Manuel Alejandro Jiménez Morales

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A data scientist who aims to contribute towards significant insights in the understanding of our physical environment. My research delves into the intersection of Astrophysics and Data Science, leveraging the potential offered by latest advances in data mining and machine learning.

Academic Background

Sep 2020 **Ph.D. in Computer Science**, *University of Nottingham*, Nottingham, United Kingdom.

· Thesis title: **Novel Automated Classification Approaches for Citizen Science**.

· Short abstract: *This thesis provides a set of novel mechanisms towards an improved automated classification based on citizen science. A novel learning paradigm is established, which is able to exploit data either labelled by experts and amateurs in the course of citizen science projects and unlabelled data. The conducted research has signified a global study of the automated classification of galaxy images astronomical problem that, from state-of-the-art approaches, has contributed new methods built on the boundary amongst citizen science, astroinformatics, and machine learning fields of study.*

Jan 2016 **Master Degree in Physics**, *University of Granada*, Granada, Spain.

Jun 2006 **Bachelor Degree in music (Piano)**, *SCAEM Professional School of Music*, Granada, Spain.

Research Work

Published:

- **M. Jiménez**, M. Torres Torres, R. John, I. Triguero. *Galaxy image classification based on citizen science data: A comparative study*. IEEE Access 8, 47232–47246, 2020. Impact Factor: **3.745** (JCR 2019). DOI: 10.1109/ACCESS.2020.2978804
- **M. Jiménez**, M. Torres Torres, R. John, I. Triguero. *A preliminary approach for the exploitation of citizen science data for fast and robust fuzzy k-nearest neighbour classification*. IEEE International Conference on Fuzzy Systems (FUZZ-IEEE). New Orleans (USA), June 23–26, 2019. DOI: 10.1109/FUZZ-IEEE.2019.8858830
- **M. Jiménez**, I. Triguero, R. John. *Handling uncertainty in citizen science data: Towards an improved amateur-based large-scale classification*. Information Sciences 479, 301–320, 2019. Impact Factor: **5.910** (JCR 2019). DOI: 10.1016/j.ins.2018.12.011
- **M. Jiménez**, I. Triguero, R. John. *A first approach for handling uncertainty in citizen science*. IEEE International Conference on Fuzzy Systems (FUZZ-IEEE). Rio de Janeiro (Brazil), July 8–13, 2018. **Nominated for the best conference paper award**. DOI: 10.1109/FUZZ-IEEE.2018.8491451

In preparation:

- **M. Jiménez**, M. Torres Torres, I. Triguero. *CzSL: A Novel Learning Paradigm for Citizen Science*. In preparation for submission to IEEE Transactions on Cybernetics.

- E.J. Alfaro, **M. Jiménez**, M.C. Sánchez-Gil. *3D topography of the galactic stellar cluster system within a 2 kpc radius around the Sun: Spatial and kinematic patterns of the clustered star formation in the solar neighborhood*. In preparation for submission to Astrophysical Journal.

Computer Skills

- Good command of **Python** and **R**.
- Expertise in **Matlab**, **Java**, **C** and **Fortran**.

Languages

English: Fluent (C1 CEFR grade) *IELTS Academic (Dec 2016)*

Spanish: Native *Mother language*

Professional Experience

2021 – present **Postdoctoral researcher**, *Instituto de Astrofísica de Andalucía*, Granada (Spain), for the development of research tasks in the application of machine learning techniques to the analysis of big data surveys. Funded by the Agencia Estatal de Investigación as part of the Excelencia Severo Ochoa 2018–2022 program.

2017 – 2020 **Ph.D. scholarship**, *School of Computer Science, University of Nottingham*, Nottingham (UK), for the development of doctoral studies in the area of Data Science.

2017 – 2020 **Teaching assistant**, *School of Computer Science, University of Nottingham*, Nottingham (UK), working as a lab assistant, running tutorials, and marking in the following undergraduate modules: *Mathematics for Computer Scientists* (G51MCS), *Fundamentals of Artificial Intelligence* (G51FAI), *Programming Paradigms* (G51PGP), and *Data Modelling and Analysis* (G54DMA).

Academic Experience

2019 – date **Project Supervision**, *University of Nottingham*, Nottingham (UK).

- B.Sc. dissertation: *Exploring Data Level Techniques to Address Imbalance for Classifying Visible Spectra Mergers*. Student: Alexander Dewfall. Co-supervisor: Dr. Isaac Triguero.
- M.Sc. dissertation: *Imbalanced Datasets for Classification: Using deep learning assisted oversampling to aid in Galaxy Classification*. Student: Nathan Pierce. Co-supervisor: Dr. Isaac Triguero.

2019 – date **Reviewer**, *Scientometrics*, an international journal for all quantitative aspects of the science of science, communication in science, and science policy.

Additional Training

Jun 2018 **Preparing to Teach in Higher Education Certificate**, *University of Nottingham*, Nottingham (UK).

Apr 2018 **NATCOR Approximation Algorithms**, *University of Nottingham*, Nottingham (UK).

Jan 2018 **International Winter School on Big Data**, *West University of Timișoara*, Timișoara (Romania).

Jul 2017 **DeepLearn International Summer School**, *University of Deusto, Rovira i Virgili University*, Bilbao (Spain).

Apr 2017 **NATCOR Stochastic Modelling**, *University of Lancaster*, Lancaster (UK).