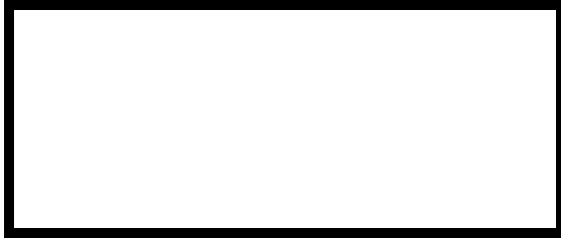


Emma Perracchione - Ph.D.



POSITION

03/20–Pres PostDoc, Department of Mathematics DIMA, University of Genova, *Artificial Intelligence for Solar Flares*, advisor Prof. M. Piana.

PREVIOUS POSITIONS

03/19–20 PostDoc, Department of Mathematics Tullio Levi-Civita, University of Padova, *Machine Learning and Data Fusion methods with application to environmental data*, advisor Prof. M. Putti; funded by UE ERA-PLANET GA n. 689443.

A.Y. 18/19 Contract Professor, Department of Industrial Engineering, University of Padova.

3/18–3/19 PostDoc, Department of Mathematics Tullio Levi-Civita, University of Padova, *Data Assimilation Methods for Machine Learning with application to environmental data*, advisor Prof. M. Putti; funded by UE ERA-PLANET GA n. 689443.

A.Y. 17/18 Contract Professor, Department of Industrial Engineering, University of Padova.

3/17–3/18 PostDoc, Department of Mathematics Tullio Levi-Civita, University of Padova, *Radial basis functions approximations: stability issues and applications*, advisor Prof. S. De Marchi; funded by Department of Mathematics Tullio Levi-Civita, No. BIRD167404.

1/14–3/17 Ph.D. student of the Doctoral School of Sciences and Innovative Technologies (Mathematics), University of Torino.

EDUCATION

24/03/17 Ph.D. in Mathematics cum Laudae, University of Torino. Advisor Prof. A. De Rossi *RBF-Based Partition of Unity Method: Theory, Algorithms and Applications*.

15/07/13 M.Sc. in Mathematics, University of Torino, (Numerical-Modelling Course), 110/110 cum Laudae and Honors.

20/07/11 B.Sc. in Mathematics, University of Torino.

RESEARCH INTERESTS

Approximation theory, scientific computing, scattered data interpolation, mathematical modelling, biomathematics, applied mathematics, reduced order methods.

SCIENTIFIC COLLABORATIONS

Prof. M. Buhmann, (University of Giessen, Germany); Prof. M.W. Farthing, Dr. S. Dutta (US Army, USA); Prof. E. Larsson, (University of Uppsala, Sweden);

Prof. T. Chácon Rebollo, (University of Sevilla, Spain); Prof. J.M. Vega (E.T.S.I. Aeronáuticos, UPM, Madrid, Spain); Prof. M. Azaïez (INP Bordeaux, France); Prof. G.E. Fasshauer (Colorado School of Mines, Golden, CO); Prof. A. Neisy (Allameh Tabataba’I University, Tehran, Iran); Prof. M. Piana (University of Genova); Prof. S. De Marchi, Prof. A. Martínez (University of Padova, Italy); Dr. G. Santin (University of Stuttgart, Germany); Prof. M. Rossini (University of Milano Bicocca, Italy); Prof. E. Venturino, Prof. A. De Rossi, Prof. R. Cavoretto, Dr. I. Stura (University of Torino, Italy).

PARTICIPATION IN RESEARCH GROUPS

- 2017–Pres. Member of the Research ITalian network on Approximation (RITA).
- 2016–Pres. Member of the Italian Society for Applied and Industrial Mathematics (SIMAI).
- 2015–Pres. Member of the Unione Matematica Italiana (UMI).
- 2013–Pres. Member of the National Group for Scientific Computing (GNCS-INdAM).

MEMBER OF ORGANIZING COMMITTEES

- 2019 Member of the organizing committee of the *Dolomites Research Week on Approximation* (DRWA19), Canazei, Italy, September 2-6, 2019.
- 2018 Member of the organizing committee of the *Dolomites Research Week on Approximation* (DRWA18), Canazei, Italy, September 10-14, 2018.
- 2018 Member of the organizing committee of the workshop *Seminari Padovani di Analisi Numerica* (SPAN18), Padova, Italy, May 3-4, 2018.
- 2016 Member of the organizing committee of the workshop *Il nettare della matematica*, Torino, Italy, October 7, 2016.
- 2016 Member of the organizing committee of the miniworkshop *Kernel-based methods and function approximation*, Torino, Italy, February 5, 2016.
- 2015 Member of the local organizing committee of the International Workshop CAMo: *from molecules to modeling*, Torino, Italy, September 14-15, 2015.
- 2014–2016 Member of the organizing committee of the Ph.D. Seminars of the Department of Mathematics G. Peano, University of Torino.

