CURRICULUM VITAE (CVA)

CV date	

Part A. PERSONAL INFORMATION

First name	Dora		
Family name	Blanco Heras		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number	NIF:		
e-mail		https://citius.usc.es/equipo/persoal-adscrito/dora-blanco-heras	
Open Research and Contributor ID (ORCID)(*)		0000-0002-5304-1426	

(*) Mandatory

A.1. Current position

Position	Profesora Catedrática de Universidad		
Initial date	Octubre de 2023		
Institution			
Departament/Center	Dept. Electrónica y Computación/Escuela Técnica Superior de Enxeñería		
Country	Spain	Teleph. number	
Key words	Computer architecture, High performance computing, remote Sensing, hyperespectral imaging		

A.2. Previous positions (research activity interruptions, art. 45.2.c))

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Physics	Univ. de Santiago de Compostela/Spain	2000
Degree in Physics	Univ. de Santiago de Compostela/Spain	1993

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

My research experience has been in HPC during the last 21 years and in the application of HPC to remote Sensing during the last 12 years. During my PhD thesis I worked on efficient programming on parallel architectures and, in particular,on the development of techniques for the improvement of locality in the execution of irregular codes. I also held a management position at USC associated with the coordination of the Office for Sustainable Development between 2004 and 2009. I am currently a member of the Computer Architecture research group at USC inside which I co-lead the Multispectral Remote Sensing group together with Prof. F. Argüello. I am also a researcher attached to the Centro de Investigación en Tecnoloxías Intelixentes (CITIUS) at USC. Finally, I have obtained the maximum evaluation inside CiTIUS graded as A and a positive evaluation for 4 six-year research periods from ANECA.

The objective of my present research is the development of computationally efficient solutions for remote sensing problems applied to different areas such as agriculture, ecosystem conservation, urban monitoring or medicine. From a computational point of view the focus is

on high performance computing approaches exploiting hardware platforms such as heterogeneous systems and accelerators (GPUs and FPGAs), among others. As a result of the research, efficient software solutions for remote sensing problems were proposed for all the stages in the remote sensing processing chain, ranging from the capture of information by sensors to offering processed information to the user and involving registration, noise reduction, compression, classification, etc.

As a result, I am the author of 42 publications indexed in JCR during the last 10 years, 12 of them are ranked Q1 and 23 Q2. I am also the author of 9 book chapters, and 67 contributions to conferences. I am also editor of 7 volumes of LNCS corresponding to the workshop proceedings of the 2017 to 2022 editions of the Euro-Par conference. I have also participated in 13 contracts, 12 networks and 26 competitive projects including national and regional ones, one of them at the European level. I am co leading researcher of 3 of the national projects and 3 of the transfer contracts. My h index is 20 according to Google Scholar.

Regarding transference activity, my most relevant participation is in the production of computationally efficient and usable interfaces that could make the very high dimensional information obtained in the form of hyperspectral or multispectral images accessible to non-experts in remote sensing processing, thus facilitating their work. I have participated in 14 contracts and I am IP of two of them in the period 2018-2020. As a result we signed 6 software registrations (3 of them in exploitation).

I have been very active during the last 10 years regarding international activity. This includes research collaboration with groups of remote sensing from Universitá degli Studi di Trento, the University of Iceland, Technische Universität Berlin or Juelich Supercomputing centre, among others. I have co-founded and lead the Working Group on High Performance and Disruptive Computing in Remote Sensing under the IEEE Geoscience and Remote Sensing Society (htpps://www.hdc-rs.com/). In this frame I have co-organized different activities such as the three first editions of the Summer School on High Performance Computing in May 2021, 2022 and 2023 (Iceland), or a Webinar for the GRSS community.

During these years I have also participated as co-organizer in sessions of different international conferences such as HLPP17, PDP2021, PDP2022, PDP2023 or ACM SigSpatial GeoSearch2021 and 2023. I would like to highlight that I am a member of the Steering Committee of the Euro-Par conference since 2017 and co-chair of the 12 workshops co-located with the conference for every edition since 2017. I also serve as a reviewer of very relevant journals such as Parallel Computing, Int. Journal of Remote Sensing, Remote Sensing Letters, and Journal of Sel. Topics in Applied Earth Obs., among others. I have also served as evaluator of the the Valencian Agency for Prospection and Evaluation (AVAP) since March 2019 and as ANEP evaluator since October 2019.

