Marco Berrettini

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Current position

Junior assistant professor March 2023 – Present

Department of Statistical Sciences, University of Bologna

- Project: "Statistical foundations of AI: advanced methods and stochastic models for learning and prediction of complex and high-dimensional data"
- Supervisor: Prof. Cinzia Viroli

Past position

Research fellow Jan 2021 – Present

Department of Statistical Sciences, University of Bologna

- Project: "Dynamic and epidemiological models for predicting and controlling the parasite outbreaks in Mediterranean farms"
- Supervisor: Prof. Cinzia Viroli

Education

Ph.D. in Statistical Sciences Nov 2017 – May 2021

University of Bologna

- Thesis: "Flexible Bayesian modelling of concomitant covariate effects in mixture models"
- Adviser: Prof. Giuliano Galimberti

Masters Degree in Statistical Sciences Sep 2015 – Jul 2017

University of Bologna

- Curriculum: Statistical - Methodological
- Thesis: "Flexible modelling of concomitant covariate effects in latent class analysis: some solutions based on spline functions"
- Adviser: Prof. Giuliano Galimberti
- Co-Adviser: Prof. Thomas Brendan Murphy
- Graduation mark: 110/110 cum laude

Bachelor of Science in Statistical Sciences Sep 2012 – Jul 2015

University of Bologna

- Curriculum: Bio - Demographic
- Thesis: "Modelli di regressione per la valutazione di eventi demografici estremi in dati di sequenziamento su popolazioni umane"
- Adviser: Prof. Rossella Miglio
- Co-Advisers: Dr. Alessio Boattini and Dr. Luca Pagani
- Graduation mark: 110/110 cum laude

Research Abroad Experience

Visiting Ph.D student Oct 2019 – Dec 2019

School of Mathematics and Statistics, University College Dublin

- Project: "Mixtures of experts with flexible concomitant covariate effects: a Bayesian solution"
- External Supervisor: Prof. Thomas Brendan Murphy

Visiting student May 2017 – June 2017

School of Mathematics and Statistics, University College Dublin

- Project: "Flexible modelling of concomitant covariate effects in latent class analysis: some solutions based on spline functions"
- External Supervisor: Prof. Thomas Brendan Murphy

Publications

Papers under review:

- M. Berrettini, G. Galimberti, S. Ranciati, T. B. Murphy (2022+): Identifying Brexit voting patterns in the British House of Commons: an analysis based on Bayesian mixture models with flexible concomitant covariate effects.

Papers in scientific journals:

- M. Berrettini, G. Galimberti, S. Ranciati (2022): Semiparametric finite mixture of regression models with Bayesian P-splines. *Advances in Data Analysis and Classification*. DOI 10.1007/s11634-022-00523-5.

Short papers and abstracts:

- M. Berrettini, G. Galimberti, S. Ranciati (2021): Semiparametric finite mixture of regression models with Bayesian P-splines. In: *G. C. Porzio C. Rampichini C. Bocci (Eds.): CLADAG 2021 Book of Abstracts and Short Papers*. Firenze University Press (ISBN 978-88-5518-340-6), p. 268 - 271.
- M. Berrettini, G. Galimberti, S. Ranciati, T. B. Murphy (2019): Flexible Bayesian modelling of concomitant covariate effects in mixture models. In: *CFE-CMStatistics 2019 Book of Abstracts* (ISBN 978-9963-2227-8-0), p. 23.
- M. Berrettini, G. Galimberti, T. B. Murphy, S. Ranciati (2019): Mixtures of experts with flexible concomitant covariate effects: a Bayesian solution. In: *G. C. Porzio F. Greselin S. Balzano (Eds.): CLADAG 2019 Book of Short Papers*. Centro Editoriale di Ateneo, Università di Cassino e del Lazio Meridionale (ISBN 978-88-8317-108-6), p. 87 - 90.

Other:

- M. Berrettini (2021): *Flexible Bayesian modelling of concomitant covariate effects in mixture models*. Dissertation thesis, supervisor: Prof. Giuliano Galimberti. Alma Mater Studiorum University of Bologna, PhD in Statistical Sciences, 33rd Cicle. DOI 10.48676/unibo/amsdottorato/9861.

Participation in research projects

NewTechAqua Jan 2021 – present

as member of the research team:

- *New technologies Tools and Strategies for a Sustainable, Resilient and Innovative European Aquaculture*, funded from the European Union's Horizon 2020 Programme under grant agreement No 862658 (www.newtechaqua.eu).

