Mario Figueira Pereira

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mariofigueirap.github.io

Work history

03/2023 – present
Predoctoral fellow, Universitat de Valéncia Estudi General.
Space-time analysis of land use at the European level, using hierarchical Bayesian models implemented with the `R-INLA` software. Member of the European project LAMASUS (LAnd MAnagement for SUStainability) as a young researcher.

25/10/2022 – 08/03/2023
Predoctoral fellow, Universitat de Valéncia Estudi General.
Space-time analysis of the distribution of the *Ceratitis Capitata*, implementing hierarchical space-time Bayesian models.

11/2021 – 02/2022
External Curricular Internship, Consultancy Promedio, S.L.
During the internship, I have conducted space-time simulation and modeling of species distribution, Bayesian inference with INLA, and geostatistical analysis using INLA-SPDE methodologies.

Education

10/2022 – present
PhD in Statistics and Optimization, Universitat de Valéncia Estudi General.
Main research line in space-time Bayesian modeling.

09/2020 – 07/2022
Master in Biostatistics, Universitat de Valéncia Estudi General.
Master's Thesis: *Methodology for Feedback between Independent Spatial Models and Preferential Models*.

09/2014 – 09/2019
Degree in Physics, Universidade de Santiago de Compostela.
Undergraduate Thesis: *Simulation of Multi-junction Photovoltaic Cells*.

Congresses, workshops and symposia

1. Participation in the XVIII Congress of Biometry CEBMADRID with a poster titled *Estimating essential habitats combining fishery-dependent and -independent data applying Bayesian learning* (Madrid, Spain, 05/2022).
2. Participation in the 5th General Meeting of BIOSTATNET in Santiago de Compostela, with the presentation of a poster titled *Combining different kinds of ecological data using Bayesian feedback* (Santiago de Compostela, Spain, 19/01/2023 - 20/01/2023).
3. International communication titled *Improving essential habitats estimation applying Bayesian feedback*, participating as an invited speaker in the *Advanced Species Distribution Modeling* workshop held at the *Universidade do Minho*. Awarded as one of the best oral presentations in the *Student Session* (Guimarães, Portugal, 23/01/2023).

4. Participation in the *Workshop on Bayesian Modeling for Complex Correlated Data* as an invited speaker, with an oral presentation titled *Improving Species Distribution Models using Bayesian feedback* (Valencia, Spain, 16/05/2023-18/05/2023).

5. Participation in the workshop *13th Bayesian Inference for Stochastic Processes* with an oral presentation titled *Improving ecological modeling using Bayesian feedback* (Madrid, 22/05/2023-24/05/2023).

6. Participation in the *XIX Spanish Conference and VIII Ibero-American Biometrics Meeting* with an oral exposition titled *A Shiny App for spatial species distribution modeling* (Vigo, Spain, 27/06/2023-30/06/2023).

7. Participation in the *XL National Congress of Statistics and Operations Research* with an oral presentation titled *A Shiny App for spatial species distribution modeling* (Elche, Spain, 7/11/2023-10/11/2023).

8. Participation in the *II R Conference and XIII R Users' Meeting* with an oral presentation titled *BAYSPINS: A Shiny app for spatial modelling* (Barcelona, Spain, 15/11/2023-17/11/2023).

9. International communication as an invited oral presentation at the *16th International Conference of the ERCIM WG on Computational and Methodological Statistics*, with an oral presentation titled *Modelling independent and preferential data jointly* (Berlin, Germany, 16/12/2023-18/12/2023).

Published papers

1. Marta González-Warleta, José Antonio Castro-Hermida, **Mario Figueira**, Jesúa López, David Conesa, Antonio López-Quílez, Florencio M. Ubeira, Mercedes Mezo, *Bayesian hierarchical modelling of the geospatial distribution of fasciolosis in dairy cattle and the impact on production: Application to the main milk-producing region (Galicia) in Spain*, Veterinary Parasitology, Volume 325, 2024, 110091, ISSN 0304-4017, https://doi.org/10.1016/j.vetpar.2023.110091.

Papers under revision

1. **Mario Figueira**, Xavier Barber, David Conesa, Antonio López-Quílez, Joaquín Martínez-Minaya, Iosu Paradinas y Maria-Grazia Pennino, *Bayesian feedback in the framework of ecological sciences*. Submitted to *Ecological Informatics*.

2. **Mario Figueira**, David Conesa, Antonio López-Quílez, *A Shiny R app for spatial analysis of Species Distribution Models*. Submitted to *Ecological Informatics*.

Preprint papers

1. **Mario Figueira**, Xavier Barber, David Conesa, Antonio López-Quílez, Joaquín Martínez-Minaya, Iosu Paradinas y Maria-Grazia Pennino, *Bayesian feedback in the framework of ecological sciences*.

2. **Mario Figueira**, David Conesa, Antonio López-Quílez, et al. How to perform modeling with independent and preferential data jointly?. Authorea. July 17, 2023. https://www.authorea.com/users/640234/articles/655188-how-to-perform-modeling-with-independent-and-preferential-data-jointly

Courses

1. Attendance at the course *Bayesian spatial and spatio-temporal models with R-INLA* taught by Håvard Rue and Elias T. Krainski (Pamplona, Spain, 25/01/2023-27/01/2023).

Collaborations

03/2022 - 01/2024 — Collaboration in the spatial analysis of the distribution of *Fasciola hepatica* and productive variables in livestock farms in Galicia. Development of geostatistical models for the presence/absence of *Fasciola hepatica* on farms and for continuous data of productive variables.

Contributions on GitHub

- `SpatialModeling ShinyApp`. An application developed with Shiny that implements the **R-INLA** environment to solve geostatistical and preferential models. In addition to allowing configuration of arguments related to the operation of INLA, it also enables feedback processes.

- `Transformation to sp/sf`. A series of functions are developed that allow converting objects of type *inla.segment* and *inla.mesh* into spatial objects from the `sp` and `sf` packages. These functions enable obtaining spatial objects considering any arbitrary number of holes within the polygons, whether they have multiple levels of depth or a single level of depth.

Skills

Computing	R, Python, Mathematica, LabVIEW, …
Composition of Scientific Texts	Markdown, LaTeX, Beamer, Quarto, …
Miscellanea	HTML/CSS, Hugo, TikZ, knitr, ggplot2, …