FIORELLA SGALLARI
CURRICULUM VITAE

PERSONAL INFORMATION

Address: Department of Mathematics – University of Bologna,
Piazza di Porta S. Donato, 5- 40127 Bologna, Italy
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Via Saragozza 8, 40123 Bologna, Italy.
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RESEARCH UNIQUE IDENTIFIER:

ScopusID: 6603889140
Orcid: https://orcid.org/0000-0002-9166-8879

SCIENTIFIC PRODUCTION:

- **92 publications on referred International Journals**
- **58 on special Volumes and Conference proceedings (with referees)**
- **4 Didactical publications**
- **8 Books, Chapters and Special Journal Volumes Edited**
- **1 patent**
- **h-ind.25, 2095 Scopus citations, h-ind. 34 3287 Citations Google Scholar**
- **My Google Profile: https://scholar.google.it/citations?user=8x4cmYEAAAAJ&hl=it**

TOP 5 MOST CITED PAPERS:

- D Calvetti, S Morigi, L Reichel, F Sgallari: *Tikhonov regularization and the L-curve for large discrete ill-posed problems*, Journal of computational and applied mathematics 123 (1-2), 423-446, 2000. **Citations: GS 616**
- P Baraldi, A Sarti, C Lamberti, A Prandini, F Sgallari: *Evaluation of differential optical flow techniques on synthesized echo images*. IEEE Transactions on Biomedical Engineering 43 (3), 259-272, 1996. **Citations: GS 126.**
- A.Lanza, S. Morigi, F.Sgallari, *Convex Image Denoising via Non-convex Regularization with Parameter Selection*, Journal of Mathematical Imaging and Vision, vol. 56, pp.195-220, 2016. **Citations: GS 92.**
- L.Reichel, F. Sgallari, Q.Ye, *Tikhonov regularization based on generalized Krylov subspace methods*, Applied Numerical Mathematics, Vol. 62(9), pp.1215-1228, 2012. **Citations: GS 82.**
- R.H. Chan, A.Lanza, S. Morigi, F. Sgallari, An Adaptive Strategy for the Restoration of Textured Images using Fractional Order Regularization, Numerical Mathematics: Theory, Methods and Applications (NM-TMA), Vol. 6, No. 1, pp. 276-296, Scopus Code 2-s2.0-84874065691, DOI: 10.4208/nmtma.2013.mssvm15, 2013. **Citations: GS 81**.

EMPLOYMENT and EDUCATION:

2002-2023	Full Professor of Numerical Analysis, University of Bologna.
1987-2002	Associate Professor of Numerical Analysis, University of Bologna.
1980-1987	Researcher at University of Bologna.
1977-1980	Researcher of CNR at University of Bologna.
1977	Diploma di Perfezionamento in "Teoria e applicazione delle macchine calcolatrici" cum laude at the University of Bologna.
1976	Dottore in Matematica cum laude at the University of Bologna.

AWARDS AND HONORS:

2023-2024 Governor Rotary International District 2072 Emilia-Romagna and Republic of San Marino

2018 "Ambasciatori di Bologna" Award.

2017 Best Student Paper Award at International Conference "VI ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing" (VipIMAGE2017), Porto, Portugal, October 2017 for the paper: A. Lanza, S. Morigi, M. Pragliola, F. Sgallari, Space-Variant TV Regularization for Image Restoration. In: Tavares J., Natal Jorge R. (eds) VipIMAGE 2017. ECCOMAS 2017. Lecture Notes in Computational Vision and Biomechanics, vol.27, pp.160-169, 2018, Springer.

2016 Leonardo Da Vinci Award 2016 – Awarded by a Scientific Committee from Datalogic S.p.A. for the best applied research in the year. Results obtained inside the project *"Study and development of innovative methods for robust and efficient barcode decoding"* under patents (USA n. US9361503B2 and Europe n. EP3016028A1)

PROFESSIONAL COMMITTEES AND ACTIVITIES (since 2002):

