

Maria Brigida Ferraro

Curriculum Vitae

23-05-2022

General Information

Full Name: Maria Brigida Ferraro

Address: Dipartimento di Scienze Statistiche, Sapienza Università di Roma, P.le Aldo Moro, 5 - 00185 - Roma, RM (Italy)

Phone Number: (+39) 0649910085

E-mail: mariabrigida.ferraro@uniroma1.it

Spoken Languages: Italian, English, Spanish

Education

- Ph.D. in Statistical Methodology (February 27, 2009)
Sapienza Università di Roma, RM (Italy)
Thesis topic: A linear regression model for LR fuzzy random variables: Properties and Inferential Procedures
Advisors: Prof. Renato Coppi (Sapienza Università di Roma), Prof. Ana Colubi (Universidad de Oviedo)
- B.S. in Statistics, GPA 110/110 summa cum laude, a.y. 2003-2004
Sapienza Università di Roma, RM (Italy)
Thesis topic: Fuzzy clustering methods based on an entropy criterion
Advisor: Prof. Renato Coppi

Appointments

Academic Appointments

- *Associate Professor* (Professore di II fascia)
Sapienza Università di Roma
Dipartimento di Scienze Statistiche
SSD: SECS-S/01
01/10/19 -
- *Assistant Professor* (RTD b)
Sapienza Università di Roma
Dipartimento di Scienze Statistiche
SSD: SECS-S/01
01/10/16 - 30/09/19

- *Assistant Professor* (RTD a)
Sapienza Università di Roma
Dipartimento di Scienze Statistiche
SSD: SECS-S/01
Topic: Latent variable models for the analysis of longitudinal socio-economic data
01/12/13 - 30/09/16
- *Research fellow*
Consiglio Nazionale delle Ricerche (CNR)
Istituto di Calcolo e Reti ad Alte Prestazioni (ICAR) - Napoli
Topic: Analysis and design of a software prototype for the analysis of omic data in a distributed computing environment, using error resilient methodologies (research program *InterOmics*)
01/10/12 - 30/11/13
- *Post Doc*
Sapienza Università di Roma
Dipartimento di Statistica, Probabilità e Statistiche Applicate
SSD: SECS-S/01
Topic: Metodologia Statistica relativa alle tecniche di analisi esplorative e inferenziali
01/02/10 - 31/01/12
- *Pre-doctoral Research fellow*
Universidad de Oviedo (Spain)
01/11/07 - 31/10/08

Other Appointments

- *Contratto di ricerca* conto terzi con YARD (in collaboration with Fiorenza Deriu, Umberto Ferraro Petrillo, Maurizio Vichi)
Sapienza Università di Roma
Dipartimento di Scienze Statistiche
Topic: Definizione di un algoritmo per la stima a medio-termine del valore di asset immobiliari di varia natura e tipologia sulla base di fattori socio-economici e di sentiment
- *Contratto di ricerca* conto terzi con l'Unione delle Camere Penali Italiane (in collaboration with Fiorenza Deriu, Fabio Grasso, Stefania Gubbiotti)
Sapienza Università di Roma
Dipartimento di Scienze Statistiche
Topic: Design and analysis of a survey on pre-trial detention: *Indagine sulla custodia cautelare in Italia*
15/07/15 - 14/06/16
- *Affiliated researcher*
European Centre for Soft Computing, Mieres (Spain)
Research Unit: Intelligent Data Analysis and Graphical Models
01/04/07 - 01/10/08

- *Scholarship*
Caspur (Consorzio Interuniversitario per le Applicazioni di Supercalcolo Per Università e Ricerca) - Roma
01/03/05 - 31/07/05

Academic duties

- Member of the *Collegio dei Docenti* for the PhD programme in 'Statistical Sciences', Dipartimento di Scienze Statistiche, Sapienza Università di Roma
2019 -
- Member of the *Collegio dei Docenti* for the PhD programme in Natural Resources Engineering, Indurot, Universidad de Oviedo, Spain
2019 .
- Member of the *Collegio dei Docenti* for the Master in 'Big Data. Metodi Statistici per la società della conoscenza', Dipartimento di Scienze Statistiche, Sapienza Università di Roma
2016 -
- Member of the *Collegio dei Docenti* for the Master in 'BANKING AND FINANCE (BA.FI.)', Dipartimento di Management, Sapienza Università di Roma
2020 -
- Member of the *University Research Committee*, Sapienza Università di Roma
2019-2020
- Program coordinator from Sapienza for Data Analyst Track - Double Master's Degree between Sapienza Università di Roma and ENSAI (Ecole Nationale de la Statistique et de l'Analyse de l'Information)
- Coordinator of Data Analyst track - Master degree in 'Statistical Methods and Application', Dipartimento di Scienze Statistiche, Sapienza Università di Roma
2019 -
- Admission Board member for the Master degree in 'Statistical Methods and Application', Dipartimento di Scienze Statistiche, Sapienza Università di Roma
2018-
- Elected member of the council of Facoltà di Ingegneria dell'Informazione, Informatica e Statistica, Sapienza Università di Roma
2016-2019
- Elected member of the council of Dipartimento di Scienze Statistiche, Sapienza Università di Roma
2015-2016
2016-2019

- Academic responsible for mobility - Statistical Sciences 2013-

Responsible for the Erasmus Agreements between Department of Statistical Sciences (Sapienza University of Rome) and:

