Curriculum Vitae – Davide Ferrari, PhD

Affiliation

Faculty of Economics and Management, Free University of Bozen-Bolzano

Contact

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Education & Academic qualifications

(2018-present) Italian national scientific habilitation (abilitazione scientifica nazionale) as a Full Professor (SECS-S/01 Statistics).

(2003-2008) PhD in Statistics, University of Minnesota. Thesis title: Maximum Lq-likelihood estimation. Supervisor: Prof. Yuhong Yang.

(2003-2005) MSc in Statistics, University of Minnesota.

Work Experience

(2021-present) Full Professor, Faculty of Economics, Free University of Bozen-Bolzano.

(2018-2021) Associate Professor, Faculty of Economics, Free University of Bozen-Bolzano.

(2016-2018) Senior Lecturer, School of Mathematics and Statistics, University of Melbourne.

(2012-2016) Lecturer, School of Mathematics and Statistics, University of Melbourne.

(2008-2012) Assistant Professor (Ricercatore), Department of Economics, University of Modena and Reggio Emilia.

(2010-2012) Associate Research Fellow, European Center for Living Technology, University of Venice.

(2006-2007) Graduate Instructor, School of Statistics, University of Minnesota.

(2005) Biostatistician/Research Assistant, V.A. Memorial Hospital, Minneapolis.

(2003-2006) Teaching Assistant. School of Statistics, University of Minnesota.

(2003-2006) Research Assistant. School of Statistics, University of Minnesota.

Current research focus

Statistical methods and mathematical statistics: Model selection; Inference methods based on divergence minimization; Inference for intractable likelihoods; Robust statistical methods. Applied statistics: Analysis of complex high-dimensional data sets in life and social sciences, including econometric and genetic data, spatial extremes, spatio-temporal modeling for complex data.

Accepted or published papers

(2025) Casa, A., **Ferrari, D.** & Huang, Z. (2025). High-dimensional covariance estimation by pairwise likelihood truncation. *Biometrika*, just accepted.

(2025) Casa, A., and **Ferrari D.**. Confidence set for mixture order selection. *Statistics & Probability Letters*, 226, 110509.

(2024) Goracci, G., **Ferrari, D.**, Giannerini, S., and Ravazzolo, F. Robust estimation for threshold autoregressive moving-average models. *Journal of Business & Economic Statistics* 43.3 (2025): 579-591.

(2024) Di Caterina, C., and Ferrari, D. Model selection by pathwise marginal likelihood thresholding. *Statistics & Probability Letters*, 214, 110214.

(2024) Roner, C., Di Caterina, C., & **Ferrari, D.**. . Exponential tilting for zero-inflated interval regression with applications to cyber security survey data. *Journal of the Royal Statistical Society Series C: Applied Statistics*, 73(4), 1065-1081.

(2024) **Ferrari, D.**, Paterlini, S., Rigamonti, A., & Weissensteiner, A. Smoothed semicovariance estimation for portfolio selection. *Annals of Operations Research*, 1-40.

(2023) Huang, Z. and **Ferrari D.**, Fast Construction of Optimal Composite Likelihoods. *Statistica Sinica*, 34: 47-66.

(2023) Galdi, G., Casarin, R., **Ferrari, D.**, Fezzi, C., and Ravazzolo, F. Nowcasting industrial production using linear and non-linear models of electricity demand. Energy Economics, 126.

(2022) Di Lascio, F. M. L., Falchetta, G. and **Ferrari, D.**, Change detection from high-resolution airborne laser scans using penalized composite likelihood screening. *Spatial Statistics* (published online).

(2022) **Ferrari, D.**, Tonin, M. and Stillman, S., Assessing the impact of COVID19 mass testing in South Tyrol using a semiparametric growth model, *Nature Scientific Reports* 12:17952.

(2021) Huang, Z., Shulyarenko, O., and **Ferrari, D.**. Truncated pair-wise likelihood for the Brown-Resnick process with applications to maximum temperature data. *Extremes* 24.3 (2021): 379-402.

(2021) **Ferrari**, D., Ravazzolo, F., and Vespignani, J. Forecasting energy commodity prices: A large global dataset sparse approach. Energy Economics, 98, 105268.

(2019) Qin, Y., **Ferrari, D.** et al, Model Confidence Bounds for Variable Selection, *Biometrics* (accepted).

(2019) Lee, Amy H., ... **Ferrari D.**, ... et al, Dynamic molecular changes during the first week of human life follow a robust developmental trajectory. *Nature communications*, 10(1), 1092.

(2019) Zheng, C., and **Ferrari, D.** , Model selection confidence sets by likelihood ratio testing. *Statistica Sinica*, Statistica Sinica, 29: 827–851.