EDITOR

- 2018 Guest editor for the Dolomites Research Notes on Approximation – Special issue SPAN2018.

AWARDS, PRIZES AND GRANTS

- 2017 Granted participant for the ENUMATH17, September 25-29 2017, sponsored by GNCS-INdAM.
- 2014–2016 Three-years Ph.D. scholarship sponsored by University of Torino.
- 2016 Funding *Young Researchers* for the project *Tecniche per l'approssimazione locale ottimale con metodi meshfree*, sponsored by GNCS-INdAM (used for research period abroad).
- 2015 Three-months granted student for the DOC-COURSE in Applied Mathematics and Optimization, March 2 - May 29, 2015, sponsored by European Cooperation in Science and Technology, University of Sevilla, University of the Basque Country and Basque Center for Applied Mathematics.

- 2015 Award *Silver Medal* sponsored by the University of Torino for the best master thesis in the academic year 2012-2013.
- 2015 Prize *Luciana Picco Botta* sponsored by the University of Torino for the best master thesis in the academic year 2012-2013.
- 2014 Granted student for the Dobbiaco Summer School, June 15-20 2014, sponsored by GNCS-INDAM.

————— FUNDINGS AND PARTICIPATION IN RESEARCH PROJECTS

- 2020 Collaborator for the project *Approssimazione multivariata ed applicazioni*, PI: Lucia Romani, sponsored by GNCS-INDAM.
- 2019 Collaborator for the project *Kernel-based approximation, multiresolution and subdivision methods and related applications*, PI: Francesco Dell’Accio, sponsored by GNCS-INDAM.
- 2018 Collaborator for the project *Metodi, algoritmi e applicazioni dell’approssimazione multivariata*, PI: Alessandra De Rossi, sponsored by GNCS-INDAM.
- 2016 Collaborator for the project: *Il nettare della matematica*, sponsored by Fondo Fondazione Ricerca e Talenti, Fondazione CRT, Torino.
- 2016–2017 Collaborator for the two-years project: *Metodi e modelli numerici per le scienze applicate*, sponsored by University of Torino.
- 2015–2016 Collaborator for the two-years project: *Metodi numerici nelle scienze applicate*, sponsored by University of Torino.
- 2015–2016 Collaborator for the two-years project: *Tecniche di interpolazione per PDE*, sponsored by University of Torino.

————— RESEARCH PERIOD ABROAD AND VISITS

- 2016 Visiting researcher invited by Prof. S. De Marchi (University of Padova, Department of Mathematics), 28-30 November, 2016.
- 2015 Visiting researcher invited by Prof. M. Azaïez (INP Bordeaux, France), 18-23 October, 2015.
- 2015 Three months in Sevilla and Bilbao (Spain) for the DOC-COURSE in Applied Mathematics and Optimization. The activity consisted in four courses in applied mathematics and research activity.

————— PERSONAL SKILLS

- Computer skills Good knowledge of: Microsoft Office Tools, C++, SAS Enterprise Miner¹, Phyton, Fortran, Xppaut, POV-Ray, MATLAB (excellent), Maple (excellent), Statistica (excellent).
- Languages Italian (mother tongue), English² (B2), French³ (speaking and understanding B2, writing A2), Spanish (A1).

Personal skills

¹Certified by Regione Piemonte and University of Torino for the course *Statistica e Data Mining per le Applicazioni*, 23/05/11.

²IESOL, issued by City & Guilds, 03/05/14, (First class pass).

³Attestation Européenne d’Études Françaises, issued by Centre Méditerranéen d’Études Françaises, 17/09/2005. Diplôme d’Études en langue Française DELF A2, issued by Ministère de L’Éducation Nationale de L’Enseignement et de la Recherche, 29/06/06.

Good communication and organizational skills gained through the participation in various university team projects.