- **Vice-Chair SIAM Group on Imaging Science**. (Society for Industrial and Applied Mathematics), 2018-2019.
- **Member of Academy of Sciences of Bologna Institute**, 2018- present.
- **Member of Excellence Center ARCES-UNIBO**, Advanced Research Center on Electronic Systems for Information and Communication Technologies E. De Castro , 2018-present
- Committee Member for permanent positions and promotions (Associate and Full professors in Numerical Analysis), Ministry of Research and Education, 2012-2013.
- Member of the Committee for the PhD program in Mathematics, University of Bologna. 2003-present.
- Committee Member for extra-institutional task authorizations, University of Bologna, 2016-2020.
- University Research Evaluation Committee (VRA) from 2020.
- Member of the International PhD Examination Committee for the PhD Program in Mathematics, at University of Hong Kong, July 2012.
- **Director of Reasearch Center CIRAM** (Centro Interdipartimentale di Ricerca per le Applicazioni della Matematica), University of Bologna, 2006–2013.
- **Scientific Coordinator** Alma Mater **Research Center on Applied Mathematics (AM^2),** University of Bologna, 2020-present.
- Member of Didactical Committee for Civil Engineering Degree and Master, 2002-present.
- President Census Committee, Faculty of Engineering, University of Bologna, 2006-2012.
- Responsible of the *Laboratory for High Performance Graphics and Vision Computing and Laboratory of Scientific Computing* (CIRAM) , 2006-present.
- Member "Society for Industrial and Applied Mathematics" (SIAM), 1992-present.
- Member of National Group for Scientific Calculus (GNCS), 1999-present.

- Member “Italian Society of Applied and Industrial Mathematics” (SIMAI), 1992-present.
- Member “Unione Matematica Italiana” (UMI), 1978-present.
  (plus a great number of institutional activities in committees at various levels, at the University of Bologna).

VISITING PERIODS AND INDUSTRIAL COLLABORATIONS

- Datalogic IP Tech, Italy.
- Skanray Europe S.r.l.
- IMALs.r.l., R&D / Engineering / Service, Italy.
- Fondazione Ugo Bordoni - Roma – Bologna, Italy
- Fondazione Guglielmo Marconi – Bologna, Italy
- Laboratorio di Tecnologia Medica - Istituti Ortopedici Rizzoli – Bologna, Italy
- Supercomputing Center CINECA - Bologna
- INRIA - Parigi - 1982 (2 monthes)
- University of Minnesota, U.S.A. 1991.
- Prof. L. Reichel, Kent State University, Ohio, U.S.A. 1999, 2003, 2008, 2013
- Prof. D. Calvetti, Case Western University, Cleveland, U.S.A, 1999.
- Prof. E. Somersalo, Helsinki University of Technology, Finland, 2004.
- Prof. M. Rumpf, Univ. Bonn, Germany, 2000.
- Prof. X. C. Tai, Univ. Bergen, Norwey. 2006.
- Prof. Raymond Chan, Univ. Chinese di Hong Kong, 2012, 2014, 2019, 2020.

PATENTS

“***SYSTEMS, METHODS AND ARTICLES FOR READING HIGHLY BLURRED MACHINE-READABLE SYMBOLS***”
Inventors: F. Deppieri, M. Aldo De Girolami, A. Lanza, F. Sgallari
Publication date: 2016/5/5 - Patent number: 20160125218 - Application number: 14/528697
Patent n. EP3016028, Patent n. US9361503

RESEARCH GRANTS

AS PRINCIPAL INVESTIGATOR

1992-1994 Research Grant among Dept. Mathematics, Dept. Electronics, Informatics and Systems, University of Bologna and CINECA on: “*Numerical methods for the design and simulation of non-linear microwave circuits using supercomputers, Iterative methods for the solution of linear systems of huge dimensions”.*

1997 C.N.R. Strategic Project: “*Models and numerical methods for the design and simulation of non-linear microwave circuits”*.

1998-99 C.N.R. Coordinate Project: “*Large linear systems and parallel computing”*.

1998-99 MURST Research Porject: “*Methods and software for Applied Science”*.

1998-99 Scientific Coordinator C.N.R. Associate Center on “*Mathematical Models and Methods in Engineering and Applied Sciences”* at University of Bologna.

2003 National Projects INDAM-GNCS-GNAMPA: *“Theoretical and computational aspects of inverse problems”.*

2004 NATO Project Reference: PST.CLG.979123: “*Efficient and robust computational methods for biomedical image analysis”.*

2004 PRIN2 Project: "*Numerical methods for large linear systems and applications to nonlinear evolutionary equations* ".

