

## CURRICULUM VITAE of PAOLA ZUCCOLOTTO

### Study degrees

Master of Science in Economics and Commerce, University of Verona (1990-1995)

Phd in Methodological Statistics, University of Trento (1995-1998)

### Professional positions

- Associate Professor of Statistics at the Department of Economics and Management of the University of Brescia (since 2005)
- Main lecturer of Statistics, Statistics for Marketing, Business Statistics, Data Analysis, Neural Networks for the Department of Economics and Management of the University of Brescia
- Member of the Committee of the PhD “Analytics for Economics and Business” of the Universities of Bergamo-Brescia (since 2013)
- Member of the Committee of the PhD “Methodological and Applied Statistics” of the University of Milano-Bicocca (2005-2013)
- Previously Assistant Professor (1999-2005) of Statistics at the Department of Quantitative Methods of the University of Brescia
- ✓ Director of the *Big&Open Data Innovation Laboratory* (BODaI-Lab), University of Brescia
- ✓ Member of the Scientific Committee of the Research Center DMS (Data, Methods and Systems) of the University of Brescia (since 2011)
- ✓ Member of Italian Statistical Society (SIS)
- ✓ Member of International Association for Statistical Computing (IASC)
- Member of the Editorial Committee of the scientific journal “Statistics & Applicazioni” (since 2005).
- Guest Editor of the Special Issue “Statistics in Sports”, *Electronic Journal of Applied Statistic Analysis*.
- Reviewer for *BMC Bioinformatics*, *Computational Statistic and Data Analysis*, *Computational Statistics*, *Electronic Journal of Applied Statistic Analysis*, *Food Chemistry*, *Intelligent Systems in Accounting Finance and Management*, *International Journal of Physical Sciences*, *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, *Italian Journal of Applied Statistics*, *Journal of Applied Statistics*, *Journal of Industry, Competition and Trade*, *Journal of Multivariate Data Analysis*, *Pattern Recognition Letters*, *Physica A*, *QdS – Journal of Methodological and Applied Statistics*, *Quality and Quantity*, *Social Indicators Research*, *Statistics & Applicazioni*, *Statistical Papers* and for Springer and McGraw-Hill books.

### Research activity

Main topics:

- Methodological and empirical aspects of data mining and data analysis. From a methodological point of view, I am interested to computer intensive algorithmic techniques such as neural networks and learning ensembles, with special attention the problem of variable selection, for which I have developed some innovative proposals. In addition, I have proposed some novel techniques for missing data treatment in Principal Component Analysis and for modelling rating data coming from surveys about human perceptions. From an empirical point of view, I have been concerned with several case studies in the framework of perceptions measurement, quality evaluation, prediction and risk factors identification within different contexts (healthcare, genetics, job, marketing, sensory analysis, sport).
- Time series analysis, with special attention to financial data. In this framework I carried out researches on vector time series, models for the volatility of financial data, models for changes in regime and I have proposed an innovative model for ultra-high-frequency data. At the moment I am attempting to extend data mining techniques to econometrics, with a special link to the theory of copula functions from the perspective of investment risk management.

I published more than 50 peer-reviewed papers on national and international journals and books, one book and more than 30 working papers and conference proceedings. I participated to more than 50 international conferences, as invited speaker, contributed speaker or invited discussant. I am and have been member of several research projects, granted by national (PRIN) and international (European Union Seventh Framework Programme) funds.

## MAIN PUBLICATIONS

### Papers on scientific journals

1. Manisera M., Zuccolotto P., Numerical optimization and EM algorithm in a mixture model for human perceptions analysis, *Communications in Statistics - Simulation and Computation*, forthcoming.
2. De Luca G., Zuccolotto P., Dynamic Tail Dependence Clustering of Financial Time Series, *Statistical Papers*, forthcoming.
3. De Luca G., Zuccolotto P., Financial time series clustering for portfolio selection based on extreme returns, *Statistics & Risk Modeling*, forthcoming.
4. Manisera M., Zuccolotto P. (2016), Treatment of “don't know” responses in a mixture model for rating data, *Metron*, **74**, 1, 99-115.
5. Carpita M., Sandri M., Simonetto A., Zuccolotto P. (2015), Discovering the Drivers of Football Match Outcomes with Data Mining, *Quality Technology and Quantitative Management*, **12**, 4, 537-553.
6. Manisera M., Zuccolotto P. (2015), Identifiability of a model for discrete frequency distributions with a multidimensional parameter space, *Journal of Multivariate Analysis*, **140**, 302-316.
7. Brentari E., Levaggi R., Zuccolotto P. (2015), A hedonic price analysis for the Italian wine in the domestic market, *Quality and Quantity*, **49**, 3, 999-1012.
8. Manisera M., Zuccolotto P. (2015), Visualizing multiple results from Nonlinear CUB models with R grid Viewports, *Electronic Journal of Applied Statistic Analysis*, **8**, 3, 360-373.
9. Manisera M., Zuccolotto P. (2015), Nonlinear CUB models: the R code, *Statistics & Applications*, **XII**, 2, 205-223.
10. Manisera M., Zuccolotto P. (2014), Modeling “don't know” responses in rating scales, *Pattern Recognition Letters*, **45**, 226-234.
11. Manisera M., Zuccolotto P. (2014), Modeling rating data with Nonlinear CUB models, *Computational Statistics and Data Analysis*, **78**, 100-118.
12. Manisera M., Zuccolotto P. (2013), Nonlinear CUB models: some stylized facts, *QdS - Journal of Methodological and Applied Statistics*, **15**, 111-130.
13. Iannario M., Manisera M., Piccolo D., Zuccolotto P. (2012), Sensory analysis in the food industry as a tool for marketing decisions, *Advances in Data Analysis and Classification*, **6**, 4, 303-321.
14. Zuccolotto P. (2012), Principal Component Analysis with Interval Imputed missing values, *Advances in Statistical Analysis*, **96**, 1, 1-23.
15. Brentari E., Levaggi R., Zuccolotto P. (2011), Pricing strategies for Italian red wine, *Food Quality and Preference*, **22**, 8, 725-732.
16. De Luca G., Zuccolotto P. (2011), A tail dependence-based dissimilarity measure for financial time series clustering, *Advances in Data Analysis and Classification*, **5**, 4, 323-340.
17. Zuccolotto P. (2011), Symbolic missing data imputation in Principal Component Analysis, *Statistical Analysis and Data Mining*, **4**, 2, 171-183.
18. Brentari E., Zuccolotto P. (2011), Analysing the impact of chemical and sensory characteristics on the market price of Italian red wines, *Electronic Journal of Applied Statistic Analysis*, **4**, 2, 265-276.
19. Zuccolotto P. (2010), Evaluating the impact of a grouping variable on Job Satisfaction drivers, *Statistical Methods & Applications*, **19**, 287-305.
20. Sandri M., Zuccolotto P. (2010), Analysis and correction of bias in the Total Decrease in Node Impurity measures for tree-based algorithms, *Statistics and Computing*, **20**, 4, 393-407.