- University of Salzburg, Department of Mathematics, Austria
- University of Oviedo, Department of Statistics, Spain
- Cyprus University of Technology, Mathematics and statistics Area, Cyprus
- University of Bremen, Department of Mathematics and Computer Science, Germany
- Universidad Complutense de Madrid, Faculty of Mathematical Sciences, Spain
- Universidad Complutense de Madrid, Faculty of Statistical Studies, Spain

Teaching experience

Instructor

- Course: *Clustering of complex data structures*
PhD in Scuola di Scienze Statistiche
Dipartimento di Scienze Statistiche - Sapienza Università di Roma
a.y. 2021-2022
- Course: *Computational Statistics* (in english)
Master Degree in Statistical Methods and Applications
Dipartimento di Scienze Statistiche, Facoltà di Ingegneria dell'Informazione, Informatica e Statistica - Sapienza Università di Roma
a.y. 2021-2022, 2020-2021, 2019-2020, 2018-2019
- Course: *Statistics I*
Degree in Statistics, Economics and Society
Dipartimento di Scienze Statistiche, Facoltà di Ingegneria dell'Informazione, Informatica e Statistica - Sapienza Università di Roma
a.y. 2021-2022, 2020-2021, 2019-2020, 2017-2018, 2015-2016, 2014-2015
- Course: *Statistics I*
Degree in Statistics, Economics, Finance and Insurance
Dipartimento di Scienze Statistiche, Facoltà di Ingegneria dell'Informazione, Informatica e Statistica - Sapienza Università di Roma
a.y. 2016-2017
- Course: *Analysis of Complex Data Structures*
Master degree in Statistics and Decision Sciences
Dipartimento di Scienze Statistiche, Facoltà di Ingegneria dell'Informazione, Informatica e Statistica - Sapienza Università di Roma
a.y. 2013-2014

- Course: *Medical statistics*
Degree in Professioni Sanitarie 'Tecniche diagnostiche'
Facoltà di Medicina - Sapienza Università di Roma
a.y. 2012-2013
- Course: *Statistics*
Facoltà di Filosofia - Sapienza Università di Roma
10/04/2009-10/08/2009
- Module: *Unsupervised classification*
Master in BIG DATA. METODI STATISTICI PER LA SOCIETÀ DELLA CONOSCENZA
Dipartimento di Scienze Statistiche, Sapienza Università di Roma
a.y. 2021-2022, 2020-2021, 2019-2020, 2018-2019, 2017-2018, 2016-2017
- Module: *Elementi di programmazione in R* (with P. Giordani)
Master in BANKING AND FINANCE (BA.FI.)
Dipartimento di Management, Sapienza Università di Roma
a.y. 2021-2022, 2020-2021
- Module: *Laboratorio avanzato di Classificazione di Big Data numerici*
Master in METODOLOGIA e TECNICHE AVANZATE DI RICERCA SOCIALE (MeTARS)
Dipartimento di Comunicazione Ricerca Sociale (CoRis), Sapienza Università di Roma
2021
- Module: *Software for data science: R/RStudio* (with P. Giordani)
Master in BANKING AND FINANCE (BA.FI.)
Dipartimento di Management, Sapienza Università di Roma
a.y. 2019-2020
- Module: *Latent variable models* (with M. Vichi)
Master in BIG DATA. METODI STATISTICI PER LA SOCIETÀ DELLA CONOSCENZA
Dipartimento di Scienze Statistiche - Sapienza Università di Roma
a.y. 2016-2017
- Module: *Classification II*
Corso di Alta Formazione Interfacoltà Metodi Statistici per la Ricerca e la Pratica Biomedica
Facoltà di Farmacia e Medicina - Facoltà di Ingegneria dell'Informazione, Informatica e Statistica - Sapienza Università di Roma
a.y. 2021-2022, 2020-2021, 2019-2020, 2018-2019, 2017-2018, 2016-2017, 2015-2016, 2014-2015, 2013-2014
- Module: *Descriptive statistics II*
Corso di Alta Formazione Interfacoltà Metodi Statistici per la Ricerca e la Pratica Biomedica
Facoltà di Farmacia e Medicina - Facoltà di Ingegneria dell'Informazione, Informatica e Statistica - Sapienza Università di Roma
a.y. 2016-2017

- Module: *Multivariate techniques to study violence against women*
Summer school in 'Statistics for the study of gender equality. Methods and tools to study violence against women'
Eastern Africa Statistical Training Centre, Dar Er Salam, Tanzania
February 12-16, 2018
- Module: *Descriptive statistics*
MATHEISIS Corso di formazione per docenti I.T.T. Colombo, via Panisperna 255, Roma
March 2017
- Lecture: *An introduction to fuzzy clustering*
2017 CRoNoS Spring Course on Multivariate methods with R
Cyprus University of Technology, Limassol (Cyprus)
April 2017
- Lecture: *Relationship between quantitative variables*
Piano Nazionale Lauree Scientifiche (PLS) - Statistica 2015-2018, Formazione docenti
Dipartimento di Scienze statistiche - Sapienza Università di Roma
December 2016

Teaching Assistant

- Course: *Statistics* (Prof. B. Liseo)
Facoltà di Economia - LUISS Guido Carli
a.y. 2011-2012
- Course: *Statistics* (Prof. M. Barbieri)
Facoltà di Economia - Università Roma Tre a.y. 2010-2011
- Course: *Advanced statistics* (Prof. R. Coppi)
Facoltà di Scienze Statistiche - Sapienza Università di Roma
a.y. 2011-2012, 2010-2011, 2009-2010
- Course: *Analysis of complex data structures* (Prof. P. Giordani)
Facoltà di Scienze Statistiche - Sapienza Università di Roma
a.y. 2011-2012, 2009-2010

