

Biographical sketch

Andrea Cerioli received his Ph.D. in Statistics from the Department of Statistical Sciences of the University of Padua in 1992. He has been Professor of Statistics at the University of Parma, Italy, since 2002. He is currently affiliated with the Department of Economics and Management. He was President of the Board of Studies of the Faculty of Economics of the University of Parma in the period 2009-2012.

He is author or coauthor of more than 100 scientific peer-reviewed scientific works, most of them published in international journals or books. He is also a coauthor of the book "[Exploring Multivariate Data with the Forward Search](#)", published by Springer-Verlag and a co-editor of the book "[Data Analysis, Classification and the Forward Search](#)", also published by Springer-Verlag.

In the years 2011-2015 he was Editor-in-Chief of the journal "Statistical Methods and Applications" (Springer), for which he had served as a Co-editor in the years 2008-2011 and as an Associate Editor in the years 2004-2007. He is currently an Editor of the journal "Advances in Data Analysis and Classification" (Springer).

He was President of the Scientific Council of the Classification and Data Analysis Group (CLADAG), a Section of the Italian Statistical Society, in the years 2009-2011. In the years 2011-2017 he was a member of the Council of the International Federation of Classification Societies.

He chaired the Local Organizing Committee of the CLADAG 2005 Conference, hosted by the University of Parma. He has served and is still serving on the Scientific Program Committee of many international conferences. He has been invited to give plenary talks and to organize specialized sessions at many international scientific conferences. He was the Principal Investigator of the Research Unit of the University of Parma in MIUR grants PRIN 2004, PRIN 2006 and PRIN 2008.

Research

Most of his research activity has focused on the development of robust methodologies for data analysis, both under the approach called "Forward Search" and other high-breakdown techniques, with special emphasis on:

- multivariate outlier detection and testing, when masking and swamping are present
- consistency, robustness and efficiency of estimators
- robust classification and clustering

- the relationships among alternative approaches
- the properties of methods under elliptical and non-elliptical distribution models.

He also studied the effect of spatial autocorrelation on association tests between categorical variables and the properties of clustering methods.

His more recent research activity includes:

- The properties of Benford's Law for the distribution of digits arising in international trade and the development of efficient statistical procedures for testing this law;
- Tempered (Positive) Stable distributions and the development of computationally efficient methods for estimating their parameters.

From the point of view of applications, he is mainly interested in applying methodologies to solve problems of major economic impact for businesses and the whole Society. The main application area in the last few years has been fraud detection in international trade, which has also been the main motivation for the development of the new methodologies described above.

Selected publications (September 2021)

1. Barabesi, L.; Cerasa, A.; CERIOLI, A.; Perrotta, D. (2021). On Characterizations and Tests of Benford's Law. *JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION*, DOI: 10.1080/01621459.2021.1891927.
2. Barabesi, L.; CERIOLI, A.; Perrotta, D. (2021). Forum on Benford's law and statistical methods for the detection of frauds. *STATISTICAL METHODS & APPLICATIONS*, 30, 767-778.
3. Salini, S.; Laurini, F.; Morelli, G.; Riani, M.; CERIOLI, A. (2021). Covariance matrices of S robust regression estimators, *JOURNAL OF STATISTICAL COMPUTATION AND SIMULATION*, DOI: 10.1080/00949655.2021.1972300.
4. Torti, F.; Perrotta, D.; Riani, M.; CERIOLI, A. (2019). Assessing trimming methodologies for clustering linear regression data. *ADVANCES IN DATA ANALYSIS AND CLASSIFICATION*, 13, 227-257.
5. Riani, M.; Atkinson, A. C.; CERIOLI, A.; Corbellini, A. (2019). Discussion on the paper: Data Science, Big Data and Statistics, by Pedro Galeano and Daniel Pena. *TEST*, 28, 349-352.
6. Riani, M.; Atkinson, A. C.; CERIOLI, A.; Corbellini, A. (2019). Efficient robust methods via monitoring for clustering and multivariate data analysis. *PATTERN RECOGNITION*, 88, 246-260.
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11. CERIOLI, A.; García-Escudero, L. A.; Mayo-Isacar, A.; Riani, M. (2018). Finding the Number of Normal Groups in Model-Based Clustering via Constrained Likelihoods. *JOURNAL OF COMPUTATIONAL AND GRAPHICAL STATISTICS*, 27, 404-416.
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13. Barabesi, L.; Cerasa, A.; CERIOLI, A.; Perrotta, D. (2018). Goodness-of-fit testing for the Newcomb-Benford law with application to the detection of customs fraud. *JOURNAL OF BUSINESS & ECONOMIC STATISTICS*, 36, 346-358.
14. Cerasa, A.; CERIOLI, A. (2017). Outlier-free merging of homogeneous groups of pre-classified observations under contamination. *JOURNAL OF STATISTICAL COMPUTATION AND SIMULATION*, 87, 2997-3020.
15. Barabesi, L.; Cerasa, A.; CERIOLI, A.; Perrotta, D. (2016) A new family of tempered distributions. *ELECTRONIC JOURNAL OF STATISTICS*, 10, 3871-3893.
16. Barabesi, L.; Cerasa, A.; Perrotta, D.; CERIOLI, A. (2016). Modelling international trade data with the Tweedie distribution for anti-fraud and policy support. *EUROPEAN JOURNAL OF OPERATIONAL RESEARCH*, 248, 1031-1043.
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20. Riani, M.; CERIOLI, A.; Perrotta, D.; Torti, F. (2015). Simulating mixtures of multivariate data with fixed cluster overlap in FSDA library. *ADVANCES IN DATA ANALYSIS AND CLASSIFICATION*, 9, 461-481.
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23. Riani, M.; CERIOLI, A.; Atkinson, A.C.; Perrotta, D. (2014) Monitoring robust regression. *ELECTRONIC JOURNAL OF STATISTICS*, 8, 646-677.
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33. Riani, M.; CERIOLI, A.; Chiandotto, B. (2006). Special issue on robust multivariate analysis and classification. *STATISTICAL METHODS & APPLICATIONS*, 15, 267-269.
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