(2018) Zheng, C., Zhang, M., **Ferrari, D.** and Baird, P., Ranking genetic factors related to age-related macular degeneration by variable selection confidence sets. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 68: 727-749.

(2018) Qiao, P., Mølck, C., **Ferrari, D.**, and Fred Hollande. A Spatio-Temporal Model and Inference Tools for Longitudinal Count Data on Multicolor Cell Growth. The International Journal of Biostatistics. Published online. doi:10.1515/ijb-2018-0008

(2017) Huang, Z., **Ferrari, D.** and Qian, G.. "Parsimonious and powerful composite likelihood testing for group difference and genotype-phenotype association. *Computational Statistics & Data Analysis* 110 (2017): 37-49.

(2016) Qian, G., Wu, Y., **Ferrari, D.**, Qiao, P., & Hollande, F. semisupervised clustering by iterative partition and regression with neuroscience applications. *Computational intelligence and neuroscience*.

(2016) Creed, S., Le C., Hassan, M., Pon, C, Albold, S., Chan, K., Berginsk, M., Huang, Z., Bear, J, Lane, R., Halls, M., **Ferrari, D.**, Nowell, C., Sloan, E., beta2-adrenergic signaling induces invadopodia for breast cancer cell invasion. *Breast Cancer Research*.

(2016) Le C. ... **Ferrari, D.** ... et al. Chronic Stress Remodels Lymph Vasculature to Promote Tumor Cell Dissemination, *Nature Communications*, 7.

(2016) **Ferrari, D.** and Zheng, C., Reliable inference for complex models by discriminative composite likelihood estimation, *Journal of Multivariate Analysis*, 144: 68-80.

(2016) Giuzio, M., **Ferrari, D.** and Paterlini, S., Sparse and robust normal and t-portfolios by penalized Lq-likelihood minimization, *European Journal of Operation research*, 250(1), 251–261.

(2016) **Ferrari, D.**, Qian, G., and Hunter, T., Parsimonious and Efficient Likelihood Composition by Gibbs Sampling, *Journal of Computational and Graphical Statistics*.

(2016) Bergamaschi, S., **Ferrari**, D., Guerra, F., Simonini, G., & Velegrakis, Y.. Providing insight into data source topics. *Journal on Data Semantics*, 5(4), 211-228.

(2015) **Ferrari, D.** and Yang. Y., Confidence sets for model selection by F-testing, *Statistica Sinica*, 25, 1637–1658.

(2015) La Vecchia, D., Camponovo, L., and **Ferrari D.**, Robust heart rate variability analysis by generalized entropy minimization *Computational Statistics and Data Analysis*, 82: 137-151.

(2014) Kim-Fuchs, C., Le, C. P., Pimentel, M. A., Shackleford, D., **Ferrari D.**; Angst, E., Hollande, F., and Sloan E., Chronic stress accelerates pancreatic cancer growth and invasion: A critical role for beta-adrenergic signaling in the pancreatic microenvironment, *Brain, Behavior, and Immunity*.

(2013) **Ferrari, D.**, Borrotti, M. and De March D., Response improvement in complex experiments by co-information composite likelihood optimization, *Statistics and Computing*, p. 1–13.

(2013) **Ferrari, D.**, and Borrotti, M. *Maximum Entropy Design in High Dimensions by Composite Likelihood Modelling*. mODa 10Advances in Model-Oriented Design and Analysis. Springer International Publishing, 2013. 73-80.

(2012) **Ferrari, D.** and La Vecchia, D. On robust estimation via pseudo-additive information, *Biometrika* , volume 99, issue 1, pages 238–244.

(2012) Bertoldi, C., Bellei, E., Pellacani, C., **Ferrari, D.**, Lucchi, A., Cuoghi, A., Bergamini, S., Cortellini, P., Tomasi, A., Zeffe, D. and Monari, E., Non-bacterial protein expression in periodontal pockets by proteome analysis, *Journal of Clinical Periodontology*.

(2012) Lalla, M., **Ferrari, D.** and Frederic, P. Unit nonresponse errors in income surveys: a case study. *Quality & Quantity*, Volume 46, Issue 6, pp 1769-1794.

(2011) Lalla, M., Frederic, P. and **Ferrari, D.**, Students Evaluation of Teaching Effectiveness: Satisfaction and Related Factors (Attanasio M., Capursi V. - Statistical Methods for the Evaluation of University Systems - Springer Berlin Heidelberg (DEU)), pages 113–129. Applied statistics/Collaborative.

(2011) Pistoresi B., Salsano F., **Ferrari, D.** Political institutions and central bank independence revisited, *Applied Economic Letters*, Vol 18, pp. 679–682.