PhD supervision and examining experience

Supervision

- Irene Cozzolino (2019 -)
- Claudia Rampichini (2019 -)
- Ilaria Bombelli (2020 -)

Examining experience

- Universidade Da Coruna, Spain, July 6, 2017 (Borja Raul Lafuente Rego)

Society memberships

- International Association for Statistical Computing (2017-)
 - President elect, European Regional Section - International Association of Statistical Computing (ERS- IASC) (2020-2022)
 - Elected Member of Board of Directors, ERS-IASC (2018-2022)
 - Scientific Secretary, ERS-IASC (2018-2020)
- Italian Statistical Society (2008 -)
- European Research Consortium for Informatics and Mathematics Working Group 'Computational and Methodological Statistics' (2007 -)
 - Co-chair of the specialized team 'Imprecision in Statistical Data Analysis' of the ERCIM Working Group 'Computational and Methodological Statistics' (2015 -)

Research Topics

- Statistical methods for fuzzy random elements
- Fuzzy clustering
- Bootstrap techniques
- Statistical analysis of omic data

Publications

1. Cozzolino, I., Ferraro, M.B. (2022). Document clustering. Wiley Interdisciplinary Reviews: Computational Statistics (in press).
2. Ferraro M.B., Giordani P., Vichi, M. (2022). Cluster validity measures for fuzzy two-mode clustering. In: Garcia-Escudero L., Gordaliza A., Mayo A., Lubiano M.A., Gil M., Grzegorzewski P., Hryniewicz O. (eds) Building Bridges between Soft and Statistical Methodologies for Data Science. Advances in Intelligent Systems and Computing, Springer (in press.).
3. Ferraro M.B., Fernandez-Iglesias, E., Ramos-Guajardo, A.B., Gonzalez Rodriguez, G. (2022). On clustering of star-shaped sets with a fuzzy approach: an application to the clasts in the Cantabrian Coast. In: Garcia-Escudero L., Gordaliza A., Mayo A., Lubiano M.A., Gil M., Grzegorzewski P., Hryniewicz O. (eds) Building Bridges between Soft and Statistical Methodologies for Data Science. Advances in Intelligent Systems and Computing, Springer (in press.).

4. Cozzolino, I., Ferraro, M.B., Winker, P. (2021). A Fuzzy clustering approach for textual data. In Book of short papers SIS 2021, pp.770-776.
5. Ferraro, M.B., Giordani, P., Vichi, M. (2021) A class of two-mode clustering algorithms in a fuzzy setting. *Econometrics and Statistics* 18, 63–78.
6. Giordani, P., Ferraro, M.B., Martella, F. (2020) An Introduction to clustering with R. *Behaviormetrics: Quantitative Approaches to Human Behavior*, Springer Verlag, Singapore (ISBN 9789811305528).
7. Ramos-Guajardo, A.B., Ferraro, M.B. (2020) A fuzzy clustering approach for fuzzy data based on a generalized distance. *Fuzzy Sets & Systems* 389, 29–50.
8. Ferraro, M.B., Giordani, P. (2020). Soft clustering. *Wiley Interdisciplinary Reviews: Computational Statistics* 12, Issue 1.
9. Ferraro M.B., Giordani P., Serafini A. (2019) fclust: An R Package for Fuzzy Clustering. *The R Journal* 11, 198–210.
10. Ferraro, M.B., Giordani, P. (2019) A review and proposal of (fuzzy) clustering for nonlinearly separable data. *International Journal of Approximate Reasoning* 115, 13–31.
11. Ferraro M.B., Giordani P. (2019) Robust Fuzzy Relational Clustering of Non-linear Data. In: Destercke S., Denoeux T., Gil M., Grzegorzewski P., Hryniewicz O. (eds) *Uncertainty Modelling in Data Science. SMPS 2018. Advances in Intelligent Systems and Computing*, vol 832. Springer.
12. Alfò M., Ferraro M.B., Giordani P., Scrucca L., Serafini A. (2018) A Comparison of Model-Based and Fuzzy Clustering Methods. *Book of Short Papers, SIS2018, Palermo 20-22 Giugno 2018*.
13. Ferraro M.B., Giordani P., Vantaggi B. (2018) Special issue on soft methods in probability and statistics (SMPS 2016). *International Journal of Approximate Reasoning* 96, 18-19.
14. Ramos Guajardo A.B., Gonzalez-Rodriguez G., Colubi A., Ferraro M.B., Blanco-Fernandez A. (2017) Descriptive statistics for random star-shaped sets. In E. Gil, E. Gil, J.J. Gil, M.A. Gil (Eds) 'The Mathematics of the Uncertain: A Tribute to Pedro Gil', *STUDIES IN SYSTEMS, DECISION AND CONTROL*, vol. 142, pp. 699-708, Springer.
15. Ferraro M.B. (2017). On the generalization performance of a regression model with imprecise elements. *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems* 25, 723-740.
16. Ferraro M.B., Giordani P. (2017). Possibilistic and fuzzy clustering methods for robust analysis of non-precise data. *International Journal of Approximate Reasoning* 88, 23-38.

