Wilmar Cardona

Data Scientist, Phd

Data Mining

Software development

Sustainability

Bayesian statistics

Research

Website Github

LinkedIn X

Docker

Experienced data scientist with strong skills in mathematical and numerical data modelling, computer programming, assessing the reliability of data and the significance of results, communicating complex information and data through presentations, writing technical reports and project proposals, having the ability to quickly study new subjects and rapidly deliver substantial results. My motivation to transition from Academia to industry stems from my desire of new challenges where I can carry out team-based research and work in multi-disciplinary groups

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Como
Italy

Resume created on DoYouBuzz

EXPERIENCES

Software Engineer

Menarini Silicon Biosystems - Since March 2024 - Full-time - Italy

Artificial Intelligence projects on Biotechnology

Senior Post-doctoral researcher

Universidad Antonio Nariño - December 2022 to October 2023 - Full-time

Leading data science projects in cosmology covering data characterisation, data exploration, data model using machine learning methods and model deployment for the analysis of big data sets

Senior Post-doctoral researcher

International Centre for Theoretical Physics - South American Institute for Fundamental Research & Instituto de Física Teórica UNESP - January 2022 to November 2022 - Full-time

- Developed analytical computation methods for cosmological data and implemented them in numerical codes thus allowing testing against datasets. Found alternative cosmological models which could fit the data better, while being favoured by Bayesian evidence
- Through Genetic Algorithms, a machine learning technique, found the current, most simple, accurate, analytical, approximate expression for the matter transfer function: a key function which allows discrimination of cosmological models through comparison with statistical properties of a great number of galaxy positions listed in catalogues

Post-doctoral researcher

Universidad del Valle - July 2019 to December 2021 - Full-time

- Funding raising to carry out research projects. Led research projects involving parameter inference as well as forecasting the performance of forthcoming experiments. Developed and validated software for testing physical models using publicly available data
- Scientific reviewing: referee for funding agencies and international journals, supervisor and mentor for MSc and Phd students, member of thesis panels (i.e., BSc, MSc, Phd)

Post-doctoral researcher

Instituto de Física Teórica UAM-CSIC - June 2017 to May 2019 - Full-time - Madrid - Spain

Led and carried out the management of research projects focused on alternative cosmological models. Cross-validated the models using multiple datasets as well as High Performance Computing resources. Regularly presented research results on scientific events and international journals

Phd Researcher

University of Geneva - June 2012 to September 2016 - Full-time - Geneva - Switzerland

- Member of the Theory Science Working Group in the European Space Agency (ESA) mission EUCLID: Statistical Methods and Forecasting. Developed software for carrying out forecasts (i.e., Fisher matrix and Markov Chain Monte Carlo) of the scientific exploitation in the mission. Carefully modelled physical effects (thus far neglected) in cosmological models and showed their inclusion is crucial for unbiased parameter estimation
- Developed a Bayesian statistical method for the analysis of Cepheid variables and supernovae. Showed that using hyper-parameters it makes it possible to obtain accurate, unbiased constraints of parameters without arbitrarily discarding outliers in the dataset
- Modified/wrote numerical codes (Fortran, C, Python) that solve complex systems of differential equations, perform parameter inference in models with a high number of degrees of freedom, assess non-Gaussianity and isotropy in data from the ESA mission PLANCK

EDUCATION

Ph. D in Physics

UNIVERSITY OF GENEVA, GENEVA, SWITZERLAND
2016

Title: "Cosmological constraints: anisotropic dark energy, the Hubble constant, and the neutrino mass"

M. Sc. in Physics

2012

B. Sc. in Physics

2009

SKILLS

Computer Skills

- Python (e.g., Numpy, Pandas, Scipy, Scikit-learn, Matplotlib, TensorFlow, Keras)
- R, Fortran, C, Linux
- MySQL
- PyCharm, RStudio, Emacs, Visual Studio Code
- Orange
- SPSS, Mathematica, Word, Excel, PowerPoint, LaTeX, WordPress
- High Performance Computing (e.g., SLURM,HTCondor)
- GitHub
- Docker
- Google Cloud Platform
- Neural Networks
- CELLSEARCH Cell Interpretation
- Machine Learning (e.g., MLOps, classification, clustering, regression)
- QuPath
- Computer Vision (e.g., image segmentation and classification)

LANGUAGES

English
C1

French
B2: I lived 4 years in Geneva, Switzerland

Portuguese
C1: I lived 3 years in Rio de Janeiro and Sao Paulo, Brazil

Italian
B2: I have lived in Italy since February 2023

Spanish
Native

INTERESTS

Sports

Cycling, Capoeira, Basketball

Arts

Oil Painting, Films

Literature

Sociology