

CV Date

30/08/2024

## Part A. PERSONAL INFORMATION

First Name Family	Pedro
Name	Arias Sánchez
Open Researcher and Contributor ID (ORCID)	0000-0002-3547-8907

### A.1. Current position

Job Title	Professor		
Starting date	2020		
Institution	Universidade de Vigo		
Department / Centre	Enxeñería RRNN e Medio Ambiente / E.E. Minas e Enerxía		
Country	Spain	Phone Number	986813645
Keywords	Civil engineering; Land transport; Construction		

### A.2. Previous positions (Research Career breaks included)

Period	Job Title / Name of Employer / Country
1998 - 2020	Tenured lecturer / Universidade de Vigo
1996 - 1998	Tenured lecturer / Universidad de León
1996 - 1997	Predoctoral fellowship / Consellería de Educación. Xunta de Galicia

### A.3. Education

Degree/Master/PhD	University / Country	Year
PhD in Mining Engineer	Universidade de Vigo	2003
Agricultural Engineer	Universidade de Santiago	1995

## Part B. CV SUMMARY

In 1996 I joined the University of León as lecturer (Cartographic Engineering), obtaining a full position in 1997. In 1998, I obtained a place by public tender at the University of Vigo. In 2003 I obtained the title of **Doctor of Mining Engineering** with distinctions Cum Laude. In 2007 I acceded to the category of Associate Professor, after passing the tests of national habilitation. In 2020 I accede to the category of **Professor**, having been accredited since 2013.

I have taught theoretical and practical teaching of subjects of 1st and 2nd cycle at the University of Vigo and León, in Subjects of Degree and Master. I have been **Coordinator** of the Master's Degree in Geoinformatics and the Doctoral Program in "Geotechnologies applied to Construction, Energy and Industry (GeoCEI) by the Universities of Vigo and Salamanca", period 2013-17. I have supervised more than 196 Projects and Academic Works. Published 17 texts of a teaching nature.

Regarding to the training of young researchers, I have supervised supervised **28 doctoral theses**, 17 with international doctorate mention, 6 with industrial mention, 22 for compendium of articles, 9 obtained Extraordinary Doctorate Award from the University of Vigo. These researchers develop their scientific activity in Spanish Universities (20), Foreign Research Centers (2), other public and private sector (10). It should also be noted that these researchers have won in competitive competition contracts Ramon y Cajal (2), Juan de la Cierva (3), Postdoctoral Program Xunta de Galicia (2).

This teaching activity has been recognized with the assessment of **Favorable** according to the DOCENTIA Program. I have obtained 5 **Teaching Periods**. And the recognition of **Excellence** in terms of Teaching Merits for Xunta de Galicia.

As researcher I have obtained 5 **Six-Year Research Periods** (CNEAI). I am the author and co-author of 250 papers in scientific publications indexed in international reference database (Scopus), with more than 9,000 citations (G. Scholar). I am main research and founder of the Applied Geotechnologies Research Group of the University of Vigo (2001-to present), a Group recognized as **Reference** by the Xunta de Galicia (periods 2012/15, 2016/19, 2020/23 and 2024/27).

**Main research** of 19 competitive research projects of national and regional programs (UVigo amount € 4M). **Main research** of 7 H2020 projects (UVigo amount € 4.15M): Fast Track to Innovation, Marie Curie – ITN, and 4 Collaborative "Societal Challenges-Smart, Green And Integrated Transport". Also, coordinator of 3 of them projects, total € 16M. I have participated as **main research** of 116 R&D contracts (UVigo amount € 3,25M) with companies and/or public institutions (36 with funding obtained in competitive calls). **Promoter and founder** of the Technology-Based Company (Spin-off) of the University of Vigo (foundation 2008), Ingeniería INSITU SL (turnover about € 1,9M and 30 employees). Inventor of 18 registered patents and software (9 commercialized).

I have obtained scientific recognition from the Xunta de Galicia to the **Research Work** (2005) and to the **Research Excellence** (periods 2006/2012/2020). **Research Award**, Category Science and Technology (Diputación Provincial de Pontevedra, 2013). **Award Best Research Project R+D+i** (Plataforma Tecnológica Española de la Carretera, 2014). **Award for Technology Transfer** (Real Academia Galega das Ciencias, 2018). **Prize the best Doctoral Thesis** in road safety, sustainable mobility responsible and safe (ABERTIS, 2019 & 2020). General ranking of scientists and researchers in Spain, positioned in 98% percentile (Webometrics Ranking – CSIC. January 2024 Edition).