REFeree/REVIEWER

Referee for the following journals

Applied Mathematics and Computation; Computers and Mathematics with Applications; Journal of Computational and Applied Mathematics; Mathematics and Computers in Simulation; The European Physical Journal Plus; International Journal of Control; International Journal of Nonlinear Sciences and Numerical Simulation; Journal of Statistical Theory and Applications; Dolomites Research Notes on Approximations; Mathematical Reviews (AMS).

Referee for the following conference proceedings and volumes

LSSC proceedings of the Eleventh International Conference on Large-Scale Scientific Computations June 10-14, 2019, Sozopol, BULGARIA; AIP Conf. Proc. of the International Conference Numerical Computations: Theory and Algorithms, Pizzo Calabro, Italy, 19-25 July.

PUBLICATIONS

Technical reports

1. E. Perracchione, M. Polato, W. Erb, F. Piazzon, F. Marchetti, F. Aiolli, B. Bayat, A. Botto, S. De Marchi, S. Kollet, C. Montzka, A. Sperduti, M. Vianello, M. Putti, *Modelling and processing services and tools*, 2019, GEO Essential Deliverable 1.3; http://www.geoessential.eu/wp-content/uploads/2019/10/Deliverable1.3_2019Final.pdf.
2. E. Perracchione, M. Polato, W. Erb, F. Piazzon, F. Marchetti, F. Aiolli, B. Bayat, A. Botto, S. De Marchi, S. Kollet, C. Montzka, A. Sperduti, M. Vianello, M. Putti, *Data fusion guidelines*, 2019, GEO Essential Deliverable 1.6; http://www.geoessential.eu/wp-content/uploads/2019/10/Deliverable1.6_2019Final.pdf.
3. E. Perracchione, M. Polato, D. Tran, F. Piazzon, F. Aiolli, S. De Marchi, S. Kollet, C. Montzka, A. Sperduti, M. Vianello, M. Putti, *Modelling and processing services and tools*, 2018, GEO Essential Deliverable 1.3; http://www.geoessential.eu/wp-content/uploads/2019/01/GEOEssential-D_1.3_final.pdf.
4. E. Perracchione, M. Polato, D. Tran, F. Piazzon, F. Aiolli, S. De Marchi, S. Kollet, C. Montzka, A. Sperduti, M. Vianello, M. Putti, *Data fusion guidelines*, 2018, GEO Essential Deliverable 1.6; http://www.geoessential.eu/wp-content/uploads/2019/01/GEOEssential-D_1.6_final.pdf.

Miscellanea

1. E. Perracchione, *Kernel-based methods: a general overview*, Seminario Dottorato 2017/2018, pp. 81–90, 2018; https://dottorato.math.unipd.it/sites/default/files/inline-files/Booklet_Seminario_Dottorato_2017-2018.pdf

Publications in journals

1. E. Perracchione, *RBF-based tensor decomposition with applications to oenology*, Dolomites Res. Notes Approx. **13** (2020), 36–46.
2. S. De Marchi, W. Erb, F. Marchetti, E. Perracchione, M. Rossini, *Shape-Driven Interpolation with Discontinuous Kernels: Error Analysis, Edge Extraction and Applications in Magnetic Particle Imaging*, SIAM J. Sci. Comput. **42** (2020), B472–B491.
3. S. De Marchi, F. Marchetti, E. Perracchione, *Jumping with Variably Scaled Discontinuous kernels (VSDKs)*, to appear on BIT Numerical Mathematics, 2019; <https://doi.org/10.1007/s10543-019-00786-z>.
4. S. De Marchi, F. Marchetti, E. Perracchione, D. Poggiali, *Polynomial interpolation via mapped bases without resampling*, J. Comput. Appl. Math. **364**, 2020.
5. R. Campagna, S. Cuomo, S. De Marchi, E. Perracchione, G. Severino, *A stable meshfree PDE solver for source-type flows in porous media*, Appl. Num. Math. **149** (2020), pp. 30–42.
6. I. McCallum, C. Montzka, B. Bayat, S. Kollet, A. Kolotii, N. Kussul, M. Lavreniuk, A. Lehmann, J. Maso, P. Mazzetti, A. Mosnier, E. Perracchione, M. Putti, M. Santoro, I. Serral, L. Shumilo, D. Spengler, S. Fritz, *Developing food, water and energy nexus workflows*, Int. J. Digit. Earth, (2019), DOI: 10.1080/17538947.2019.1626921.
7. M. Buhmann, S. De Marchi, E. Perracchione, *Analysis of a new class of rational RBF expansions*, to appear on IMA J. Numer. Anal. 2019; doi.org/10.1093/imanum/drz015.
8. M. Aminian Shahrokhhabadi, A. Neisy, E. Perracchione, M. Polato, *Learning with subsampled kernel-based methods: Environmental and financial applications*, Dolomites Res. Notes Approx. **12** (2019), pp. 17–27.
9. S. De Marchi, A. Martínez, E. Perracchione, M. Rossini, *RBF-based partition of unity methods for elliptic PDEs: Adaptivity and stability issues via variably scaled kernels*, J. Sci. Comput. **79** (2019), pp. 321–344, doi: 10.1007/s10915-018-0851-2.
10. S. De Marchi, A. Martínez, E. Perracchione, *Fast and stable rational RBF-based partition of unity interpolation*, J. Comput. Appl. Math. **349** (2019), pp. 331–343; doi.org/10.1016/j.cam.2018.07.020.
11. M. Azaïez, T. Chácon Rebollo, E. Perracchione, J. M. Vega, *Recursive POD expansion for advection-diffusion-reaction equation*, Comm. Comput. Physics **24** (2018), pp. 1556–1578, doi: 10.4208/cicp.OA-2017-0257.