Regarding education, I participated in 2 projects on teaching innovation during (2019 and 2020) funded by UVA. In addition, I have supervised 20 final degree and final master dissertations and 7 theses awarded with the maximum degree during the last 10 years. I am currently supervising 3 more thesis. The young researchers had a very good professional projection. They continue their research. In particular, J. Lamas-Rodríguez currently works in data analysis, 3D modeling and visualization at the company 100Shapes (Germany), Pablo Quesada-Barriuso, J. Fandiño and A.S. Garea are assistant professors at USC and A. Ordoñez is a postdoctoral Juan de la Cierva researcher at University of La Coruña.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(see instructions)*

1- Gabriele Cavallaro, Dora B. Heras, Zebin Wu, Manil Maskey et al. High-Performance and Disruptive Computing in Remote Sensing: HDCRS-A New Working Group of the GRSS Earth Science Informatics Technical Committee.IEEE Geoscience and Remote Sensing Magazine. 2:2,329-345. 2021. JCR Q1.

2- F. Argüello, D.B. Heras, A.S. Garea and P. Quesada-Barriuso. Watershed Monitoring in Galicia from UAV Multspectral Imagery Using Advanced Texture Methods, Remote Sensing, 13:1-22. 2021 JCR Q1.
3- Sergio R. Blanco; Dora B. Heras; Francisco Argüello. Texture Extraction Techniques for the Classification of Vegetation Species in Hyperspectral Imagery: Bag of Words Approach Based on Superpixels. Applied Sciences. MDPI. 12-16, paper 2633. 2020. JCR Q2.
4- Alberto S. Garea; Dora B. Heras; Francisco Argüello. TCA Net for Domain Adaptation of Hyperspectral Images Remote Sensing. MDPI. 11-11. 2019. JCR Q1
5- Pedro G. Bascoy; et al. (4/3). Wavelet-based Multicomponent Denoising Profile for the Classification of Hyperspectral Images IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS). IEEE. 12-2, pp.722-733. 2019. JCR Q2.
6- Pedro G. Bascoy; et al. (6/3). Extended Attribute Profiles on GPU Applied to Hyperspectral Image Classification The Journal of Supercomputing. Springer. pp.1-15. 2018. JCR Q2.
7- Alvaro Ordóñez; Dora B. Heras; Francisco Argüello. GPU Accelerated FFT-Based Registration of Hyperspectral Scenes IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing. IEEE. 10-11, pp.4869-4878. 2017. JCR Q2
8- Pablo Quesada-Barriuso, Francisco Argüello, Dora B. Heras, and Jón Atli Benediktsson. Wavelet based classification of Hyperspectral images using extended morphological profiles on graphics processing units. IEEE J. Selected Topics in App. Earth Obs. and Remote Sensing, 8, pp. 2962-2970. 2015. JCR Q1
9- J. Lopez Fandiño, P. Quesada-Barriuso, D. B. Heras, F. Argüello. Efficient ELM-Based Techniques for the Classification of Hyperspectral Remote Sensing Images on Commodity GPUs. Revista : IEEE Journal of Selected Topics in App. Earth Obs. and Remote Sensing. IEEE. 8-6, pp.5 2884-2893.2015. JCR Q1
10- Pablo Quesada-Barriuso; Francisco Arguello; Dora B. Heras. 2014. Spectral-Spatial Classification of Hyperspectral Images Using Wavelets and Extended Morphological Profiles IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing. 7-4, pp.1177-1185. ISSN 19391404. 2014. JCR Q1

C.3. Research projects

1- **Fast-DEM:** Monitorización Digital Rápida de Ecosistemas Fluviales. Proyectos de Transición Ecológica y Digital 2021, Ref. ED2021-130367B-I00.IP: Dora Blanco Heras y Francisco Argüello Pedreira (USC). 01/12/2022 al 01/12/2024. 190.155 €
2- **Computación HPC y Cloud para aplicaciones de alto interés.** PID-2019-104834GB-100. Proyectos de I+D, Ministerio de Ciencia, Innovación y Universidades, Francisco Fernández Rivera y Dora Blanco Heras 01/01/2020 - 31/12/2023. 190.938 €
3- **Consolidación y estruturación de unidades de investigación competitivas.** Grupo de referencia competitiva (GRC) GI-1638. Consellería de Educación, Xunta de Galicia. Francisco Fernández Rivera. (USC). 01/01/2019 al 31/12/2021. 320.000 €.
4-**SDNHPC**: Soluciones para nuevos desafíos en computación de altas prestaciones TIN2016-76373-P.Agencia Estatal de Investigación. F. F. Rivera. 01/01/2017 - 31/12/2019. 386.350 €.
5- **CITIUS**-Agrupacións estratéxicas 2016 (2016-PG014). Ref. ED431G/08 (Universidad de Santiago de Compostela). 01/01/2016 - 30/12/2019. 1.400.000 €.
6- **PROPHET**: Paralelización de algoritmos secuenciales de aplicaciones científicas y de ingeniería desplegables en plataformas heterogéneas interconectadas. Ref. VA082P17 Diego Rafael Llanos Ferraris. (Universidad de Valladolid). 01/01/2017 - 30/11/2019. 120.000 €.
7- **SHSCAP:** Soluciones hardware y software para la computación de altas prestaciones. Ref: TIN2013-41129-P Ministerio de Educación y Ciencia de España. MINECO 6PN – Ciencias de la computación y tecnología informática. F. F. Rivera. 01/01/2014 - 31/12/2016. 386.350 €.
8- **Consolidación y estruturación de unidades de investigación competitivas.** Grupo de referencia competitiva (GRC) GI-1638. Ref. GRC2014/008. Consellería de Educación, Xunta de Galicia. Francisco Fernández Rivera. (USC). 24/06/2014 al 31/12/2017. 200.000 €.