2005 Industrial Research**,** (Esaote-Genova, TecnoBiomedica-Rome)**:** *2D Segmentation of Ultrasound Images”*.

2006 PRIN Project: "*Innovative numerical methods for large discrete models*".
2008 PRIN Project: "*Innovative numerical methods for large discrete problems* ".
2012-2014 Industrial project Datalogic IPTech Srl, *"Development of methods for correct classification of barcode signals in the presence of noise and high levels of blur*".
2014-2017 Industrial project Datalogic IPTech Srl, *"Study and development of innovative methods for robust and efficient barcode decoding* .
2017-2018 Industrial project IMAL SRL Modena, "*Algorithms and mathematical solutions for a research project related to RF technology in industrial applications*".
2019 Industrial project Skanray Europe S.r.l., *"Study and develop reconstruction algorithms for cone-beam computed tomography for soft-tissues*"

PARTECIPATIONS AT GRANTS

2003 EU Project FRAFEM, scientific coordinator numerical unity: "*Real-time software for the femoral neck fracture prediction*".
2006 Strategic Project – University of Bologna on "*Geometric theory of partial differential equations*", Dept. Mathematics.
2006 Strategic Project – University of Bologna on *"Remote sensors at low cost for the measurement of forces and displacements*", DISTART.
2012 Italy-China project, joint project funded by The Chinese University of Hong Kong (internal grant for international projects) Grant Number: CUHK Direct Allocation Grant #2060408. "Tight-frame Algorithms for Segmentation". P. I.: Prof. Raymond H. Chan - Co-P.I.: Prof. Fiorella Sgallari et al.
2017 Alma Idea Grant. "*Variational methods for heterogeneous embedded system for portable immunofluorescence diagnostics*".
2017 EU GAHIA Project *Geometric and Harmonic Analysis with Interdisciplinary Applications*
https://site.unibo.it/ghaia-eu-project/en
GHAIA promote excellence through mobility to the world leader Universities in pure and applied mathematical research: Princeton University, Mit, Yale, Johns Hopkins, the Universities of California, of Texas, of Houston, of Pittsburgh, the Washington University (St. Louis), and the Worchester Polytechnical Institute, the Academia Sinica, the University of Buenos Aires have joined the consortium.
2020 Finanziamento Borsa di Dottorato in Matematica – Carisbo per Progetto *Modelli e metodi numerici innovativi per la ricostruzione 3D di immagini di tomografia computerizzata a fascio conico per la realizzazione di attrezzature di dimensioni ridotte.*

PROJECT EVALUATOR FOR INTERNATIONAL FUNDING AGENCIES

- Ministry of Research and Education, Italy.
- Swiss National Science Foundation.
- HPC Europa - High Performance Computing.
- Nanyang Technological University, Singapore.
- Research Grants Council, Hong Kong.
- Research Foundation Flanders (FWO), Belgium.
- University of Macau (UM) Research Committee for the 2012 Multi-Year Research Grant (MYRG)
- Czech Science Foundation.
- External reviewer for the tenure track assistant professorship on "Mathematical Foundations and Applications of Image Analysis", Saarland University, Saarbruecken, Germany
- External reviewer for the tenure track in the Kate Gleason College of Engineering (KGCOE) at Rochester Institute of Technology.
- HPC-Europa3 (EC H2020 program): Scientific Users Selection Panel

- VQR 2015-2019 - Valutazione della Qualità della Ricerca -Italy - ANVUR (Agenzia nazionale di valutazione del sistema universitario e della ricerca)

MEMBERSHIPS TO EDITORIAL BOARD OF INTERNATIONAL JOURNALS:

Since 2007	Editor, Numerical Mathematics: Theory, Methods and Applications
Since 2008	Editor, International Journal of Imaging and Robotics
Since 2009	Editor, ETNA - Electronic transactions on Numerical Analysis
Since 2012	Editor, Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization
Since 2020	Editor, Journal of Imaging
Since 2021	Editor, *Advances in Discrete and Continuous Models* - Associate Editor in the area of Signal and Image Processing.
Since 2022	Editor, Computational Mathematics and Computer Modeling with Applications (CMCMA)
Since 2024	Editor, Journal of Mathematical Imaging and Vision (JMIV)

REVIEWER FOR JOURNALS

SIAM review, SIAM Journal on Imaging Sciences , SIAM Journal on Scientific Computing, IEEE Trans. on Pattern Analysis and Machine Intelligence, IEEE Trans. Image Processing, IEEE Transactions on Neural Networks, IEEE Transactions on Cybernetics, Inverse Problems, Inverse Problems and Imaging, Inverse Problems in Science and Engineering (IPSE), BIT, ETNA-Electronic Transaction on Numerical Analysis, Journal of Computational and Applied Mathematics, Journal Computing and Visualization in Science, Journal of Integral Equations and Applications, Journal of Scientific Computing, Journal of Mathematical Imaging and Vision (JMIV), Applied Numerical Mathematics, Applied Physics & Engineering, Applied Mathematical Modelling, Mathematics and Computers in Simulation, Mathematical Problems in Engineering, Neural Computing and Applications, Numerical Algorithms, Numerical Linear Algebra with Applications, Physics in Medicine and Biology, Communications in Nonlinear Science and Numerical Simulations, Graphical Models, etc.