(2010) **Ferrari, D.** and Yang, Y. Maximum lq-likelihood estimation. *The Annals of Statistics*, Vol.38, n.2, 753-78.

(2009) **Ferrari, D.** and Paterlini, S. The Maximum Lq-Likelihood Method: an application to extreme quantile estimation in finance. *Methodology and Computing in Applied Probability*, Vol.11, n.1, 3-19.

(2009) **Ferrari, D.**, Read, D. and van der Leeuw, S. An agent-based model of information flows in social dynamics, in D. Lane, D. Pumain, S. van der Leeuw and G. West (eds.) Complexity Perspectives on Innovation and Social Change, Springer.

(2009) Villani, M., Bonacini S., **Ferrari, D.**, Serra, R. and Lane, D. Exaptive processes: an agent based model, in D. Lane, D. Pumain, S. van der Leeuw and G. West (eds.) Complexity Perspectives on Innovation and Social Change, Springer. Stochastic modeling.

(2007) Villani, M., Bonacini S., **Ferrari, D.**, Serra, R. and Lane, D. An agent-based model of exaptative processes, *European Management Review*. Vol. 4, 141-151.

Supervision of junior researchers

Postdoctoral researchers: (2024) Dr Patrick Osatohanmewn, (2022) Dr Francesca Papagni, (2021) Dr Zhendong Huang (2019) Dr Claudia Di Caterina. PhD students: (current) Andrea Nicolodi; (2021) Cristian Roner; (2019) PuXue Qiao, Zhenguo Wu; (2018) Zhendong Huang; (2017) Chao Zheng. MSc students: (2022) Antonio Martinelli; (2021) Golin Alberto; (2020) Rossella Monsorno; (2019) Kieran Maguire; (2018) Shiting Zhao, Irina Domaingue, Olga Shulyarenko; (2016) Kexin Xu, Tian Yuan; (2015) Chen Fan, Lachlan McIntosh, Janan Arslan; (2014) Zhendong Huang, Puxue Qiao, Michael Zheng

Grants and research funding

(2026) Co-Principal Investigator, of the unibz unit. Learning complex networks for economic data: theory, methods, and algorithms, Swiss National Science Foundation grant. Role: PI.

(2022) Ageing Population and Sustainability in South Tyrol: epidemiological, economic and social implications of an ageing society. RC UniBZ funding. Role: Co-investigator.

(2021) High-frequency Economic Indicators and Resilience of Society. MIUR funding. Role: Co-investigator.

(2020) Data normalization intelligence: industry collaboration project with Corvallis Spa. Role: Chief investigator.

(2019) Progetti di ricerca interesse nazionale (PRIN): Econometric Analysis of High Dimensional Models with Network Structures in Macroeconomics and Finance, MIUR. Role: Co-investigator

(2018) HIgh-Performance statistical methods for Spatio-Temporal Environmental and econometRic data (HIPSTER). Interdisciplinary University of Bolzano Grant. Role: Chief investigator.

(2018) Euregio Mobility Program grant. First UniBz Summer School in Data Science for the Social Sciences. Role: Project leader.

(2018) REliable ASsessment of the Selection Uncertainty for statistical models by REsampling (REASSURE). Start-up University of Bolzano Grant. Role: Chief investigator.

(2017) Composite likelihood inference for spatio-temporal image data on multicolor cell proliferation, Interdisciplinary seeding grant, University of Melbourne. Role: Chief investigator.

(2016) Australian Mathematical Science Institute industry collaboration intern program, Model selection and prediction of tropical cyclones. Industry partner: Bureau of Methereology. Role: Chief Investigator. .

(2015) Australian Mathematical Science Institute industry collaboration intern program, Reliable data-driven modelling of the security risk in building. Industry partner: Epsilon Security. Role: Chief Investigator.

(2015) University of Melbourne International Research and Research Training Fund grant.Role: Chief investigator.

(2014) University of Melbourne Early Career Research grant, Model selection confidence sets for high- dimensional data. Role: Leading Chief Investigator.

(2014) University of Melbourne International Research and Research Training Fund grant. Role: Chief investigator. Variable selection confidence sets for high- dimensional data. Role: Leading Chief Investigator.

(2010-2012) Fondazione Cassa di Risparmio, Modena, REFIGLO Project - Real and financial economic dynamics in a globalized world: Theory, Modeling, and Policy Implications. Role: co-invstigator.

(2010-2011) Fondazione Cassa di Risparmio di Modena, ASBE Project - Advances in the study of business cycle and economic growth. Role: co-invstigator.