21. De Luca G., Riviuccio G., Zuccolotto P. (2010), Combining Random Forest and Copula Function: a heuristic approach for selecting assets in a financial crisis perspective, *Intelligent Systems in Accounting, Finance and Management*, **17**, 2, 91-109.
22. Zuccolotto P. (2010), Measuring Job and Patient Satisfaction in presence of missing values: a case study with Interval Imputation, *Electronic Journal of Applied Statistic Analysis: Decision Support Systems and Services Evaluation*, **1**, 1, 79-94.
23. Zuccolotto P. (2010), Attitudes, feelings, satisfaction with dental healthcare: a case study, *Electronic Journal of Applied Statistic Analysis: Decision Support Systems and Services Evaluation*, **1**, 1, 54-65.
24. Sandri M., Zuccolotto P., (2008), A bias correction algorithm for the Gini variable importance measure in classification trees, *Journal of Computational and Graphical Statistics*, **17**, 3, 1-18.
25. Zuccolotto P. (2007), Principal Components of sample estimates: an approach through Symbolic Data Analysis, *Statistical Methods & Applications*, **16**, 173-192.
26. De Luca G., Zuccolotto P. (2006), Regime-switching Pareto distributions for ACD models, *Computational Statistics & Data Analysis*, **51**, 2179-2191.
27. Zuccolotto P., (2003), Quantiles estimation in ultra-high frequency financial data: a comparison between parametric and semiparametric approach, *Statistical Methods & Applications*, **12**, 243-257.
28. De Luca G., Zuccolotto P., (2003), Finite and infinite mixtures for financial durations, *Metron*, **61**, 431-455.
29. Zuccolotto P., (2002), Modelling the impact of open volume on inter-trade autoregressive durations, *Metron*, **60**, 51-65.

#### Chapters on scientific books

1. De Luca G., Zuccolotto P. (2014), Dynamic clustering of financial assets, in: Vicari D., Okada A., Ragozini G., Weihs C. (editors), *Analysis and Modeling of Complex Data in Behavioral and Social Sciences*, Springer, Berlino, ISBN 978-3-319-06691-2, 103-111.
2. De Luca G., Zuccolotto P. (2014), Time series clustering on lower tail dependence for portfolio selection, in: Corazza M., Pizzi C. (editors), *Mathematical and Statistical Methods for Actuarial Sciences and Finance*, Springer, Berlino, ISBN 978-3-319-02498-1, 131-140.
3. Carpita M., Sandri M., Simonetto A., Zuccolotto P. (2014), Football Mining with R, *Data Mining Applications with R* (Yanchang Z., Yonghua C. eds.), chapter 14, Elsevier.
4. Vezzoli M., Zuccolotto P. (2011), CRAGGING measures of variable importance for data with hierarchical structure, in: Ingrassia S., Rocci R., Vichi M. (editors), *New Perspectives in Statistical Modeling and Data Analysis*, Springer, Berlino, ISBN 978-3-642-11362-8.
5. Zuccolotto P., (2009), La Soddisfazione e l'Impegno dei Lavoratori delle Cooperative Sociali, in Carpita M. (editor), *La Qualità del Lavoro nelle Cooperative Sociali – Misure e modelli statistici*, FrancoAngeli, ISBN: 978-88-568-0532-1, 75-94.
6. De Luca G., Riviuccio G., Zuccolotto P., (2008), Exploring the Copula Approach for the Analysis of Financial Durations, in Perna C. e Sibillo M. (editors), *Mathematical and Statistical Methods in Insurance and Finance*, Springer, Berlino, ISBN: 978-88-470-0703-1, 99-106.
7. Carpita M., Zuccolotto P. (2007) Mining the Drivers of Job Satisfaction using Algorithmic Variable Importance Measures, in D'Ambra L., Rostirolla P., Squillante M. (editors), *Metodi, Modelli, e Tecnologie dell'Informazione a Supporto delle Decisioni, Volume I: Metodologie*, Franco Angeli, 63-70, ISBN 978-88-464-8381-2.
8. Sandri M., Zuccolotto P., (2006), Variable Selection Using Random Forests, in Zani S., Cerioli A., Riani M. e Vichi M. (editors), *Data Analysis, Classification and Forward Search*, Springer, Berlino, ISBN: 978-3-540-35977-7, 263-270.