ORGANIZATION OF CONFERENCES, WORKSHOPS, AND SPECIAL SESSIONS

1999	ICIAM – Edimburgh, Minisymposium on "*Computational Methods in Image Processing and Analysis*".
1999	Workshop - Universities of California and Bologna on "*Advanced methods in Image Processing*".
2000	SIMAI –Ischia -Minisymposium on "*Biomedical image processing and reconstruction ".*
2001	International Conference – Montecatini - Italy, **AIP:** *"Applied Inverse Problems: Theoretical and Computational Aspects".*
2004	Workshop on Applied Computational Inverse Problems, Firenze – Italy.
2004	Workshop Matrix Day, Bologna - Italy 6 May, 2004.
2004	SIMAI– Venezia. Minisymposium on "*Computational aspects in medical imaging*"
2006	Workshop Numerical Analysis Day on Innovative Numerical Methods in Engineering Applications, Bologna – Italy.
2006	Workshop COMSOL Multiphysics, Bologna – Italy.
2008	Workshop Numerical Linear Algebra, Bologna – Italia.
2009	Conference on Applied Inverse Problems, Vienna. M12 *Inverse Problems: computational*

aspects and emerging applications.

2007 SSVM 07 1st International Conference On Scale Space and Variational Methods in Computer Vision**,** May 30 – June 2, 2007 Ischia, Italy.

2009 First International Workshop of Computational Biomathematics at the University of Bologna and Third International Workshop of Morphofunctional Studies at the University of Parma on *Mathematical and biomedical modelling in regenerative medicine of endocrine organs,* Accademy of Sciences of Bologna, Italy.

2011 *XIX Congresso dell'Unione Matematica Italiana,* Bologna.

2015 ICIAM, Bejing. Minisymposium, *Image restoration: new algorithms and new applications*.

2019 ICIAM 2019, July 15-19, 2019. Four Minisymposia Organizer: *"Optimisation and Inverse Problems in Imaging Science".*

2019 Minisymposium Organization, ICIAM 2019 Valencia, Spain July 15-19, Minisymposium on Computational Methods for Inverse Problems (4 parts): R.Chan-F.Sgallari

2022 Minisymposium Organization, SIAM IS 2022 Berlin, Germany March 21-25 (online), Minisymposium on Recent Advances in Parameter Estimation for Medical Imaging (2 parts): A.Lanza-M.Pragliola-F.Sgallari

2005 Scientific Committee International Conf. *Scale-Space 2005*, Hofgeismar, Germany.

2005 Scientific Committee International Conf. *Algoritmy 2005*, Vysoke Tatry, Slovakia.

2009 Scientific Committee "International Conference on Imaging Theory and Applications" – IMAGAPP 2009, Lisbon, Portugal.

2009 Scientific Committee "Scale Space and Variational Methods - SSVM 09 Voss, Norway.

2009 Scientific Committee "EUROMEDIA 2009 - The Multimedia Applications Conference", Bruges, Belgium.

2009 Scientific Committee special track "Computational Bioimaging", ISVC09 - 5th International Symposium on Visual Computing, Las Vegas, Nevada, USA.

2010 Scientific Committee "CompIMAGE'2010 Symposium", Buffalo, NY.

2010 Scientific Committee "Inverse Problems: Computation and Applications", Luminy, France .

2010 Scientific Committee International Conference EUROMEDIA 2010, Gandia, Spain, Workshop "Medical Imaging Systems".

2010 Scientific Committee 6th International Conference on Technology and Medical Sciences. Porto, Portugal.

2010 Scientific Committee special track "Computational Bioimaging" ISVC10 - 6th International Symposium on Visual Computing, Las Vegas, Nevada, U SA.

2011 Scientific Committee International Program Committee IMAGAPP 2011, Algarve Portugal.

2011 Scientific Committee Third International Conference on Scale-Space and Variational Methods in Computer Vision (SSVM 2011), Israel.

2011 Scientific Committee VipIMAGE2011 - 3rd ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing, Algarve, Portugal.

2011 Scientific Committee ISVC'11 Special Track on "Computational Bioimaging". 7th International Symposium on Visual Computing, Las Vegas, Nevada, USA

2012 Scientific Committee CompIMAGE 2012, 3rd edition, Rome, Italy.

2012 Scientific Committee VISAPP 2012, International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications, Rome.

2013 Scientific Committee Fourth ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2013), Madeira island, Portugal.

2013 Scientific Committee VISAPP 2013 Barcelona, Spain.

2013 Scientific Committee Fourth International Conference on Scale-Space and Variational Methods in Computer Vision (SSVM 2013), Austria.

