Elena Geminiani

Postdoctoral Researcher in Statistics at University of Bologna

Bologna, Italy
@ elenageminiani@gmail.com
github.com/egeminiani
unibo.it/sitoweb/elena.geminiani4
linkedin.com/in/elenageminiani
k kaggle.com/elenageminiani

Profile summary: Strong background in statistics, data analysis and machine learning, enriched by research/study periods abroad at renowned worldwide universities. My current work focuses on multivariate analysis, dimension reduction, text analysis and optimization. Teaching assistant in three undergraduate and postgraduate courses.

Research Interests
Computational Statistics
Multivariate Analysis
Machine Learning
Sparsity
Modelling
Analytics
Optimization
Data Mining
Data Science
Text Analysis
Latent variables
Neural Networks
Data Visualization

Skills
R, tidyverse, R Shiny
R Markdown, Python
Matlab, SAS
SAS Enterprise Miner
SQL, LaTeX, Tableau
Latent GOLD, SPSS
Microsoft Office
KNIME, MongoDB
Spark, Hadoop
Git, Shell scripting

Research
Programming
Public Speaking
Data visualization
Reporting
Technical Writing
Problem Solving
Independence
Fast learning

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

Languages
Italian (mother tongue)
English (C2 level)
French (B1 level)
German (B1 level)

Work Experience

Postdoctoral Researcher
University of Bologna
Development of advanced parsimonious latent variable models for the analysis of graduates' satisfaction.

Bologna, Italy
Oct 2019 – present

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

Bologna, Italy
Sep 2014 – present

Education

PhD in Statistics
University of Bologna
Thesis: *A penalized likelihood-based framework for single and multiple-group factor analysis models.*

Bologna, Italy
Oct 2016 – Sep 2019

Master's degree in Statistical Sciences
University of Bologna
110/110 cum laude
Thesis: *Wald tests for factor loading differences in mixture simultaneous factor analysis: power and specificity.*

Bologna, Italy
Sep 2014 – Jul 2016

Bachelor in Statistical Sciences (Double Degree)
University of Bologna
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.*

Bologna, Italy & Glasgow, UK
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

Projects

🏷 My contributions to the #tidytuesday challenges (link to projects)

Sample projects: The Simpsons TV Show (link); BBC Music Best Hip Hop Songs (link)

data wrangling, data visualization, data analysis, text mining, web scraping, Spotify API

🔧 Fault prediction of a wastewater treatment plant

clustering, predictive maintenance, dimension reduction, time series, anomaly detection

📊 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

🖌 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, modelling, reporting

🧮 Assessment of students' psychological abilities

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

📈 Development of University capacities in Albania

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

🏔 Projects on Kaggle: see notebooks

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

Achievements & Certifications

○ Contributor of `R` package `GJRM`

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

○ SAS Certified Base Programmer for SAS 9 (2015)

○ Certifications obtained through Coursera

  – SQL for Data Science (University of California, Davis; 2020)
  – Fundamentals of Visualization via Tableau (Univ. of California, Davis; 2020)
  – Essential Design Principles for Tableau (Univ. of California, Davis; 2020)
  – Introduction to Big Data (UC San Diego; 2020)
  – Big Data Modeling and Management Systems (UC San Diego; 2020)
  – Big Data Integration and Processing (UC San Diego; 2020)
  – Machine Learning with Big Data (UC San Diego; 2020)

Talks

○ Social Statistics Seminar at the London School of Economics (2019)

○ International Meeting of the Psychometric Society in New York, USA (2018)

○ ACTNext Tech Talk at ACTNext, Iowa City, USA (2018)

Publications

- **Geminiani**, E. (2020). *A penalized likelihood–based framework for single and multiple–group factor analysis models* (Doctoral dissertation, University of Bologna). Available at https://amsdottorato.unibo.it/

- **Geminiani**, E., Ceulemans, E. & De Roover, K. (Accepted). *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 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 University of Bologna (2016).

- **Study award** in favor of worthy students of the University of 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).