12. E. Perracchione, *Rational RBF-based partition of unity method for efficiently and accurately approximating 3D objects*, Comput. Appl. Math. (2018), **37**, pp. 4633–4648, DOI: 10.1007/s40314-018-0592-8.
13. I. Stura, E. Perracchione, G. Migliaretti, F. Cavallo, *A new numerical method for processing longitudinal data: clinical applications*, Epidemiology Biostatistics and Public Health **15** (2018), pp. 1–8, DOI: 10.2427/12881.
14. R. Cavoretto, A. De Rossi, E. Perracchione, *Optimal selection of local approximants in RBF-PU interpolation using bivariate LOOCV*, J. Sci. Comput. **74** (2018), pp. 1–22, DOI: 10.1007/s10915-017-0418-7.
15. A. De Rossi, E. Perracchione, E. Venturino, *Meshless partition of unity method for attraction basins of periodic orbits: Fast detection of separatrix points*, Dolomites Res. Notes Approx. **11** (2018), pp. 15–22.
16. A. De Rossi, E. Perracchione, *Positive constrained approximation via RBF-based partition of unity method*, J. Comput. Appl. Math. **319** (2017), pp. 338–351, DOI: 10.1016/j.cam.2017.01.024.
17. R. Cavoretto, S. De Marchi, A. De Rossi, E. Perracchione, G. Santin, *Partition of unity interpolation using stable kernel-based techniques*, Appl. Numer. Math. **116** (2017), pp. 95–107, DOI:10.1016/j.apnum.2016.07.005.
18. E. Perracchione, I. Stura, *RBF kernel method and its applications to clinical data*, Dolomites Res. Notes Approx. **9** (2016), pp. 13–18, DOI: 10.14658/pupj-drna-2016-Special-Issue-3.
19. A. De Rossi, E. Perracchione, E. Venturino, *Fast strategy for PU interpolation: An application for the reconstruction of separatrix manifolds*, Dolomites Res. Notes Approx. **9** (2016), pp. 2–12, DOI: 10.14658/pupj-drna-2016-Special-Issue-2.
20. R. Cavoretto, A. De Rossi, E. Perracchione, *Efficient computation of partition of unity interpolants through a block-based searching technique*, Comput. Math. Appl. **71** (2016), pp. 2568–2584, DOI: 10.1016/j.camwa.2016.04.021.
21. R. Cavoretto, A. De Rossi, E. Perracchione, E. Venturino, *Graphical representation of separatrices of attraction basins in two and three dimensional dynamical systems*, Int. J. Comput. Math. **14** (2017), pp. 1750008-1–1750008-16, DOI: 10.1142/S0219876217500086.
22. R. Cavoretto, A. De Rossi, E. Perracchione, E. Venturino, *Robust approximation algorithms for the detection of attraction basins in dynamical systems*, J. Sci. Comput. **68** (2016), pp. 395–415, DOI: 10.1007/s10915-015-0143-z.
23. R. Cavoretto, A. De Rossi, E. Perracchione, *Partition of unity interpolation on multivariate convex domains*, Int. J. Model. Simul. Sci. Comput. **6** (2015), pp. 1–17, DOI: 10.1080/00207160.2013.867955.

