Shock Filter Models: Part-I: Existence and Uniqueness result of the Cauchy Problem," *Journal of Mathematical Analysis And Applications*. Vol. 279, No 1, pp. 207-227, 2003.
17. L. Remaki and M. Cheriet, "Enhanced and Restored Signal as a Generalized Solution for Shock Filter Models: Part-II: Numerical Study," *Journal of Mathematical Analysis And Applications*. Vol. 279, No 2, pp. 398-418, 2003.
18. F. Cheriet, L. Remaki, C. Bellefleur, A. Koller, H. Labelle, J. Dansereau, "A New X-Ray Calibration/Reconstruction System for 3D Clinical Assessment of Spinal Deformities", in *Studies in Health Technology and Informatics* Vol. 91 (IRSSD 2002), pp. 257-261}, May 2002
19. S. Bernard, J.F. Colombeau, A. Meul, L. Remaki, "Conservation laws with discontinuous coefficients," *Journal of Mathematical Analysis And Applications*. Vol. 258, No. 1, Jun 2001, pp. 63-86.
20. L. Remaki and M. Cheriet, "KCS - New Kernel Family with Compact Support in Scale Space : Formulation & Impact," *IEEE Transaction on Image Processing*, Vol. 9, No. 6., p.970 Juin 2000.

21. L. Remaki, F. Cheriet, C. Bellefleur, H. Labelle, J. Dansereau, "A Robustness Study of Self-calibration Technique for the Radiographic 3D Reconstruction of Human Spine", in *Archives Physiology and Biochemistry*, vol. 108, no. 1/2, 2000.

Conferences with proceedings

22. A. Ramezani, G. Stipcich, L. Remaki, "Discontinuous high-order finite-volume/finite-element method for inviscid compressible flows". 53rd AIAA Aerospace Sciences Meeting (2015), DOI: 10.2514/6.2015-0823
23. I. Bidaguren, L. Remaki and J.M. Blanco, "New effective basis system for the pod-snapshots based reduction models" in proceeding of Congresso de Metodos Numericos em Engenharia 2015 Lisboa, 29 de Junho a 2 de Julho 2015 c APMTAC, Portugal 2015
24. G. Stipcich, A. Ramezani, V. Nava, I. Touzon, M. Sanchez-Lara and L. Remaki, "Numerical investigation of the aerodynamic performance for a wells-type turbine in a wave energy converter", VI international conference on computational methods in marine engineering, marine 2015
25. L. Remaki, A. Ramezani, J.M Blanco, J.I Antolin, "Efficient Rotating Frame Simulation in Turbomachinery," ASME Turbo Expo 2014, Dusseldorf, Germany, June 16-20 2014
26. L. Remaki, "Riemann solution for hyperbolic equations with discontinuous coefficients, " International Conference: Application of Mathematics 2013, Institute of Mathematics, Academy of Sciences, Žitná 25, Prague, Czech Republic, May 15–17, 2013
27. L. Remaki , J.I Antolin Suarez , T. Crespo and I.G de Beristain, "Steady flow Simulation in Turbofans," 21st Annual Conference of the CFD Society of Canada, May 6-9, 2013 - Sherbrooke, Quebec, Canada.
28. L. Remaki O. Hassan, B. Evans, and K. Morgan "Fluidized Sand Effect for Drag Forces on a Supersonic Vehicle," ICCFD 2012, *International Conference on Computational Fluid Dynamic* 2- August, Paris.
29. L. Remaki, O. Hassan and K. Morgan "New Limiter and Gradient Reconstruction Method for HLLC-Finite Volume Scheme to Solve Navier-Stokes Equations," *ECCOMAS, the fifth European Congress on Computational in Fluid Dynamic* 14 - 17 June 2010, Lisbon, Portugal.
30. L. Remaki, O. Hassan and K. Morgan "Spray Drag Model for Bloodhound SSC Supersonic Vehicule," *ECCOMAS, the fifth European Congress on Computational in Fluid Dynamic* 14 - 17 June 2010, Lisbon, Portugal.
31. L. Remaki, X. Zhongqiang, O. Hassan and K. Morgan "Anisotropic Mesh Generation using Delaunay techniques," The 11th ISGG Conference. Montreal, Canada, 25 –2 8 May 2009
32. L. Remaki, X. Zhongqiang, O. Hassan and K. Morgan "A High Order Finite Volume-HLLC Solver and Anisotropic Delaunay Mesh Adaptation," *The 47th AIAA Aerospace Sciences Meeting and Exhibit*. Orlando, Florida, USA, 5 – 8 January 2009. AIAA-2009-1498
33. Z.Q.Xie, L.Remaki, O.Hassan, and K. Morgan, "Adaptive High Speed Flow Simulation Using an Anisotropic Delaunay Remeshing," *Procedure, 15th Conference on Finite Elements in Flow Problems*, 1st-3rd April 2009, Tokyo, Japan
34. K. Morgan, G. Campagne, B.J. Evans, O. Hassan, J.W. Jones, L. Remaki, "The Computational of High Speed Aerodynamics Flows using Unstructured Mesh Methods", *Proceedings of SEECCM 2009*.