17. Deriu F., Ferraro M.B., Grasso F., Gubbiotti S. (2017). Il procedimento cautelare in Italia. In *Indagine sul procedimento cautelare in Italia*, pp.1-75, ISBN:978-88-14-22845-2, Giuffr  Editore.
18. Ferraro M.B., Giordani P. (2016). Fuzzy and possibilistic approach to clustering of imprecise data. *Proceedings of the 48th Scientific Meeting of the Italian Statistical Society (SIS2016)*.
19. Ferraro M.B., Giordani P. (2015). A toolbox for fuzzy clustering using the R programming language . *Fuzzy Sets and Systems* 279, 1–16.
20. Ferraro M.B., Vichi M. (2015). Fuzzy double clustering: a robust proposal. *Strengthening Links Between Data Analysis and Soft Computing*, Springer-Verlag Berlin Heidelberg, 225–232 (ISBN: 978-3-319-10764-6).
21. Williams C.M., Watanabe M., Guarracino M.R., Ferraro M.B., Edison A.S., Morgan T.J., Boroujerdi A.F.B., Hahn D.A. (2014). Cold adaptation shapes the robustness of metabolic networks in *Drosophila melanogaster*. *Evolution* 68, 3505-3523, DOI: 10.1111/evo.12541.
22. Ferraro M.B., Savarese M., Di Fruscio G., Nigro V., Guarracino M.R. (2014). Prediction of rare single-nucleotide causative mutations for muscular diseases in pooled NGS experiments. *Journal of Computational Biology* 21, 665-675.
23. Agliata A., De Martino M., Ferraro M.B., Guarracino M.R. (2014). IGV-plus: A Java Software for the Analysis and Visualization of Next-Generation Sequencing Data. *Dynamics of Information Systems Springer Proceedings in Mathematics & Statistics*, 105, 149 - 160 , 2014 (ISBN: 978-3-319-10045-6).
24. Ferraro M.B., Guarracino M. (2014). Prediction of single-nucleotide polymorphisms causative of rare diseases. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 8452 LNBI, Springer-Verlag Berlin Heidelberg, 2014 (ISBN: 9783319090412).
25. Ferraro M.B., Giordani P. (2014). fclust: an R package for fuzzy clustering. *Proceedings of the 47th Scientific Meeting of the Italian Statistical Society* (ISBN: 978-88-8467-874-4).
26. Ferraro M.B., Guarracino M. (2014) From separating to proximal plane classifiers: a review (with M.R. Guarracino). In *Pardalos, P.M., Du, D.-Z. (Eds.) Springer Optimization and Its Applications, Clusters, orders, trees: methods and applications*, 167-180, (ISSN: 1931-6828).
27. Ferraro M.B., Giordani P. (2013). On possibilistic clustering with repulsion constraints for imprecise data. *Information Sciences* 245, 63-75.
28. Ferraro M.B., Giordani P. (2013). A new fuzzy clustering algorithm with entropy regularization (with P. Giordani). *Proceedings of the 9th Scientific Meeting of the Classification and Data Analysis Group of the Italian Statistical Society* (ISBN: 9788867871179).

29. Ferraro M.B., Irpino A., Verde R., Guarracino M.R. (2013). A novel feature selection method for classification using a fuzzy criterion. In: G. Nicosia, P. Pardalos (Eds.), LION 7- Lecture Notes in Computer Sciences, 7997, 1-13, Springer-Verlag Berlin Heidelberg (ISSN: 0302-9743).
30. Ferraro M.B., Giordani P. (2013). A class of linear regression models for imprecise random elements (with R. Coppi and P. Giordani). In: N. Torelli et al. (eds.), Advances in Theoretical and Applied Statistics, Studies in Theoretical and Applied Statistics, DOI 10.1007/978-3-642-35588-2 20, Springer-Verlag Berlin Heidelberg (ISBN: 9783642355875).
31. Ferraro M.B., Coppi R., Gonzalez-Rodriguez G. (2013). Bootstrap Confidence Intervals for the Parameters of a Linear Regression Model with Fuzzy Random Variables. In: Borgelt, C.; Gil, M.A.; Sousa, J.M.C.; Verleysen, M. (Eds.) Towards Advanced Data Analysis by Combining Soft Computing and Statistics, Studies in Fuzziness and Soft Computing 190, 33-42, 2013 (ISSN: 1434-9922).
32. Ferraro M.B., Giordani P. (2013). A proposal of robust regression for random fuzzy sets (with P. Giordani). In: Kruse, R.; Berthold, M.R.; Moewes, C.; Gil, M.A.; Grzegorzewski, P.; Hryniewicz, O. (Eds.) Synergies of Soft Computing and Statistics for Intelligent Data Analysis, Advances in Intelligent Systems and Computing 190, 115-123 (ISBN: 9783642330421).
33. Blanco-Fernandez A., Casals M.R., Colubi A., Coppi R., Corral N., de la Rosa de Saa S., D'Urso P., Ferraro M.B., Garcia-Barzana M., Gil M.A., Giordani P, Gonzalez-Rodriguez G., Lopez M.T., Lubiano M.A., Montenegro M., Nakama T., Ramos-Guajardo A. B., Sinova B., Trutschnig W. (2012). Arithmetic and Distance-Based Approach to the Statistical Analysis of Imprecisely Valued Data. In: Borgelt, C.; Gil, M.A.; Sousa, J.M.C.; Verleysen, M. (Eds.) Towards Advanced Data Analysis by Combining Soft Computing and Statistics. Studies in Fuzziness and Soft Computing, 285, 1-18, 2012 (ISBN: 9783642302770).
34. Ferraro M.B.(2012). A prediction error for a linear regression model with fuzzy random elements. Proceedings of the 46th Scientific Meeting of the Italian Statistical Society (ISBN: 978-88-6129-882-8).
35. Ferraro M.B., Giordani P. (2012). A multiple linear regression model for vague information. *Metrika* 75, 1049-1068.
36. Ferraro M.B., Colubi A., Gonzalez-Rodriguez G. (2012). A consistent bootstrap linearity test for a regression model with an imprecise response. pp.5545-5550. In *Bulletin of the International Statistical Institute Proceedings of the 58th World Statistics Congress 2011* - ISBN:978-90-73592-33-9
37. Ferraro M.B., Colubi A., Gonzalez-Rodriguez G., Coppi R. (2011). A determination coefficient for a linear regression model with imprecise response. *Environmetrics* 22, 516-529.