24. R. Cavoretto, A. De Rossi, E. Perracchione, E. Venturino, *Reliable approximation of separatrix manifolds in competition models with safety niches*, Int. J. Comput. Math. **92** (2015), pp. 1826–1837, DOI: 10.1142/S1793962315500348.

Publications in conference proceedings and volumes

1. S. De Marchi, W. Erb, E. Francomano, F. Marchetti, E. Perracchione, D. Poggiali, *Fake nodes approximation for magnetic particle imaging*, in: IEEE, Proc. of Melecon 2020.
2. R. Cavoretto, A. De Rossi, G. E. Fasshauer, M. J. McCourt, E. Perracchione, *Anisotropic weights for RBF-PU interpolation with subdomains of variable shapes*, in: F.A. Radu et al. (Eds.), Proc. of ENUMATH17, 2019, Lecture Notes in Computational Science and Engineering 126, pp. 93-101, DOI 978-3-319-96415-7-6.
3. R. Cavoretto, A. De Rossi, E. Perracchione, *Surface approximation of basins of attraction through RBF interpolation schemes*, in: J. Vigo-Aguiar et al. (Eds.), Proc. of CMMSE17, vol. 2, 2017, pp. 523–529.
4. R. Cavoretto, A. De Rossi, E. Perracchione, *RBF-PU interpolation with variable subdomain sizes and shape parameters*, in: T.E. Simos et al. (Eds.), NUMPTA16 AIP Conf. Proc., vol. 1776, 2016, pp. 070003-1–070003-4, DOI: 10.1063/1.4965349.
5. R. Cavoretto, S. De Marchi, A. De Rossi, E. Perracchione, G. Santin, *Approximating basins of attraction for dynamical systems via stable radial bases*, in: T.E. Simos et al. (Eds.), ICNAAM15 AIP Conf. Proc., vol. 1738, 2016, pp. 390003-1–390003-4, DOI: 10.1063/1.4952177.
6. E. Perracchione, I. Stura, *A RBF-PSO based approach for modeling prostate cancer*, in: T.E. Simos et al. (Eds.), ICNAAM15 AIP Conf. Proc., vol. 1738, 2016, pp. 390008-1–390008-4, DOI: 10.1063/1.4952182.
7. R. Cavoretto, A. De Rossi, E. Perracchione, *Fast and flexible interpolation via PUM with applications in population dynamics*, in: T.E. Simos et al. (Eds.), ICNAAM15 AIP Conf. Proc., vol. 1738, 2016, pp. 390005-1–390005-4, DOI: 10.1063/1.4952179.
8. R. Cavoretto, S. De Marchi, A. De Rossi, E. Perracchione and G. Santin, *RBF approximation of large datasets by partition of unity and local stabilization*, in: I.P. Hamilton et al. (Eds.), Proc. of CMMSE15, 2015, pp. 317–326.
9. G. Sabetta, E. Perracchione, E. Venturino, *Wild herbivores in forests: four case studies*, in: R.P. Mondaini (Ed.), Proc. of BIOMAT14, 2015, pp. 56–77, DOI: 10.1142/9789814667944-0005.
10. A. De Rossi, I. Ferrua, E. Perracchione, G. Ruatta, E. Venturino, *Competition models with niche for squirrel population dynamics*, in: T.E. Simos et al. (Eds.), ICNAAM13 AIP Conf. Proc., vol. 1558, 2013, pp. 1818–1821, DOI: 10.1063/1.4825880.
11. R. Cavoretto, A. De Rossi, E. Perracchione, E. Venturino, *Reconstruction of separatrix curves and surfaces in squirrels competition models with niche*, in: I.P. Hamilton et al. (Eds.), Proc. of CMMSE13, vol. 2, 2013, pp. 400–411.