2013 Scientific Committee "International Congress on Neurotechnology, Electronics and Informatics" - NEUROTECHNIX 2013 Vilamoura, Algarve, Portugal.

2013 Scientific Committee International Conference on Computational and Experimental Biomedical Sciences (ICCEBS2013) S Miguel Island, Azores.

2014 Scientific Committee - VISAPP 2014, 9th International Joint Conf.on Computer Vision, Imaging and Computer Graphics Theory and Applications. Lisbon, Portugal.

2014 Scientific Committee CompIMAGE 2014, 4^{thd} edition, Pittsburgh, USA.

2014 Scientific Committee "International Congress on Neurotechnology, Electronics and Informatics" - NEUROTECHNIX 2014, Rome, Italy.

2015 Scientific Committee 5th ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2015), Tenerife island, Canary Islands, Spain.

2015 Scientific Committee 10th Intl. Conf. on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), Hong Kong.

2015 Scientific Committee VISAPP 2015, 10th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications. Berlin, Germany.

2015 Scientific Committee Conference "New Trends in Numerical Analysis - Theory, Methods, Algorithms and Applications" NETNA 2015, Falerna (CZ), Italy.

2015 Scientific Committee "International Congress on Neurotechnology, Electronics and Informatics" - NEUROTECHNIX 2015. Lisbon, Portugal.

2015 Scientific Committee 2nd MICCAI workshop on Bio-Imaging Visualization for Patient-Customized Simulations, MICCAI 2015 - the 18th International Conference on Medical Image Computing and Computer Assisted Intervention, Munich, Germany.

2015 Scientific Committee Fifth International Conference on Scale-Space and Variational Methods in Computer Vision (SSVM 2015), France.

2016 Scientific Committee CompIMAGE 2016, 5th edition, Niagara falls, NY, USA.

2016 Scientific Committee "International Congress on Neurotechnology, Electronics and Informatics" - NEUROTECHNIX 2016. Porto, Portugal.

2016 Scientific Committee VISAPP 2016, 11th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications. Rome, Italy.

2017 Scientific Committee 6th ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2017), Porto, Portugal.

2017 Scientific Committee Sixth International Conference on Scale-Space and Variational Methods in Computer Vision (SSVM 2017), Denmark.

2017 Programme Committee 11th International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), Venice, Italy, 30 October - 1 November 2017.

2018 Scientific Committee VISAPP 2018, 13th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications. Madeira, Portugal.

2018 Scientific Committee "International Congress on Neurotechnology, Electronics and Informatics" - NEUROTECHNIX 2018. Seville, Spain.

2018 Scientific Committee CMBBE 2018. 5th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization. March 2018, Lisbon, Portugal.

2018 Siam Conference on Imaging Science, Bologna, Italy. (**International and Organizing Committee Co-Chair).**

2019 Scientific and Organizing Committee Workshop on "*Efficient Operator Splitting Techniques for Complex Systems and Large Scale Data Analysis*", Tsinghua Sanya International Mathematics Forum (TSIMF) January 14-18, 2019.

2019 Scientific Committee VISAPP 2019, 14th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications. Prague, Czech. Republic.

2020 Scientific and Organizing Committee Workshop on "*Efficient Algorithms in Data Science, Learning and Computational Physics*" at the Tsinghua Sanya International Mathematics Forum (TSIMF) in Sanya, China, January 12- 16, 2020.

2020 Minisymposium Organization, SIAM IS 2020 Toronto Canada July 6-17 (online),

Minisymposium on Data Driven Image restoration (3 parts): S.Morigi-F.Sgallari

2020 Scientific Committee 21st ALGORITMY Conference, September 10-15, 2020, Slovakia.

2020 Organizer and Lecturer in Summer School *'Advanced numerical methods for inverse imaging problems*' , July 16-26, 2020 (online) Harbin Institute of Technology, Harbin, China.

2021 Program Committee of International VISAPP ("16th International Conference on Computer Vision Theory and Applications"), Online 8-10 February 2021.

2021 Scientific Committee International Conference on Scale Space and Variational Methods in Computer Vision (SSVM), Cabourg, France, May 16-20 2021.

2021 Scientific Committee CMBBE 2021 Symposium (17th International Symposium on Computer Methods on Biomechanics and Biomedical Engineering, and 5th Conference on Imaging and Visualization) Bonn, Germany, 7 – 9 September 2021.