38. Ferraro M.B., Coppi R., Gonzalez-Rodriguez G., Colubi A. (2010). A linear regression model for imprecise response. *International Journal of Approximate Reasoning* 51, 759-770, 2010.
39. Ferraro M.B., Colubi A., Giordani P. (2010). A Linearity Test for a Simple Regression Model with LR Fuzzy Response. In: Borgelt, C.; Gonzalez-Rodriguez, G.; Trutschnig, W.; Lubiano, M.A.; Gil, M.A.; Grzegorzewski, P., Hryniewicz, O. (Eds.) *Combining Soft Computing and Statistical Methods in Data Analysis. Advances in Intelligent and Soft Computing* 77, 263-271 (ISBN: 9783642147456).
40. Colubi A., Coppi R. , Ferraro M.B., Gonzalez-Rodriguez G. (2008). A linear regression model for fuzzy LR responses and scalar predictors. *Atti della XLIV Riunione Scientifica Società Italiana di Statistica*.
41. Ferraro M.B., Colubi A., Coppi R. , Gonzalez-Rodriguez G. (2007).Un modelo de regresión lineal para variables aleatorias difusas de tipo. *Actas del XXX Congreso Nacional de Estadística e Investigación Operativa y de las IV Jornadas de Estadística Pública*, 87.

Conference Talks and Seminars

1. *Robust methods for fuzzy clustering of non-linear structures*. Final CRoNoS meeting & Workshop on Multivariate Data Analysis (CRoNoS & MDA 2019), April 14-16, 2019, Limassol (Cyprus).
2. *Robust Fuzzy Relational Clustering of Non-linear Data*. SMPS 2018/BELIEF 2018, September 17-21, 2018, Université de Technologie de Compiègne (France).
3. *Relational fuzzy clustering to identify non-linear structures*. 33rd International Conference on Computational Statistics (COMPSTAT 2018), August 2018 28-31, Iasi (Romania) .
4. *Model-based and fuzzy clustering algorithms: A comparative simulation study*. 10th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2017), December 16-18, 2017, University of London (UK)
5. *Possibilistic and fuzzy clustering methods for robust analysis of non-precise data*. CRoNoS Cost action, WGs meetings, September 1-2, 2017, Amsterdam (Netherlands)
6. *Fuzzy two-mode clustering with polynomial fuzzifiers*. The 9th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics2016), December 9-11,2016, University of Seville (Spain)
7. *A robust fuzzy clustering method for non-precise data based on trimmed regions*. The 22nd International Conference on Computational Statistics (COMPSTAT2016), August 23-26, 2016, Oviedo, Spain

8. *Fuzzy and possibilistic approach to clustering of imprecise data*. The 48th Scientific Meeting of the Italian Statistical Society (SIS2016), June 12- 14, 2016, Salerno, Italy (invited)
9. *A possibilistic fuzzy k-means clustering algorithm for fuzzy data*. The 8th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics2015), December 12-14, 2015, Senate House, University of London, UK
10. *A general method for clustering in a reduced subspace*. International Meeting of the Psychometric Society (IMPS2015), July 12-16, 2015, Beijing, China.
11. *A general method for fuzzy partitioning and component analysis*. The 2015 conference of the International Federation of Classification Societies (IFCS2015), July 6-8, Bologna, Italy (invited).
12. *A robust proposal of fuzzy biclustering*. Second internal meeting of the FIRB Research project 'Mixture and latent variable models for causal-inference and analysis of socio-economic data', January 23-24, 2015, Rome.
13. *Fuzzy double k-means clustering for simultaneous classification of objects and variables*. 7th International Conference of the ERCIM WG on Computational and Methodological Statistics (ERCIM 2014), December 6-8, 2014, Pisa, Italy.
14. *A toolbox for fuzzy clustering using the R programming language*. Workshop on Clustering Methods and their Applications, November 28, 2014, Bolzano, Italy (invited).
15. *Fuzzy Double Clustering: A Robust Proposal*. 7th International Conference on Soft Methods in Probability and Statistics (SMPS 2014), September 22-24, 2014, Warsaw, Poland.
16. *fclust: an R package for fuzzy clustering*. 47th Scientific Meeting of the Italian Statistical Society (SIS 2014), June 11-13, 2014, Cagliari, Italy.
17. *Checking linearity for a multivariate regression model*. 6th International Conference of the ERCIM Working Group on Computational and Methodological Statistics (ERCIM 2013), December 14-16, 2013, London, UK.
18. *Supervised classification for rare variant calling in NGS pooled experiments*. 8A Edizione Bioinformatica e Biologia Computazionale in Campania (BBCC 2013), November 15, 2013, Avellino, Italy.
19. *A new fuzzy clustering algorithm with entropy regularization*. 9th Scientific Meeting of the Classification and Data Analysis Group of the Italian Statistical Society (CLADAG 2013), September 18-20, 2013, Modena, Italy.
20. *Prediction of single-nucleotide polymorphisms causative of muscular diseases*. Tenth International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics (CIBB 2013), June 20-22, 2013, Nice, France (invited).

