

Elena Geminiani

Postdoctoral Researcher in Statistics, University of Bologna

📍 Bologna, Italy

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Profile summary: Strong background in statistics, data analysis and machine learning, enriched by research periods abroad at renowned worldwide universities. Enthusiastic about anything at the intersection between statistics and computational science. Teaching assistant in three university courses. Looking for a challenging and dynamic environment where I can apply and extend my skills to make an impact on real-world problems.

Interests

Data Analysis
Machine Learning
Multivariate Analysis
Data Science
Text Analysis
Sparsity
Data Visualization
Optimization
Dimension Reduction
Latent variables
Classification
Clustering
Neural Networks
Programming

Talks

Statistics Seminar at LSE (2019)
International Meeting of Psychometric Society, New York (2018)
ACTNext Tech Talk, Iowa City (2018)

Conferences

useR 2020
eRum 2020
R-ladies meetings
WiDS meetings
IMPS 2018

Languages

Italian (mother tongue)
English (C2; certified)
French (B1; certified)
German (B1; certified)

Work Experience

Postdoctoral Researcher

Development of advanced parsimonious latent variable models for the analysis of graduates' satisfaction.

University of Bologna

Oct 2019 – present

Teaching Assistant

Tutor for three undergraduate and postgraduate courses. Tasks include giving lectures, lab and class practicals, exam invigilation and office hour.

University of Bologna

Sep 2014 – present

Education

PhD in Statistics

Thesis: *A penalized likelihood-based framework for single and multiple-group factor analysis models.*

University of Bologna

Oct 2016 – Sep 2019

Master's degree in Statistical Sciences

110/110 cum laude
Thesis: *Wald tests for factor loading differences in mixture simultaneous factor analysis: power and specificity.*

University of Bologna

Sep 2014 – Jul 2016

Bachelor in Statistical Sciences (Double Degree)

110/110 cum laude; Honours of the First Class
Thesis: *A comparison of clustering methods for determining the operational states of a wastewater treatment plant.*

Universities of
Bologna & Glasgow

Sep 2011 – Jul 2014

International Experiences

University College London (UCL)

Department of Statistical Science
Visitor research student; preparation of the doctoral dissertation.

London, UK

Nov 2018 – Jun 2019

London School of Economics (LSE)

Department of Statistics
Erasmus+ PhD student; preparation of the doctoral dissertation.

London, UK

Jan 2018 – Jun 2018

Katholieke Universiteit Leuven

Faculty of Psychology and Educational Sciences
Visiting Scholar; preparation of the Master's thesis project.

Leuven, Belgium

Feb 2016 – May 2016

University of Glasgow

Department of Mathematics
Fourth-year attendance of the Bachelor in Statistical Sciences, preparation of the Bachelor project and graduation.

Glasgow, UK

Sep 2013 – May 2014

Skills

Programming

R & tidyverse (9 years)
Python (< 1 year)
SPSS (< 1 year)
SAS (1 year)
SAS Enterprise Miner
(1 year)

Databases

SQL (< 1 year)
MongoDB (< 1 year)

Big Data

Spark (< 1 year)
KNIME (< 1 year)
Hadoop (< 1 year)

Reporting

R Markdown (4 years)
LaTeX (6 years)
MS Office (10 years)

Visualization

R (9 years)
Tableau (< 1 year)

Version Control

Git & Github (1 year)

Websites & Apps

R Shiny (2 years)
blogdown (< 1 year)
Hugo (< 1 year)

Transferable

Problem Solving
Independence
Fast learning
Adaptability
Self-motivation
Commitment
Time Management
Public Speaking
Technical Writing

Projects

📌 My contributions to the #tidytuesday challenges ([link to projects](#))

Sample projects: Text Mining the Simpsons Show ([link](#)); BBC Music Best Hip Hop Songs ([link](#))
data wrangling, data visualization, data analysis, text mining, web scraping, Spotify API

📁 Personal website: elena.rbind.io

R, blogdown, Hugo, Github, Markdown, Netlify

🔧 Anomaly detection of a wastewater treatment plant

clustering, unsupervised learning, dimension reduction, time series, predictive maintenance

📊 Sparse estimation of factor analysis models

shrinkage, optimization, efficiency, penalty functions, dimension reduction

📖 Text analysis of Shakespeare's works ([link](#))

non-negative matrix factorization, topic modelling, document classification, text mining

⚙️ Shiny app for sparse factor analysis

R, interactive data visualization, dashboard, factor analysis, multivariate analysis

🌐 Exploration of cross-cultural differences in emotions

factor analysis, hypothesis testing, multiple groups, mixture clustering, multiple testing

🖌️ Image processing of Raphael's Artwork ([link](#))

image compression, matrix decomposition, non-negative matrix factorization

🏛️ Analysis of MoMA artwork collection

pre-processing, data cleaning, analysis, tidyverse, modelling, reporting

📊 Sparsity & Psychometrics: assessing students' psychological abilities

regularization, factor analysis, dimension reduction, multiple groups, optimization

📈 Development of University capacities in Albania

pre-processing, data cleaning, multivariate analysis, educational testing

🏠 Projects on Kaggle: see personal [notebooks](#)

data wrangling, pre-processing, model building, analytics, data visualization

Achievements & Certifications

- Contributor of R package **GJRM**

- Certifications obtained through Coursera (2020)

- SQL for Data Science (UC Davis)

- Fundamentals of Visualization via Tableau (UC Davis)

- Essential Design Principles for Tableau (UC Davis)

- Introduction to Big Data (UC San Diego)

- Big Data Modeling and Management Systems (UC San Diego)

- Big Data Integration and Processing (UC San Diego)

- Machine Learning with Big Data (UC San Diego)

- SAS Certified Predictive Modeler using SAS Enterprise Miner 13 (2015)

- SAS Certified Base Programmer for SAS 9 (2015)

Publications

- **Geminiani, E.** (2020). *A penalized likelihood-based framework for single and multiple-group factor analysis models* (Doctoral dissertation, University of Bologna). Available at amsdottorato.unibo.it/9355
- **Geminiani, E., Ceulemans, E. & De Roover, K.** (In press). *Testing for factor loading differences in mixture simultaneous factor analysis: A Monte Carlo simulation-based perspective*, Structural Equation Modeling: A Multidisciplinary Journal.
- **Geminiani, E., Marra, G. & Moustaki, I.** (Under review) *A penalized likelihood-based framework for single and multiple-group factor analysis models*. Psychometrika.

Awards & Scholarships

- **Research fellowship** at the University of Bologna funded by *GRADUA* (GRaduates Advancement and Development of University capacities in Albania; 2019).
- **Marco Polo** scholarship for research periods abroad (UCL, London; 2018).
- **ACTNext Travel Award** to support travel to the IMPS conference (2018).
- **Erasmus+** scholarship for research periods abroad (LSE, London; 2017).
- **PhD scholarship** at the Department of Statistics, University of Bologna (2016).
- **Study award** for distinguished merit in academic performance at Univ. Bologna (2016).
- **Master's thesis** scholarship for research periods abroad (KU Leuven; 2015).
- **Erasmus** scholarship for research periods abroad (University of Glasgow; 2013).
- **Study Award**: two-times recipient of the scholarship by **CO.RA S.p.A.** (car accessories distributions), Barbiano di Cotignola (2011, 2012).