Softwares

1. Learning via Variably scaled kernels - Software in Python, available at <https://github.com/emmaA89/SVM-VSK>.
2. Jumping with VSDKs - Software in Matlab, available at <https://github.com/emmaA89/VSDKs>.
3. Modelling and processing services and tools (work in progress for GeoEssential project) - Software in Python, available at <https://github.com/emmaA89/vlabprediction>.
4. Fake nodes for polynomial interpolation - Software in Python, available at <https://github.com/emmaA89/FakeNodes/>.
5. Learning with subsampled kernel-based methods - Software in Python, available at <https://github.com/emmaA89/vlabtestrepo/>.
6. Fast and Stable Rational RBF-based Partition of Unity interpolation - Software in Matlab, available at https://github.com/emmaA89/FastRVSK_PU.
7. Hybrid Variably Scaled Kernels by Partition of Unity for elliptic PDEs - Software in Matlab, available at https://github.com/emmaA89/HVSK_PU.
8. Robust approximation algorithms for the detection of attraction basins in dynamical systems - Software in Matlab, available at <http://hdl.handle.net/2318/1520518>.
9. Fast computation of partition of unity interpolants through block-based data structures - Software in Matlab, available at <http://hdl.handle.net/2318/158790>.
10. Partition of unity interpolation using stable kernel-based techniques - Software in Matlab available at <http://hdl.handle.net/2318/1527447>.
11. Optimal selection of local approximants in RBF-PU interpolation - Software in Matlab available at <http://hdl.handle.net/2318/1559094>.

SCIENTIFIC COMMUNICATIONS

Scientific communications with invitation letter for minisymposia

1. Speaker for the special session *Theory and Practice of meshless Fluid-Simulations* at ICIAM19, Valencia, Spain, July 15-20, 2019.
Discontinuous kernel-based ROMs for modeling heat transfer.
2. Speaker for the special session *Recent Advances in Radial Basis Function Methods* at ICOSAHOM18, London, UK, July 09-13, 2018.
Fast and stable rational RBF-based Partition of Unity interpolation, joint work with M.D. Buhmann, S. De Marchi, A. Martínez, E. Perracchione.

3. Speaker for the special session *Kernel methods for large scale problems: Algorithms and applications* at ENUMATH17, Voss, Norway, September 25-29, 2017.
Anisotropic weights for RBF-PU interpolation with subdomains of variable shapes, joint work with R. Cavoretto, A. De Rossi, G.E. Fasshauer.
4. Speaker for the special session *Kernel Methods* at MMCS16, Toensberg, Norway, June 23-28, 2016.
On the optimal choice of local RBF approximants in the partition of unity interpolation, joint work with R. Cavoretto, A. De Rossi.
5. Speaker for the special session *Mathematical Models and Numerical Methods in Life Sciences* at ICNAAM15, Rhodes, Greece, September 23-29, 2015.
Fast and flexible interpolation via PUM with applications in population dynamics, joint work with R. Cavoretto, A. De Rossi.

Scientific communications as speaker
1. E. Perracchione, *RBFs and tensors for scoring wines*, Multivariate Approximation: Theory and Applications MATA2020, January 16-18, 2020, Perugia, Italia.
2. E. Perracchione (EU project, PI M. Putti), *Data-based models for satellite images*, Numerical Computations: Theory and Algorithms, NUMTA 2019, 15-21 June, Capo Rizzuto, Italia.
3. E. Perracchione (EU project, PI M. Putti), *Discontinuous reduced bases for satellite images*, Approssimazione Multivariata: Teoria ed Applicazioni AMTA 2019, 24-26 January, Napoli, Italia.
4. M. Aminian Shahrokhbabadi, E. Perracchione, M. Polato, M. Putti, *Smooth kernel machines for environment and finance*, Dolomites Research Week on Approximation (DRWA18), Alba di Canazei, Italy, September 10-14, 2018.
5. M. Azaïez, T. Chácon Rebollo, E. Perracchione*, J. M. Vega, *Recursive POD for real time simulations of a ventilated temperature-controlled room*, Seminari Padovani di Analisi Numerica, Padova, Italy, May 3-4, 2018.
6. E. Perracchione*, M. Polato, D. Tran, F. Piazzon, F. Aioli, S. De Marchi, A. Sperduti, M. Vianello, M. Putti, *Modelling and processing services*, GeoEssential Meeting, Palma di Maiorca, Spain, April 23-25, 2018.
7. S. De Marchi, A. Martínez, E. Perracchione*, *Numerical linear algebra techniques for efficient RBFs interpolation and collocation*, Due giorni di Algebra Lineare Numerica e Applicazioni, Padova, Italy, February 8-9, 2018.
8. S. De Marchi, A. Martínez, E. Perracchione*, *Rational stable RBF-PU interpolation via VSKs*, Dolomites Research Week on Approximation (DRWA17), Alba di Canazei, Italy, September 4-8, 2017.