**Dean** of the "ETSI Minas e Enerxía" of University of Vigo, period 2007-2013. I have been **Member of the Evaluation Committee** of university degrees and master programs, Agencia Andaluza del Conocimiento, period 2014-2018. I have been involved in different positions of the International Society for Photogrammetry and Remote Sensing (ISPRS), Commission I and V, period 2008-16. **Scientific Manager** of the Agencia Estatal Investigación (AEI) since 2021. I have organized the international conference (19th International 3D GeoInfo Conference 2024 and the 31st EG-ICE International Workshop on Intelligent Computing in Engineering, Vigo 2024), participated in the organization of 5 international conferences, and in the scientific committee of 10 international congresses. In addition, I have participated as a **guest speaker** on 15 occasions in international conferences and/or other prestigious institutions (ISPRS, IMS, RTR, RTA). Project evaluator of ANEP, AEI, CONICYT (Chile), RGC (Hong Kong), NOW (Holland), CNPq (Brazil). I am **Editor in Chief** of INFRASTRUCTURES journal from 2016.

## Part C. RELEVANT ACCOMPLISHMENTS

### C.1. Most important publications in national or international peer-reviewed journals, books and conferences

AC: corresponding author. (n° x / n° y): position / total authors. If applicable, indicate the number of citations

- 1 **Scientific paper**. Juan C.; Pedro; Lucia; Jesús. 2024. Mixed reality head mounted displays for enhanced indoor point cloud segmentation with virtual seeds. Resilient Cities and Structures. Elsevier B.V.. 3-3, pp.43-52. ISSN 2772-7416. <https://doi.org/10.1016/j.rcns.2024.06.005>
- 2 **Scientific paper**. Lino Comesaña-Cebal; Joaquin Martínez-Sánchez; Gabriel Suárez-Fernández; Pedro Arias. 2024. Wildfire response of forest species from multispectral LiDAR data. A deep learning approach with synthetic data. Ecological Informatics. Elsevier B.V.. 81. ISSN 15749541. <https://doi.org/10.1016/j.ecoinf.2024.102612>

- 3 **Scientific paper.** Núñez-Seoane, Antón; Martínez-Sánchez, Joaquín; Rúa, Erik; Arias, Pedro. 2024. Comparing Mobile and Aerial Laser Scanner point cloud data sets for automating the detection and delimitation procedure of safety-critical near-road slopes. *Measurement: Journal of the International Measurement Confederation*. Elsevier B.V.. 224-113919. ISSN 02632241. <https://doi.org/10.1016/j.measurement.2023.113919>
- 4 **Scientific paper.** Zhouyan Qiu; Joaquín Martínez-Sánchez; Pedro Arias-Sánchez; Rabia Rashdi. 2023. External multi-modal imaging sensor calibration for sensor fusion: A review. *Information Fusion*. Elsevier B.V.. 97-101806. ISSN 15662535. <https://doi.org/10.1016/j.inffus.2023.101806>
- 5 **Scientific paper.** Zhouyan Qiu; Joaquín Martínez; Pedro Arias; Mihai Datcu. 2023. A novel low-cost multi-sensor solution for pavement distress segmentation and characterization at night. *International Journal of Applied Earth Observation and Geoinformation*. Elsevier B.V.. 120-103331. ISSN 15698432. <https://doi.org/10.1016/j.jag.2023.103331>
- 6 **Scientific paper.** Javier Grandio; Belén Riveiro; Daniel Lamas; Pedro Arias. 2023. Multimodal deep learning for point cloud panoptic segmentation of railway environments. *Automation in Construction*. Elsevier B.V.. 150-104854. <https://doi.org/10.1016/j.autcon.2023.104854>
- 7 **Scientific paper.** Rúa, Erik; Núñez-Seoane, Antón; Arias, Pedro; Martínez-Sánchez, Joaquín. 2023. Automatic detection to inventory road slopes using open LiDAR point clouds. *International Journal of Applied Earth Observation and Geoinformation*. Elsevier B.V.. 118-103225. ISSN 15698432. <https://doi.org/10.1016/j.jag.2023.103225>
- 8 **Scientific paper.** Jesus Balado; Elena Gonzalez; Juan L Rodríguez Somoza; Pedro Arias. 2023. Multi feature-rich synthetic colour to improve human visual perception of point clouds. *ISPRS Journal of Photogrammetry and Remote Sensing*. Elsevier B.V.. 196, pp.514-527. ISSN 09242716. <https://doi.org/10.1016/j.isprsjprs.2023.01.019>
- 9 **Scientific paper.** Roi Otero; Susana Lagüela; Manuel Cabaleiro; Helder Sousa; Pedro Arias. 2023. Semi-automatic 3D frame modelling of wooden trusses using indoor point clouds. *Structures*. Elsevier Ltd.. 47, pp.1743-1753. ISSN 23520124. <https://doi.org/10.1016/j.istruc.2022.11.122>
- 10 **Scientific paper.** Garrido, I; Laguela, S.; Fang, Q.; Arias, P. 2023. Introduction of the combination of thermal fundamentals and Deep Learning for the automatic thermographic inspection of thermal bridges and water-related problems in infrastructures. *Quantitative Infrared Thermography Journal*. Taylor and Francis Ltd.. 20-5, pp.231-255. ISSN 17686733. WOS (17) <https://doi.org/10.1080/17686733.2022.2060545>
- 11 **Scientific paper.** Conde, David; Balado, Jesús; Soilán, Mario; Martínez, Joaquín; Arias, Pedro. 2023. LiDAR Data Processing for Digitization of the Castro of Santa Trega and Integration in Unreal Engine 5. *International Journal of Architectural Heritage*. Taylor and Francis Ltd.. ISSN 15583058. <https://doi.org/10.1080/15583058.2023.2271877>