2023 Scientific Committee CANA23 Challenges and Advances in Numerical Analysis, Cagliari, Italy, June 5-9, 2023.

INVITED TALKS AT INTERNATIONAL CONFERENCES (SINCE 2004)

Legend: invited talk (i.t.), contributed talk (c.t.), and plenary lecture (p.l.).

1. International Conference on "Perspectives in Inverse Problems", Helsinki, May 31-June 5, 2004. "*Edge preserving regularization methods in image processing*". (i.t.)
2. Workshop Computational Problems in Medical Imaging. Genova, November 2004. "*2D and 3D ultrasound processing".* (i.t.)
3. Conference "Scuola Scienza e Societa'", 24-26 February 2005, La Maddalena, Italy. "*La matematica e l'imaging medico*". **(p.l.)**
4. Conference on Numerical Analysis: The state of the art. (NAC2005) May 19-21 2005. University of Calabria Rende (CS), Italy. "*Numerical solution of inverse problems in image analysis* ". (i.t)
5. SPIE 2005. The International Society for Optical Engineering, Symposium on Advanced Signal Processing Algorithms, Architectures, and Implementations XV. San Diego, USA. August 2005. **"***Regularized segmentation based on nonlinear PDE models: some numerical aspect*". (i.t.)
6. SIAM Minisymposia at Joint Mathematics Meetings, San Antonio, Texas, January 12-15, 2006. "*Some computational issues on inverse problems in medical imaging*". (i.t.)
7. Workshop on "Variational, PDE, and Level Set Set Methods", Obergurgl, Tyrol, Austria (1. - 3.9.2006). *"Finite Volumes in Imaging and Surface Processing"*. (i.t.)
8. *"Numerical Methods in Image Processing"*, at European Excellence Center, Bergen-Oslo 5 December, 2006. **(p.l.)**
9. Workshop on "Geometrical partial differential equations: numerics and applications", Bergen, Norway (6-7. 12. 2006). *"Numerical experience in PDE Image and Surface Processing"*.(i.t.)
10. Numerical Analysis Day on Innovative Numerical Methods in Engineering Applications. Bologna 18.9.2006.*"Numerical Analysis in Imaging and Surface Processing"*. (i.t.)
11. University Roma La Sapienza, Dipartimento di Matemtica 'G. Castelnuovo', 27 February 2007, *" Metodi cascadic multiresolution per il deblurring delle immagini"*. (i.t.)
12. Seminari Università Palermo: 24 January 2008**,** Centro Interdipartimentale Tecnologie della Conoscenza, "*Modelli e Metodi numerici per l'image processing".* (i.t.)
13. GAMM Workshop Applied and Numerical Linear Algebra with special emphasis on Regularization of Ill-posed Problems September 11-12, 2008-Technische Universität Hamburg-Harburg, Germany,*"Cascadic Multilevel Methods for Large-Scale Ill-Posed problems"*. (i.t.)
14. Foundations of Computational Mathematics - City University of Hong Kong at Hong Kong, China, 16-26 June 2008. Workshop B5 Numerical linear algebra,*"Cascadic Multilevel Methods for Large-Scale Ill-Posed Problems".* (i.t.)
15. Kent State University October 9, colloquium talk *"Numerical experience in PDE image and surface processing"* , 2008. (i.t.)