9. S. De Marchi, A. Martínez, E. Perracchione*, M. Rossini, *RBF-based Partition of Unity Method for Elliptic PDEs: An Adaptive Greedy Approach*, miniworkshop Multivariate Approximation: Theory, Algorithms and Applications (MATAA17), May 25–26, 2017, Turin, Italy.
10. E. Perracchione, *On the adaptivity of the PU method for interpolation and collocation*, Padova, Italy, October 29, 2016.
11. C. Guiot, E. Perracchione, I. Stura, *Follow-app: un amico per la prostata*, Notte Europa dei Ricercatori, Torino, Italy, September 30, 2016.
12. R. Cavoretto, A. De Rossi, E. Perracchione*, *Approximation of scattered data using positive and accurate partition of unity interpolants*, Dolomites Workshop on Constructive Approximation and Applications (DWCAA16), Alba di Canazei, Italy, September 8-13, 2016.
13. R. Cavoretto, A. De Rossi, E. Perracchione*, E. Venturino, *Efficient algorithms for kernel-based partition of unity interpolation with applications in geometric design*, miniworkshop Kernel-based methods and function approximation, Torino, Italy, February 5, 2016.
14. E. Perracchione, *Efficient RBF-PU interpolation through block-based data structures*, Welcome Home Workshop, Torino, Italy, December 21, 2015.
15. R. Cavoretto, A. De Rossi, E. Perracchione*, *Detection and approximation of attraction basins in dynamical systems*, XX UMI (UMI15), Siena, Italy, September 7-12, 2015.
16. M. Azaïez, T. Chácon Rebollo, M. Gómez Marmol, E. Perracchione*, J. M. Vega, *Recursive POD with applications in fluid dynamics: modelling of air-wall heat transfer in buildings*, BCAM Workshop on Mathematics and its Applications, Bilbao, Spain, May 27-29, 2015.
17. R. Cavoretto, A. De Rossi, E. Perracchione*, E. Venturino, *An efficient algorithm to model dynamical system's separatrix manifolds*, Dolomites Research Week on Approximation (DRWA14), Alba di Canazei, Italy, September 8-12, 2014.
18. R. Cavoretto, A. De Rossi, E. Perracchione*, E. Venturino, *Approximation of the basins of attraction in dynamical systems*, Models in Population Dynamics and Ecology (MPDE14), Torino, Italy, August 25-29, 2014.

TEACHING EXPERIENCE

Thesis

1. Co-supervisor of the following master thesis: An adaptive radial basis function method for solving PDEs by Danilo Stocchino (UNIPD).

Teaching abroad

1. Lecturer for the workshop *Meshless Methods and Applications in Finance*, Departments of Mathematics of Allameh Tabataba'I University, Tehran, Iran, February 2019 (6 hours, co-lecturer with S. De Marchi, E. Larsson).
2. Lecturer for the workshop *Meshless Methods: Theory, Algorithms, Applications and Software*, Departments of Mathematics of Allameh Tabataba'I University, Tehran, Iran, January 2018 (8 hours, co-lecturer with S. De Marchi).

Teaching professor

1. *Numerical Analysis*, bachelor course, Department of Industrial Engineering University of Padova, March 2019 - February 2019 (24 hours, co-lecturer with F. Piazzon).
2. *Numerical Analysis*, bachelor course, Department of Industrial Engineering University of Padova, March 2018 - February 2018 (8 hours, co-lecturer with S. De Marchi).

Tutor

1. *Numerical Analysis*, bachelor course, Department of Informatics, University of Padova, held by M. Redivo Zaglia, A. Martínez, March 2019 - June 2019 (20 hours).
2. *Numerical Analysis*, bachelor course, Department of Industrial Engineering, University of Padova, held by A. Martínez and M. Vianello, March 2018 - June 2018 (24 hours).
3. *Percorso di Eccellenza*, bachelor course, Department of Mathematics G. Peano, University of Torino, held by P. Caldiroli, March 2018 - June 2018 (20 hours).
4. *Numerical Analysis*, bachelor course, Department of Industrial Engineering, University of Padova, held by A. Martínez and M. Vianello, March 2017 - June 2017 (26 hours).
5. *Percorso di Eccellenza*, bachelor course, Department of Mathematics G. Peano, University of Torino, held by P. Caldiroli, March 2017 - June 2017 (20 hours).
6. *Advanced Numerical Analysis*, master course, Department of Mathematics G. Peano, University of Torino, held by R. Cavoretto and A. De Rossi, October 2016 - January 2017 (22 hours).
7. *Advanced numerical analysis*, master course, Department of Mathematics G. Peano, University of Torino, held by R. Cavoretto and A. De Rossi, October 2015 - December 2015 (18 hours).
8. *Mathematics*, bachelor course, Department of Agricultural Sciences, University of Torino, held by F. Ferrara, October 2015 - February 2016 (20 hours).