9- **HSCAP**: Hardware y software para computación de altas prestaciones. Ref: TIN 2010-1754 Ministerio de Educación y Ciencia de España. 6PN. Francisco Fernández Rivera y Dora Blanco Heras. 01/01/2011 - 31/12/2014. 224.334 €.

C.4. Contracts, technological or transfer merits

1 Knowledge transfer. HyperEdit' entre Babcock Misión Crítical Services Fleet Management e a USC (2021-AT001), Babcock Mission Critical Services Fleet Management, SA, Francisco Argüello Pedreira y Dora Blanco Heras, USC, 5.000,00 euros, 01/02/2021-31/01/2041.

2 Contract Civil UAVs Initiative. Análisis de viabilidad del algoritmo de identificación de vegetación y otros elementos artificiales en la cuenca hidrográfica. Babcock. Dora Blanco Heras y Francisco Argüello. 01/01/2019 - 01/01/2020. 68.211,61 €.

3 Contract Civil UAVs Initiative. Análisis de viabilidad del algoritmo de identificación de vegetación y otros elementos artificiales en la cuenca hidrográfica. Babcock. Dora Blanco Heras y Francisco Argüello. 31/07/2018-P5M. 20.908,8 €.

4 Contract Cursos de formación sobre “Programación eficiente de sistemas paralelos y distribuidos” (2016-CL066). Fundación Centro Tecnolóxico de Galicia. José Carlos Cabaleiro Domínguez. 01/01/2017 – 31/03/2017. 8.120 €.

5 Contract Centro de Supercomputación de Galicia: Computación de altas prestacións. 2010-CL086. Fundación Centro Tecnolóxico de Supercomputación de Galicia. Anselmo Tomás Fernández Pena. 01/01/2011-31/12/2011. 12.000 €.

6 Contract Computación de altas prestacións. 2011-CL079. Fundación Centro Tecnolóxico de Supercomputación de Galicia. A. Tomás F. Pena. 19/12/2011-31/12/2012. 11.820 €.

7 Contract Análise, modelaxe e mellora do rendemento de aplicación en computación de altas prestacións. Fundación Centro Tecnolóxico de Supercomputación de Galicia. Anselmo Tomás Fernández Pena. 23/12/2010 - 31/12/2012. 11.820 €.

8 Contract Optimización de aplicaciones irregulares en arquitecturas emergentes de altas prestaciones CPU/GPU. Ref:I09TIC002CT. Fundación Centro Tecnolóxico de Supercomputación de Galicia. Juan Carlos Pichel Campos. 23/12/2009-31/10/2012.13.915 €.

Software Registrations:

1- Francisco Argüello Pedreira y Dora Blanco Heras. Solicitud SC-51-2019. Segmentador SLIC para imágenes de sensado remoto. Número de asiento registral 03/2019/273 España. 19/02/2019. USC. En explotación por la empresa Babcock.

2- Francisco Argüello Pedreira y Dora Blanco Heras. Solicitud SC-52-2019. Perfiles morfológicos para imágenes de sensado remoto. Número de asiento registral: 03/2019/274 España. 19/02/2019. USC. En explotación por la empresa Babcock.

3- Francisco Argüello Pedreira y Dora Blanco Heras. SC-53-2019. Clasificadores ELM y KELM para imágenes de sensado remoto 03/2019/275 España. 19/02/2019. Número de asiento registral: 03/2019/273. USC. En explotación por la empresa Babcock.

4- Francisco Argüello Pedreira; Dora Blanco Heras. SC-54-2019. Segmentador watershed para imágenes de sensado remoto. N. de asiento: 03/2019/276 España. 19/02/2019. USC.

5- Francisco Argüello Pedreira; Dora Blanco Heras. SC-55-2019. Perfiles de reducción de ruido para imágenes de sensado remoto. Número: 03/2019/277 España. 19/02/2019. USC.

6- Francisco Argüello Pedreira y Dora Blanco Heras. SC-56-2019. Algoritmo de agrupamiento k-means para imágenes de sensado remoto. Número de asiento registral: 03/2019/278 España. 19/02/2019. Universidad de Santiago de Compostela. En explotación por Babcock.