16. Varga Conference Kent 17-18 October 2008, "*Cascadic multilevel methods for image denoising and deblurring".* (i.t.)
17. "Scale Space and Variational Methods-SSVM 09", 2009, Voss, Norway, *"Composed Segmentation of Tubular Structures by an Anisotropic PDE Model*". (c.t.)
18. Approximation methods in numerical linear algebra, "2nd Dolomites Workshop on Constructive Approximation and Applications" (DWCAA09), Alba di Canazei (Trento, Italy), Sept. 4-9 2009. *"Edge-preserving multilevel methods for deblurring, denoising, and segmentation".*(i.t.)
19. Minisymposium Talk, SIAM Conference on Imaging Science, Chicago, USA, April 12-14, 2010. ***"****Image Restoration by Tikhonov Regularization Based on Generalized Krylov Subspace Methods".* (i.t.)
20. Inverse Problems, Computations and Applications, Luminy, France, May 31-June 4, 2010. "*A paradigm for updating preconditioners in nonlinear image denoising and deblurring"*, (i.t.).
21. International Workshop on Numerical Mathematics: Theory, Methods and Applications, August 25-29, 2010, Nanjing, China, *"Fast numerical solution of inverse problems in image processing".* **(p.l.)**
22. Minisymposium Talk on *Linear Algebra and Inverse prob*lems, ILAS 2010, Pisa, Italy, June 21-25, 2010. '*Image Restoration by Tikhonov Regularization Based on Generalized Krylov Subspace Methods'.* (i.t.)
23. Minisymposium Talk, MSP04 Analytical and Numerical Methods for Applied Inverse Problems, SIMAI, Cagliari, Italy, 21-24 June, 2010. "*A paradigm for updating preconditioners in nonlinear image denoising and deblurring".* (i.t.)
24. FoCM'11, Foundation of Computational Mathematics, Budapest, 4-14 July 2011. Workshop on Numerical linear algebra. *"Alternating Krylov subspace image restoration methods".* (i.t.)
25. ICIAM 2011, 18-22 July 2011, Vancouver, Canada. MS99 Theoretical and Numerical Aspects in Variational-PDE Methods for Solving Inverse Problems in Imaging Sciences. *"Iterative Krylov Subspace based Alternating Image Restoration Methods"*. (i.t.)
26. SC2011, International Conference on Scientific Computing. S. Margherita di Pula, Sardinia, Italy. October 10-14, 2011. "Alternating Krylov subspace image restoration methods". (i.t.)
27. Dipartimento di Matematica. Università La Sapienza di Roma. Seminario di Modellistica Differenziale Numerica. October 2011, *"Fast numerical solution of inverse problems in image processing".* (i.t.)
28. Minisymposium Talk on Inverse Problems and Image Analysis in Remote Sensing Science, Organizer: Igor Yanovsky, Jet Propulsion Laboratory, California Institute of Technology, USA, Anthony B. Davis, California Institute of Technology, USA Luminita A. Vese, University of California, Los Angeles, USA, 2012 SIAM Conference on Imaging Science, Philadelphia, USA, May 20-22, 2012. *"Texture Adaptive Image Restoration Using Fractional Order Regularization"*. (i.t.)
29. Mini-Workshop on Scientific Computing, University of Macau, Macao, P. R. China, 25–26tJuly, 2012, *"Texture Adaptive Image Restoration Using Fractional Order Regularization".* (i.t.)
30. CompIMAGE 2012. Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications. 3rd edition, Rome September 4-7, 2012. *"Fast algorithms for Tikhonov and Total variation image restoration*". **(p.l.)**
31. New Frontiers in Numerical Analysis and Scientific Computing, Kent State University, Ohio, USA, April 19-20, 2013. *"Cascadic Alternating Krylov Subspace Image Restoration Methods".* (i.t.)
32. SIAM Conference on IMAGING SCIENCE, 12-14 May 2014, Hong Kong Baptist University, Minisymposium M12: Advances in Numerical Linear Algebra for Imaging, organizers: Julianne Chung, Malena I. Español. *"Variational Image Restoration with Auto-Correlation Whiteness Penalties".* (i.t.)
33. CompIMAGE 2014, Computational Modeling of Object presented in Images: Fundamentals, Methods and Applications. 3-5 Sptember Pittsburgh, PA, USA. *"A General Framework for Nonlinear Regularized Krylov-based Image Restoration"*. (i.t.).