21. *Supervised classification for causative mutation prediction of rare diseases in pooled next generation sequencing data.* 2nd International Conference on Computational Biomedicine, 24-26 January 2013, Gainesville, Florida U.S.A.
22. *A novel feature selection method for classification using a fuzzy criterion.* Learning and Intelligent Optimization Conference LION 7, Catania - Italy, January 7-11, 2013.
23. *On possibilistic clustering with repulsion constraints for imprecise data.* 5th International Conference of the ERCIM WG on COMPUTING & STATISTICS (ERCIM 2012), December 1-3, 2012, Conference Centre, Oviedo, Spain.
24. *A proposal of robust regression for random fuzzy sets.* 6th International Conference on Soft Methods in Probability and Statistics (SMPS 2012), October 4-6, 2012, Konstanz, Germany.
25. *On fuzzy clustering with entropy regularization.* 20th International Conference on COMPUTATIONAL STATISTICS (COMPSTAT 2012), August 27-31, 2012, Limassol, Cyprus.
26. *A prediction error for a linear regression model with fuzzy random elements.* 46th Scientific Meeting of the Italian Statistical Society (SIS 2012), Sapienza University of Rome - Faculty of Economics, June 20-22, 2012.
27. *Fitting parametric link functions in a regression model with imprecise random variables.* 4th International Conference of the ERCIM WG on COMPUTING STATISTICS (ERCIM 2011), Senate House, University of London, UK, December 17-19, 2011.
28. *A consistent bootstrap linearity test for a regression model with an imprecise response.* 58th Congress ISI, August 21-26, 2011, Dublin.
29. *Different linearity tests for a regression model with an imprecise response.* The 8th International Conference on Computational Management Science (CMS 2011), University of Neuchatel, Switzerland, April 28-30, 2011
30. *Testing linearity for a regression model with imprecise elements: a power analysis.* 4th CSDA International Conference on Computational and Financial Econometrics and 3rd International Conference of the ERCIM Working Group on Computing and Statistics (CFE 10 and ERCIM 10), Senate House, University of London, UK), December 10-12, 2010
31. *Un modelo de regresión lineal para variables aleatorias difusas trapezoidales.* XXXII Congreso Nacional de Estadística e Investigación Operativa (SEIO 2010), A Coruna, September 14-17, 2010
32. *A Linearity Test for a Simple Regression Model with LR Fuzzy Response.* 5th International Conference on Soft Methods in Probability and Statistics (SMPS2010), Mieres-Oviedo (Spain), September 28 - October 1, 2010
33. *A class of linear regression models for imprecise random elements.* The 45th Scientific Meeting of the Italian Statistical Society, University of Padua, June 29 - July 1, 2010

34. A multiple linear regression model for LR fuzzy random variables. XXIV Riunione Scientifica – DSPSA, February 2010, Roma, Italy.
35. *A linear regression model with LR fuzzy random variables*. Second Workshop of the ERCIM Working Group on Computing and Statistics (ERCIM 09), Limassol Cyprus), October 29-31, 2009
36. *Estimation of a determination coefficient for a regression model with imprecise response*. 18th Conference of IASC-ERS (COMPSTAT'2008), Porto, August 24-29, 2008
37. *A linear regression model for fuzzy LR responses and scalar predictors*. XLIV Riunione Scientifica Società Italiana di Statistica, Università della Calabria. Arcavacata (CS), June 25-27, 2008
38. *Un modelo de regresión lineal para variables aleatorias difusas de tipo LR*. XXX Congreso Nacional de Estadística e Investigación Operativa, Valladolid, September 25-28, 2007

Seminars

- *Fuzzy clustering of complex data structures*
University of Giessen, Germany - January 28, 2020
- *Fuzzy clustering of complex data structures*
Cyprus University of Technology, Limassol, Cyprus - November 19, 2019
- *Prediction of single-nucleotide polymorphisms causative of muscular diseases*
Institute for Applications of Calculus "M. Picone", Italian National Research Council, Naples - June 10, 2013
- *Statistical analysis of imprecise data*
Institute of High Performance Computing and Networking, Italian National Research Council, Naples - July 19, 2012

Software

- R package `fclust` (with P. Giordani and A. Serafini) Algorithms for fuzzy clustering, cluster validity indices and plots for cluster validity and visualizing fuzzy clustering results. (<https://cran.r-project.org/package=fclust>) (version 2.0.2 19-10- 2018).
- R package `datasetsICR` (with P. Giordani and F. Martella) Datasets from the Book "An Introduction to Clustering with R" (2020).