Conferences, Workshops & Talks

Invited sessions

as speaker:

- *"Semiparametric finite mixture of regression models with Bayesian P-splines"* (with G. Galimberti and S. Ranciati). CSDA & EcoSta Workshop on Statistical Data Science (SDS 2022) – Bologna (IT), August 26 - 28, 2022.

as co-author:

- *"Flexible Bayesian modelling of concomitant covariate effects in mixture models"* (with G. Galimberti, S. Ranciati, T. B. Murphy). 12th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2019) – London (UK), December 14 - 16, 2019.

Contributed sessions

as speaker:

- *"Modelling the Sparicotyle chrysophrii outbreaks in gilthead seabream (Sparus aurata) Mediterranean aquaculture"* (with R. Barić, S. Čolak, M. Kolega, D. Mejdandžić, M.L. Fioravanti, A. Gustinelli, L. Parma and C. Viroli). Aquaculture Europe 2021 – Funchal, Madeira (PT), October 4 - 7, 2021.
- *"Semiparametric finite mixture of regression models with Bayesian P-splines"* (with G. Galimberti and S. Ranciati). Classification and Data Analysis Working Group of the Italian Statistical Society, 13th meeting (CLADAG 2021) – Firenze (IT), September 9 - 11, 2021.
- *"Mixtures of experts with flexible concomitant covariate effects: a Bayesian solution"* (with G. Galimberti, T. B. Murphy and S. Ranciati). Classification and Data Analysis Working Group of the Italian Statistical Society, 12th meeting (CLADAG 2019) – Cassino (IT), September 11 - 13, 2019.

Posters - Lightning talks

as speaker:

- *"Bayesian semiparametric finite mixture of regression models"* (with G. Galimberti and S. Ranciati). 6th Workshop on Models and Learning in Clustering and Classification (MBC^2) - Catania (IT), August 31 - September 2, 2022.

as co-author:

- *"Pro health feed to mitigate Sparicotylosis effects in caged gilthead seabream (Sparus aurata): preliminary results"* (with A. Musmanno, S. Čolak, M. Kolega, M.L. Fioravanti, C. Viroli, M. Berrettini, D. Mejdandžić, R. Barić, G. Bignami, A. Di Biase, A. Gustinelli). Aquaculture Europe 2021 – Rimini (IT), September 27 - 30, 2022.

Awards

Best poster award 2022

- for *"Bayesian semiparametric finite mixture of regression models"*(with G. Galimberti and S. Ranciati) – 6th Workshop on Models and Learning in Clustering and Classification (MBC^2).

Scholarships

Marco Polo scholarship 2019

- Scholarship for research periods (3 months) abroad aimed at the preparation of the doctoral dissertation.

Teaching Activity

2022 – 2023

as Adjunct Professor:

- *Statistical Software for Business* – 6 CFU (30 hours), second cycle degree programme (LM) in Statistics, Economics and Business.

as Teaching Tutor:

- *From Data to Decision*, lifelong learning certificate in Data Science.
- *Statistical Models* (10 hours), first cycle degree programme (L) in Statistical Sciences.

2021 – 2022

as Adjunct Professor:

- *Statistical Software for Business* (30 hours, 6 CFU), second cycle degree programme (LM) in Statistics, Economics and Business.

as Teaching Tutor:

- *Supervised Statistical Learning* (10 hours), second cycle degree programme (LM) in Statistical Sciences.
- *Statistics and Programming* (40 hours), first cycle degree programme (L) in Economics, Politics and Social Sciences.
- *Statistical Models and Applications* (15 hours), second cycle degree programme (LM) in Statistical Sciences.
- *Statistical Models* (10 hours), first cycle degree programme (L) in Statistical Sciences.

2020 – 2021

as Teaching Tutor:

- *Statistical Models and Applications* (15 hours), second cycle degree programme (LM) in Statistical Sciences.
- *Statistical Models* (10 hours), first cycle degree programme (L) in Statistical Sciences.

2019 – 2020

as Teaching Tutor:

- *Statistical Models and Applications* (15 hours), second cycle degree programme (LM) in Statistical Sciences.
- *Tutorials in Statistics* (42 hours), second cycle degree programme (LM) in Economics.

2018 – 2019

as Teaching Tutor:

- *Statistics A-E* (25 hours), first cycle degree programme (L) in Political, Social and International Sciences.
- *Statistics LM* (30 hours), second cycle degree programme (LM) in Economics.

Computer & Language Skills

Softwares: R, SAS, Python, STATA, SPSS, MySQL, Excel, LaTeX
Languages: Italian, English