35. B. J. Evans, O. Hassan, J. W. Jones, K. Morgan and L. Remaki, "Computational Fluid Dynamics Applied to the BLOODHOUND SSC Project", *Proceedings of the First International Conference on Soft Computing, Structural and Environmental Engineering, Madeira, Portugal 2009*.
36. Z. Xie, L. Remaki, Oubay Hassan, Kenneth Morgan, N. P. Weatherill "Anisotropic 3D Delaunay Mesh Adaptation for High Speed Compressible Flows," *ECCOMAS, the fifth European Congress on Computational Methods in Applied Sciences and Engineering*, Venice, Italy, 30 June - 4 July 2008.
37. L. Remaki and W. G. Habashi, "Hermite-based Error in Mesh Adaptation," *The 9th U.S National Congress on Computational Mechanics*. San Francisco, California, USA, July 22-26, 2007.
38. L. Remaki, W. G. Habashi, S. Nadarajah "Functional Output-based Mesh Adaptation," *The 45th AIAA Aerospace Sciences Meeting and Exhibit*. Reno, Nevada, USA, 8 – 11 January 2007. AIAA-2007-1297
39. C. Bucur, L. Remaki, S. Nadarajah, W.G. Habashi "Mesh Adaptation for Transonic Viscous Flows," *The 14th Annual Conference of the CFD Society of Canada*. Kinston, Ontario, July 16-18, 2006.
40. L. Remaki, S. Nadarajah and W. G. Habashi "On the A Posteriori Error Estimation in Mesh Adaptation to Improve CFD Solutions," *The 44rd AIAA Aerospace Sciences Meeting and Exhibit*. Reno, USA, 9 - 12 January 2006. AIAA-2006-0890.
41. L. Remaki and W. G. Habashi, "Drag and Lift Prediction Using a Finite Element Solver and Mesh Adaptation Strategy," *Proceedings of the Fifth International Conference On Engineering Computational Technology*, [doi:10.4203/ccp.84.173](https://doi.org/10.4203/ccp.84.173). Las Palmas de Gran Canaria, Spain 12-15 September 2006
42. L. Remaki, S. Nadarajah, W. G. Habashi, M.C. Bogstad, C. Kho, F. Mokhtarian, "Mesh Adaptation Impact on Lift and Drag Coefficients," *Canadian Aeronautics and Space Institute (CASI) Conference on Aerospace Technology and Innovation*, Toronto, April 2005.
43. L. Remaki and W.G. Habashi "Toward an Optimal Initial Grid for CFD," *The 43rd AIAA Aerospace Sciences Meeting and Exhibit*. Reno, Nevada, USA, 10 - 13 January 2005. AIAA-2005-0494.
44. Lakhdar Remaki, Wagdi G. Habashi, Claude Lepage and France Suerich-Gulick, "On Some Progress in Anisotropic Mesh Smoothing and Adaptation," *Symposium on adaptive anisotropic mesh generation: advances in analysis and practice 2005 SIAM Conference on Mathematical and Computational Issues in the Geosciences*, June 7-10, 2005, Palais des Papes, The International Conference Center, Avignon, France.
45. L. Remaki, and W.G. Habashi "Optimal Initial Grid Generation for Viscous Flows," *The 12th Annual Conference of the CFD Society of Canada*. Ottawa, Ontario, June, 2004.
46. L. Remaki and W.G. Habashi "An Acoustic-Inspired Approach to Optimal CFD Grid Generation," *ECCOMAS, the fourth European Congress on Computational Methods in Applied Sciences and Engineering*, Jyväskylä, Finland 24 - 28 July 2004.
47. L. Remaki, Claude Lepage and W.G. Habashi "Efficient Anisotropic Mesh Adaptation on Weak and Multiple Shocks," *The 42nd AIAA Aerospace Sciences Meeting and Exhibit*. Reno, Nevada, USA, 5 – 8 January 2004 AIAA-2004-0084.
48. M.C. Bogstad, C. Kho, F. Mokhtarian, L. Remaki, C. Y. Lepage, W. G. Habashi, "Geometrical- and Solution-based Mesh Adaptation on a NASA Semi-Span Flap", *Canadian Aeronautics and*