Editorial Activities

- *Associate Editor*
 - CSDA Annals of Statistical Data Science, Elsevier (2019 -)
 - Metron, Springer (2019 -)
 - International Journal of Approximate Reasoning, Elsevier (2018 -)
 - International Journal of Computer Mathematics: Computer Systems Theory, Elsevier (2017 - 2019)
- *Editorial Board*
 - Fuzzy Sets & Systems (2019 -)
- *Guest Editor*
 - Special issue 'Soft Methods in Probability and Statistics 2018' of the International Journal of Approximate reasoning, Elsevier, 2019 (with S. Destercke and B. Sinova).
 - Special issue 'Soft Methods in Probability and Statistics 2016' of the International Journal of Approximate reasoning, Elsevier, 2017 (with P. Giordani and B. Vantaggi).
 - Special issue 'Bringing Math to Life' of BMC Bioinformatics Supplements, 2015 (with V. Colonna and M. R. Guarracino).
- *Co-Editor*
 - Springer book 'Soft Methods for Data Science', Advances in Intelligent Systems and Computing 456, 2017 (with P. Giordani, B. Vantaggi, M. Gagolewski, M.A. Gil, P. Grzegorzewski, O. Hryniewicz).
 - Springer book 'Mathematical Models in Biology', Bringing Mathematics to Life, 2015 (with V. Zazzu and M. R. Guarracino).
- *Editorial Staff*
 - Metron, Springer (2015 - 2018)
- *Referee* for: Computational Statistics and Data Analysis, Fuzzy sets and Systems, Information Sciences, International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, Advances in Data Analysis and Classification, International Journal of Approximate Reasoning, Neurocomputing, Optimization Methods and Software, Biometrical Journal

Organization Activities

Organizer/Chair

1. Co-chair - CSDA & EcoSta Workshop on Statistical Data Science (SDS 2020), August 28-30, 2020, Bologna (Italy) [postponed to August 26-28, 2022]

2. Co-chair - 24th International Conference on Computational Statistics (COMPSTAT 2020), August 25-28, 2020, Bologna (Italy) [postponed to August 23-26, 2022]
3. Co-chair - The final CRoNoS meeting and the 2nd workshop on Multivariate Data and Software (CRoNoS & MDA2019), April 14-16, 2019, Limassol (Cyprus).
4. Co-Organizer (with Paolo Giordani and Barbara Vantaggi) of the 8th international conference on Soft Methods in Probability and Statistics (SMPS 2016), September 12-14, 2016.
5. Organizer of the 1st WGs meeting, COST Action IC1408 Computationally-Intensive Methods for the Robust Analysis of Non-Standard Data (CroNoS), June 19-20. 2015, Roma (Italy).
6. Co-Organizer (with V. Colonna, M. R. Guarracino, A. Rogato and V. Zazzu) of the Workshop "Bringing Maths to Life", October 27-29, 2014, Naples (Italy).

Scientific Program Committee

1. Scientific Program Committee - 10th International Conference on Soft Methods in Probability and Statistics (SMPS 2020), September 16-18, 2020, Valladolid (Spain) [postponed to 2022]
2. Scientific Program Committee - 12th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2019), December 14-16, 2019, London (UK).
3. Ex-officio SPC - 33rd International Conference on Computational Statistics (COMPSTAT 2018), August 28-31, 2018, Iasi (Romania).
4. Program committee - SMPS 2018/BELIEF 2018, September 17-21, 2018, Université de Technologie de Compiègne (France).
5. Scientific Program Committee - 9th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2016), December 9-11, 2016, University of Seville (Spain).

Local organization

1. Local organizer of the workshop "Recent advances on modeling and inference for brain signals and images", satellite meeting of the OHBM (Organization for Human Brain Mapping) meeting, June 14, 2019, Roma (Italy).
2. Local organizer of the Second internal meeting of the research group on Mixture and Latent Variable Models for Causal Inference and Analysis of Socio-Economic Data (FIRB 2012), January 23-24, 2015, Roma (Italy).
3. Local organizer of the Conference of European Statistics Stakeholders, November 24-25, 2014, Roma (Italy).

4. Local organizer of the 5th International Conference on Soft Methods in Probability and Statistics (SMPS2010) September, 28 - October, 1, Oviedo - Mieres (Spain).

Organized sessions

1. "Clustering of complex data structures", 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2022)
2. "Clustering of complex data structures", 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021)
3. "Clustering of complex data structures", 13th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2020)
4. "Clustering of complex data structures", CSDA & EcoSta Workshop on Statistical Data Science (SDS 2020) [postponed to 2022]
5. "Clustering and classification", 12th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2019)
6. "Clustering and dimensionality reduction for complex data structures", the final CRoNoS meeting and the 2nd workshop on Multivariate Data and Software (CRoNoS & MDA2019)
7. "Statistical methodologies with complex information" (with Ana Belen Ramos-Guajardo), 11th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2018).
8. "Soft clustering", 11th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2018).
9. "Soft clustering", (COMPSTAT 2018).
10. "Advances in fuzzy clustering", 10th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2017).
11. "Advances in fuzzy clustering", 9th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2016).
12. "Advances in fuzzy clustering", 8th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2015).
13. "Advances in cluster analysis", 7th International Conference of the ERCIM WG on COMPUTING & STATISTICS (ERCIM 2014).
14. "Fuzzy clustering", 6th International Conference of the ERCIM WG on COMPUTING & STATISTICS (ERCIM 2013).
15. "Statistics in Biomedicine", 6th International Conference of the ERCIM WG on COMPUTING & STATISTICS (ERCIM 2013).

16. "Fuzziness in Statistics", 5th International Conference of the ERCIM WG on COMPUTING & STATISTICS (ERCIM 2012).
17. "Imprecision in inference", 4th International Conference of the ERCIM WG on COMPUTING & STATISTICS (ERCIM 2011).