(2008-2009) Progetti di Ricerca di Interesse Nazionale (PRIN), Evolutionary computation in statistical modeling and estimation problems. Role: Chief Investigator.

Service to Profession

I served as an associate editor for Nature Scientific Reports and Mathematics. I served as a referee numerous for the following journals: Statistics and Probability Letters, Journal of American Statistical Association, Statistica Sinica, Biometrika, The Journal of Econometrics, Methodology and Computing in Applied Probability, Computational Statistics and Data Analysis, Entropy, Statistical Methods, Applications and Annals of Human Genetics.

Teaching experience

University of Bolzano:

(2024-2025) 29123 Machine Learning for Econometric Applications (PhD level) 27512 Statistical methods for high-dimensional data, 27511B Data science applications (graduate statistics), 27010 Statistics (undergraduate, introductory subject for economists)

(2020-2023) 27066 Introduction to Statistical Methods (graduate, applied statistics), 27418 Data Management (graduate applied statistics)

(2020-2023) 27066 Introduction to Statistical Methods (graduate, applied statistics), 27418 Data Management (graduate applied stats)

(2018-2019) 27174 Methods for Business Analysis (graduate, applied statistics), 27010 Statistics (undergraduate, introductory subject for economists), 25408 Applied Statistics for Accounting and Finance (graduate, applied statistics), Applied statistics (for Faculty of Science)

University of Melbourne, Australia:

(2017) MAST20031 Analysis of Biological Data (undergraduate,introductory subject for biologists), MAST90110 Analysis of High-Dimensional Data (graduate, advanced statistics subject).

(2012–2015) MAST10001 Experimental Design and Data Analysis (undergraduate, introductory statistics for biologists).

(2013–2016) BINF90001 Statistics for Bioinformatics (graduate, advanced statistical methods for bioinformaticians).

(2014–2016) MAST20005 Statistics (undergraduate, statistical theory).

(2014–2016) MAST90058 Elements of Statistics (graduate, introductory subject for bioinformaticians).

University of Modena and Reggio Emilia, Italy:

(2009-2011) Statistical Learning and Prediction from Data (graduate, applied statistics and generalized linear models)

(2010-2011) Introduction to sampling (graduate, topics in applied dimension reduction and classification)

(2008) Introduction to Statistical Analysis (undergraduate).

University of Parma, Italy:

Spring 2010. Bayesian Analysis for Forensic Sciences (graduate).

School of Statistics, University of Minnesota, USA:

Spring 2007. Instructor, Stat 3011: Introduction to Statistical Analysis (undergraduate)

Fall 2006. Instructor, Stat 3011: Introduction to Statistical Analysis (undergraduate)

Spring 2006. Teaching assistant, Stat 3022: Introduction to Data Analysis (undergraduate)

Fall 2005. Teaching assistant, Stat 5303: Design of Experiments (graduate)

Summer 2005. Teaching assistant, Stat 3011: Introduction to Statistical Analysis (undergraduate)

Spring 2005. Teaching assistant, Stat 1001: Introduction to the Ideas of Statistics (undergraduate)

Fall 2004. Teaching assistant, Stat 5021: Statistical Analysis (graduate)

Summer 2005. Teaching assistant, Stat 5302: Applied Regression Analysis (graduate)

Spring 2004. Teaching assistant, Stat 3011: Introduction to Statistical Analysis (undergraduate)

Fall 2003. Teaching assistant, Stat 1001: Introduction to the Ideas of Statistics (undergraduate)

Summer/Winter Schools:

(2017) Introduction to high-dimensional statistics. Australian Mathematical Science Institue (AMSI) Winter School, Queensland University of Technology, Brisbane, Australia.

(2010) Generalized likelihood inference for biologists (graduate). International Advanced School in Statistical Inference for Biology and Human Sciences, Asti, Italy.

Main administrative responsibilities & engagement

Free University of Bozen-Bolzano:

(2023–2025) Director of the Master in Public Policy and Administration

(2020–2023) Vice dean teaching, Faculty of Economics and Management

(2020–2023) Director of the Master in Public Policy and Administration

(2018–2020) Coordinator for bilateral agreements, Faculty of Economics and Management

University of Melbourne:

(2016–2017) Master of Data Science coordinator

(2017–2018) Mathematics and Statistics Postgraduate Committee member

(2014–2018) Mathematics and Statistics Melbourne-Peking Research Forum Deputy Chair

(2012–2015) Student-Staff Liason Committee member

(2012–2015) Mathematics and Statistics Open Day coordinator

(2013–2015) Undergraduate Studies Committee member

University of Modena:

(2009-10) Seminar series organizer

(2009-10) Undergraduate Studies Teaching Committee