- Space Institute (CASI) Conference on Aerospace Technology and Innovation, Montreal, April 2004.*
49. W.G. Habashi, L. Remaki and C. Lepage, "Le maillage adaptatif: vers une CFD de qualité", *Keynote Address, CFT'04: Colloque Franco-Tunisien sur les Méthodes Numériques Appliquées aux Écoulements et aux Transferts*, pp. 1-8, 23-24 avril 2004, Monastir, Tunisie.
 50. L. Remaki, H. Beaugendre and W.G. Habashi "A 3D Isovalue-Oriented Artificial Viscosity for CFD," *The 41st AIAA Aerospace Sciences Meeting and Exhibit. Reno, Nevada USA, January 2003. AIAA-2003-0073.*
 51. L. Remaki, H. Beaugendre and W.G. Habashi "An Anisotropic Isovalue-Oriented Artificial Viscosity," *The 10th Annual Conference of the CFD Society of Canada. Windsor, Ontario, pp. 222-227, June 9-11, 2002.*
 52. Claude Lepage, Lakhdar Remaki, Wagdi Habashi "Advances in Mesh Optimization: from Qualitative to Quantitative CFD" *Grand review of the state-of-the-art in the numerical simulation of fluid flow I. MECH. E., London, December 17, 2002.*
 53. F. Cheriet, L. Remaki, C. Bellefleur, A. Coller, H. Labelle, J. Dansereau, "A New X-ray Calibration / Reconstruction System for 3d Clinical Assessment of Spinal Deformities," *The 4th Meeting of The International Research Society of Spinal Deformities. May 2002, Athens, Greece.* Published in *Research into Spinal Deformities 4 Volume 91: Studies in Health Technology and Informatics*
 54. N.E. Ayat, 1M. Cheriet, 1 L. Remaki, C.Y. Suen, "2KMOD-A New Support Vector Machine Kernel With Moderate Decreasing for Pattern Recognition. Application to Digit Image Recognition," *ICDAR, Seattle, September 2001.*
 55. E. Ben Braiek, L. Remaki and M. Cheriet, "Extraction of Handwritten Data from Noisy Gray Level images using a separable version of the KCS Kernel Family," *ICISP'01, pp. 125-131, Agadir 2001.*
 56. S. Bernard, J.-F. Colombeau, A. MÉRIL et L. Remaki , "Conservation laws with discontinuous coefficients," *CANum 2000, 32^e Congrès national d'analyse numérique 5 - 9 juin 2000 Port d'Albret (Vieux Boucau, Landes).*
 57. L. Remaki, F. Cheriet, C. Bellefleur, H. Labelle, J. Dansereau, "A Robustness study of Self-Calibration Technique for Radiographic 3D Reconstruction of Human Spine," *In Proc. Of XIth Congress of the Canadian Society for Biomechanics. 23-26 August 2000. Montreal Canada.*
 58. L. Remaki, et J.-G. Meunier, "Un modèle HMM pour la détection des mots composés dans un corpus textuel," *In Rajman, M. & Chappelier, J.-C. (ed.). Actes des 5es Journées internationales d'Analyse Statistique des Données Textuelles. 9-11 mars 2000, EPFL, Lausanne, Suisse. Volume 1, pages 325 à 329.*
 59. M. Cheriet and L. Remaki, (Invited authors) "Visual Data Extraction from Document Image: A Multi-Scale Based Approach" *En El Congreso Internacional de Computacion CIC'99. Celebrado en la Cd. De México, D.F. del 15 al 19 de Noviembre de 1999.*
 60. L. Remaki and M. Cheriet, "Visual Data extraction from Bi-Level Document Image Using a Generalized Kernel Family with Compact Support in Scale-Space," *In Proc. of the 5th ICDAR'99. Bangalore, India. September, 1999.*
 61. L. Remaki and M. Cheriet, "Building New Kernel Family with Compact Support, in Scale-Space," *In Vision Interface, Trois-Rivières, pp. 445-452, May 1999.*