34. SSVM 2015, Scale Space and Variational Methods in Computer Vision, 31May-4June , 2015 Lège Cap Ferret, France, *"Convex image denoising via Non-Convex Regularization*". (c.t.)
35. Netna 2015, New Trends in Numerical Analysis Theory, Methods, Algorithms and Applications**,** Falerna (CZ), Calabria, 18-21 June 2015. *"A generalized Krylov subspace method for l_p -l_q minimization".* (i.t.)
36. ICIAM 2015, 10-15 August, Bejing, *"Constrained TVp -L2 model for image restoration".* (i.t.)
37. International Conference on Numerical Mathematics and Scientific Computing, August 16 - 19, 2015, Nanjing, China, *"Convex image denoising via Non-Convex Regularization".* (i.t)
38. VIPIMAGE 2015 19-21 Octobe 2015, Tenerife, *"Image Restoration: A Survey and Recent Advances"*. **(p.l.)**
39. SIAM Conference on IMAGING SCIENCE, 23-26 May 2016, Albuquerque, New Mexico, USA, MS8 Non-Gaussian Noise: New Trends and Challenges, organizers: Federica Sciacchitano, Yiqiu Dong. *"A Majorization-Minimization Generalized Krylov Subspace Methods for Lp-Lq Image Restoration",* (Invited).
40. SIAM Conference on IMAGING SCIENCE, 23-26 May 2016, Albuquerque, New Mexico, USA, MS51 Nonconvex Regularization in Imaging: Theory, Algorithms and Applications, organizers: Yifei Lou, Jing Qin. *"Majorization-Minimization for Nonconvex Optimization",* (Invited, co-author).
41. Workshop on Optimization in Image Processing, 27-30 June 2016, Harvard University, Boston, USA. "Majorization-Minimization for Nonconvex Optimization". (**p.l**.)
42. Workshop on Computational Inverse Problems - Insight and Algorithms, Copenhagen, Denmark, August 23–25, 2017. "*A Unified Framework for the Restoration of Images Corrupted by Additive White Noise***"** (c.t.).
43. VIPIMAGE 2017 October 2017, Porto, Portugal, *"Space-variant TV regularization for image restoration*". (Best Student Paper Award, PHD M. Pragliola).
44. CMBBE 2018. 5th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization. March 2018, Lisbon, Portugal. Minisymposium Organizer :"*New Mathematical Trends in Medical Imaging*". **(i.t)**
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47. Workshop in Image Science and Optimization, Hong Kong, January 11, 2019. "*Whiteness Constraints in a Unified Variational Framework for Image Restoration*" (invited).
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50. ETNA Conf. on Recent Advances in Scientific Computation Santa Margherita di Pula, Italy, May 27-29, 2019, *"Space-variant regularization for image restoration problems"* (**p.l**.)
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52. ICIAM 2019 Valencia, Spain July 15-19, Minisymposium on Computational Methods for Inverse Problems, "*Adaptive parameter selection for weighted-TV image reconstruction problems*" (i.t.)
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Physics", Tsinghua Sanya International Mathematics Forum (TSIMF) January 12-16, 2020, "*Space-adaptive anisotropic bivariate Laplacian regularization for image restoration*" (i.t.).
55. Thematic day on Non-Convex Sparse Optimization 9 October 2020 – ENSEEIHT, Toulouse, "*Convex Non-Convex Variational Models for Image Processing*" (i.t.)
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57. SIAM One World IMAGing and INvErse problems (IMAGINE) seminar series, September 22, 2021. *"I can see clearer now: the optimal regularization parameter"*.(p.l.).
58. Beijing Institute of Applied Physics and Computational Mathematics, November 15, 2021, "*The choice of the optimal regularization parameter*".(p.l.)
59. Numerical Methds for Large Scale Problems, NMLSP 2022, June6-10, 2022, Belgrade, "*Finding the optimal regularization parameter: old and new methods*". (p.l.)

RESEARCH INTERESTS

Numerical Analysis/Scientific Computing, and in particular:
- Ill-posed problems
- Variational Methods for Inverse Problems
- Numerical Linear Algebra
- Image Processing and Analysis
- Numerical Methods for Partial Differential Equation Based Image Processing
- Numerical Methods for Engineering problems

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SPECIAL VOLUMES AND CONFERENCE PROCEEDINGS (WITH REFEREES)

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4. M. Gei**,** F. Sgallari, **Personal Computer, Microsoft DOS, WINDOWS, FORTRAN con elementi di grafica ed esercizi,** Esculapio, Progetto Leonardo, Bologna, 1994.

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TEACHING ACTIVITY

Holder of many Italian and English taught courses at the Faculty of Engineering (Bachelor and Master), University of Bologna.
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- Teaching of "Enhancing sparsity beyond convexity: applications to the restoration of barcode images and segmentation of medical images". International Summer School "Advanced Numerical Techniques for Inverse Problems" at Cagliari (Italy), July 17-21, 2017

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PHD STUDENTS

- **Monica Pragliola,** PhD in Mathematics**,** University of Bologna, Italy, 2016-2019.
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POST-DOC. STUDENTS

- **Elena Franchini**, Title: *Metodi numerici a PDE paraboliche non lineari per l'eliminazione del rumore e la segmentazione di immagini 2D–3*D. CIRAM, Univ. Bologna, Jan-Dec. 2008.
- **Alessandro Lanza**, Title*:"Algoritmi Efficienti ed Accurati per la Restoration di Immagini 2D/3D per la Digital Image Correlation".* CIRI Edilizia e Costruzioni – Aug. 2012 -July 2013.
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- **Roberto Mecca**, Title: *"Analysis of new models and algorithms fro innovative 3D scanning technologies".* Dip. Matematica - Jan-Dec. 2015.
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- **Monica Pragliola**, Title: "Statistical space-invariant regularizing techniques for image processing", 2019-2020.
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