Funding Information

Grants for scientific missions

- COST Action IC1408 grant for a Short Term Scientific Mission within the COST scientific programme on "Computationally-Intensive Methods for the Robust Analysis of Non-Standard Data (CRoNoS)" (in collaboration with Prof. Gil Gonzalez-Rodriguez), University of Oviedo, Asturias (Spain), April 2018
- COST Action IC0702 grant for a Short Term Scientific Mission within the COST scientific programme on "Combining Soft Computing techniques and Statistical Methods to Improve Data Analysis Solutions" (in collaboration with Prof. Ana Colubi), University of Oviedo, Asturias (Spain), February - March 2012
- COST Action IC0702 grant for a Short Term Scientific Mission within the COST scientific programme on "Combining Soft Computing techniques and Statistical Methods to Improve Data Analysis Solutions" (in collaboration with Prof. Gonzalez Rodriguez), University of Oviedo, Asturias (Spain), January - February 2011
- COST Action IC0702 grant for a Short Term Scientific Mission within the COST scientific programme on "Combining Soft Computing techniques and Statistical Methods to Improve Data Analysis Solutions" (in collaboration with Prof. Ana Colubi), University of Oviedo, Asturias (Spain), September - October 2010
- COST Action IC0702 grant for a Short Term Scientific Mission within the COST scientific programme on "Combining Soft Computing techniques and Statistical Methods to Improve Data Analysis Solutions" (in collaboration with Prof. Gil Gonzalez Rodriguez), European Centre for Soft Computing, Mieres, Asturias (Spain), March 2009

Projects

- ATENEO 2021 New developments on clustering of text, functional and other complex data - Sapienza Università di Roma (Role: PI)
- The Spanish Ministry of Science and Innovation Project MTM2017- 89632-P "ANÁLISIS ESTADÍSTICO EFICIENTE CON ESTRUCTURAS NO-ESTÁNDAR" (Efficient statistical analysis with non-standard structures) (Role: I) 2017-2021
- COST Action IC1408 Computationally-Intensive Methods for the Robust Analysis of Non-Standard Data (CRoNoS) (Role: CORE Management Committee Member)

<http://cmstatistics.org/CRONOS/index.php>
2015-2018

- ATENEO 2017 Model-based dimensionality reduction techniques for high-dimensional data - Sapienza Università di Roma (Role: I)
- Fondo di Finanziamento delle Attività Base di Ricerca - FFABR 2017 (Role: PI)
- ATENEO 2016 'Latent Variable Models for Complex Data Structures' - Sapienza Università di Roma (Role: I)
- ATENEO 2015 'Latent Variable Models for Complex Data Structures, with a focus on Categorical Responses' - Sapienza Università di Roma (Role: I)
- Spanish Regional project co-funded by European Regional Development Fund GRUPIN14-005 (Role: I) 2015-2017
- ATENEO 2014 project 'Biclustering methods with fuzzy approach' - Sapienza Università di Roma (Role: PI)
- The Spanish Ministry of Science and Innovation Grant Robust and Flexible 'Statistics for interval-valued, set-valued and fuzzy set-valued data: location, variability and linear regression' (Role: I) 2013-2017
- Futuro in Ricerca 2012 'Mixture and latent variable models for causal inference and the analysis of social economic data' (Role: I) 2013-2016
- INTEROMICS Flagship Project 2011-2013 'Development of an integrated platform for the application of "omic" sciences to biomarker denitification and theranostic, predictive and diagnostic profiles' CNR (Role: I) 2011-2013
- Ricerche UNIVERSITARIE 2011 - Sapienza Università di Roma 'Metodi di clustering per dati multivariati misti' (Role: I)
- Ricerche UNIVERSITARIE 2010 - Sapienza Università di Roma 'Modelli di gestione dell'incertezza nell'analisi di dati osservazionali e sperimentali' (Role: I)
- The Spanish Ministry of Science and Innovation Grant MTM2009-09440-C02-02 (Role: I) 2009-2013
- Ricerche UNIVERSITARIE 2009 - Sapienza Università di Roma 'Metodi e modelli statistici per l'analisi di traiettorie multivariate' (Role: I)
- Ricerche di ATENEO FEDERATO della Scienza e della Tecnologia AST 2009-Sapienza Università di Roma 'Modelli e metodi statistici per l'analisi di dati microarray longitudinali' (Role: I) 20000 eur

- Ricerche di ATENEIO FEDERATO della Scienza e della Tecnologia AST 2008- Sapienza Università di Roma 'Metodologie e tecniche per la riduzione dimensionale di dati statistici con struttura complessa' (Role: I)
- Ricerche di ATENEIO FEDERATO della Scienza e della Tecnologia AST 2007 - Sapienza Università di Roma 'Fuzzy tools for statistical analysis of real- and fuzzy-valued data' (Role: I)
- The Spanish Ministry of Science and Innovation Grant MTM2006-07501 (Role: I) 2006-2010

International Cooperation Activities

- Project "Summer School on Statistics for the Study of Gender Equality - Methods and tools to study the violence against women" between Department of Statistics of Sapienza University and Eastern Africa Statistical Training Center (EASTC)
Module: *Multivariate techniques to study violence against women*
EASTC, Dar Er Salam, Tanzania
February 12-16, 2018
- Member of the for the PhD programme in Natural Resources Engineering, Indurot, Universidad de Oviedo, Spain
2019 .
- Member of the Research Group on STATISTICAL METHODS WITH IMPRECISE RANDOM ELEMENTS (SMIRE), University of Oviedo (Spain), University of Salzburg (Austria), Sapienza University of Rome.
2007 -