62. Meunier, J.-G., Remaki, L. and Forest, D. "Use of classifiers in computer-assisted reading and analysis of text (CARAT) ", *International conference CISST*, Las Vegas, Nevada, U.S.A 1999.

63. L. Remaki and J.G. Meunier, "Les champs de Markov dans l'analyse de texte assistée par ordinateur. Modélisation et premiers résultats," *Acte du colloque international JADT, Nice, France, pp. 691-694, Fevrier199*

Books Chapters

64. B.J. Evans, O. Hassan, J.W. Jones, K. Morgan,, L. Remaki "Simulating Steady State and Transient Aerodynamics Flows Using Unstructured Meshes and Parallel Computers", *COMPUTATIONAL FLUID DYNAMICS REVIEW 2010*. Edited by M M Hafez (University of California, Davis, USA), K Oshima (University of Tokyo, Japan), & D Kwak (NASA Ames Research Center, USA)

Electronic publications

65. B. J. Evans, O. Hassan, J. W. Jones, K. Morgan, L. Remaki "Computational Fluid Dynamics Applied to the Aerodynamic Design of a Land-Based Supersonic Vehicle", *Received 1 July 2010; accepted 12 July 2010 Published online 1 October 2010 in Wiley Online Library (wileyonlinelibrary.com). DOI 10.1002/num.20644*

Workshops and Seminars

66. "Waves speed averaging effect on Godunov type schemes", The Second Basque-Hungarian Workshop on Numerical Methods for PDEs, January 12-13 2015

67. "BBIPED CFD Platform: Application to Turbomachinery Simulation and Design", March 28, 2014, BCAM, Bilbao, Spain.

68. "Dual mesh finite-volume method for flow motion simulation, ", BCAM Workshop on Computational Mathematics, October 02, 2012, BCAM-Bilbao, Spain.

69. "On some Aspects of Mesh Adaptation in CFD and Industrial Applications, ", Aquitaine-Euskadi Workshop on Applied Mathematics, June 06, 2012, BCAM-Bilbao, Spain

70. "Anisotropic Adaptivity in the Context of Delaunay Triangulation, ", Tetrahedron WorkshopIII, The International Workshop on Grid Generation for Numerical Computations September 14–15, 2010 Swansea University, Swansea, UK.

71. "CFD in Industrial Applications and Mesh Improvement Shock-Filter for Multiple Discontinuities Capturing," BCAM Seminars, May 24, 2012, BCAM-Bilbao, Spain.

Invited Talks

72. "Fluid dynamic simulation and mesh adaptivity for industrial applications", Institut Élie Cartan de Lorraine, Metz, France, 10-10-2014

73. "On Optimization in Industrial applications", international conference PICO 2014 to be held in Tunis, 7-9 May, 2014.

74. "Flow Simulation for Aerodynamic Optimal Design in Industry", Congrès SMAI 2013, Seignosse le Penon (Landes), 27-31 Mai 2013

75. "Large Scale Simulations of Turbulent Flows for Industrial Applications", APPLIED FLUID MECHANICS, University College of Engineering Vitoria-Gasteiz, April 23rd 2013.

76. "On CFD Industrial Applications and Some Numerical Issues, ", June 29, 2012, Escuela Técnica Superior de Ingeniería, Universidad del País Vasco / Euskal Herriko Unibertsitatea

77. "New Advances in Finite Volume Scheme and Application to Supersonic Car Aerodynamic Analysis, ", April 08, 2011, Laval University, Canada

78. Invited speaker jointly with professor W. Habashi from McGill University, Canada at the 11th ISGG Conference. Montreal, Canada, 25 –2 8 May 2009

79. "PDEs shock-filter model for multiple shocks capturing in mesh adaptation", Seminar

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