Seminarial activities for undergraduate students

1. *Introduction to Numerical Analysis* for “Progetto Lauree Scientifiche”, held by S. De Marchi, I.I.S. Newton, Piove di Sacco, January-February 2018 (6 hours).
2. *Kernel-based methods: a general overview*, Seminari del dottorato, University of Padova, Italy, March 28, 2018.
3. *Api informatiche*, Il nettare della matematica, Torino, Italy, October 7, 2016.
4. *Scattered data approximation: Fast algorithms and applications*, Ph.D. Seminars, University of Torino, Italy, October 15, 2014.
5. *Introduzione alla matematica applicata*, I.I.S. Fermi-Galilei, Cirié, Italy, January 17, 2013.

FORMATIVE ACTIVITIES

Conferences, workshops and schools

1. *Approssimazione Multivariata: Teoria ed Applicazioni*, Palermo, Italy, December 8-10, 2017.
2. *Franco-Italian mathematical ecology days*, University of Torino, Italy, November 16-17, 2016.
3. Dolomites Research Week on Approximation (DRWA15), *RBF-QR method, Polynomial approximation on Lissajous curves and Constructive non-polynomial approximations of spherical functions: Algorithm, analysis, fast evaluation and application*, Alba di Canazei Italy, September 5-8, 2015. Lectures: Prof. E. Larsson (University of Uppsala, Sweden); Prof. L. Bos (University of Verona, Italy); Prof. M. Ganesh (University of Golden, Colorado, USA).
4. *Mixed Integer Nonlinear Programming* (MINLP15), Sevilla, Spain, March 30-April 1, 2015.
5. Dobbiaco Summer School, *Matrix Theory and Computation with Applications to Network Analysis, Quantum Chemistry and Dynamical Systems*, Dobbiaco, Italy, June 15-20, 2014. Lecturers: Prof. M. Benzi (University of Emory, Atlanta, USA); Prof. N. Guglielmi (University of L’Aquila, Italy); Prof. M.L. Overton (Courant Institute, New York, USA).

Courses

1. *Advanced course in Nonlinear Optimization*, University of Sevilla, Spain, 2015. Lecturers: Prof. E. Carrizosa, Prof. J. Puerto (University of Sevilla, Spain); Prof. J.B. Lasserre (LAASS-CNRS-Toulouse, France).
2. *Multiscale and Multiphysic Computational Mathematical Modeling*, University of Sevilla, Spain, 2015. Lecturers: Prof. D. Pardo, (University of the Basque Country, Spain); Prof. J. Jansson (Basque Center for Applied Mathematics, Spain).

3. *Computational fluid dynamics*, University of Sevilla, Spain, 2015. Lecturers: Prof. E.F. Nieto, Prof. F. Guillen (University of Sevilla, Spain); Prof. L. Remaki (Basque Center for Applied Mathematics, Spain).
4. *Modelling and optimization algorithms in networks design and energy planning*, University of Sevilla, Spain, 2015. Lecturers: Prof. J.A. Mesa, Prof. F. Ortega-Riejos (University of Sevilla, Spain); Prof. G. Perez, Prof. M. Merino (University of the Basque Country, Spain); L. Escudero (European Cooperation in Science and Technology).
5. *Optimization methods for engineering*, Politecnico di Torino, Italy, 2014. Lecturers: Prof. M. Repetto, Prof. F. Freschi (Electrical Engineering Department, Politecnico di Torino, Italy).
6. *Numerical Methods for Scattered Data Approximation*, University of Torino, Italy, 2014. Lecturers: Prof. A. De Rossi, Prof. R. Cavoretto (Department of Mathematics, University of Torino, Italy).
7. *Some recent models in mathematical population theory*, University of Torino, Italy, 2014. Lecturers: Prof. E. Venturino (Department of Mathematics, University of Torino, Italy).

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