### C.3. Research projects and contracts

- 1 **Project.** 101129961-2, SUM4Re. Creating materials banks from digital urban mining. HORIZON-CL4-2023-TWIN-TRANSITION-01-TWO-STAGE. Pedro Arias Sánchez. (Comisión Europea). 01/06/2024-31/12/2027. 6.503.272,23 €. Co-ordinator.
- 2 **Project.** PID2022-140662OB-I00, RoadS2Win. Mejora de la seguridad en carreteras a través de tecnologías enfocadas al Digital Twin. Agencia Estatal de Investigación. Arias Sánchez. (Universidade de Vigo). 01/10/2023-30/09/2026. 212.500 €. Principal investigator.
- 3 **Project.** 955337-1, InfraROB. Maintaining integrity, performance and safety of the road infrastructure through autonomous robotized solutions and modularization. Comisión Europea. Pedro Arias Sánchez. (Universidade de Vigo). 01/09/2021-28/02/2025. 5.002.000 €. Co-ordinator.
- 4 **Project.** 860370, MENLAOS. Multi Modal Environmental Exploration Systems Novel Technologies. Comisión Europea. Pedro Arias Sánchez. (Ingeniería INSITU / Universidade de Vigo). 01/01/2020-31/12/2024. 3.660.332,76 €. Principal investigator. EUROPEAN COMMISSION. Horizon 2020 - Research and Innovation Framework Programme. H2020-MSCA-ITN-2019

- 5 **Project.** PCI2020-120705-2, 4Map4Health. Mapping of forest health, species and forest fire risks using Novel ICT Data and Approaches. CHIST-ERA. Horizon 2020 FET programme, EU; Agencia Estatal de Investigación. Pedro Arias Sánchez. (Universidade de Vigo). 01/04/2021-31/03/2024. Principal investigator.
- 6 **Project.** PID2019-108816RB-I00, RESTART. Resiliencia de las infraestructuras: tecnologías de apoyo para la caracterización del índice de vulnerabilidad y la toma de decisiones. Energía y Transporte 2019. Pedro Arias Sánchez. (Universidade de Vigo). 01/06/2020-31/05/2023. 140.360 €. Principal investigator.
- 7 **Project.** 958171, IM-SAFE. Harmonised Transport Infrastructure Monitoring in Europe for Optimal Maintenance and Safety. Comisión Europea. Pedro Arias Sánchez. (Universidade de Vigo). 01/11/2020-31/10/2022. 1.999.978,75 €. Principal investigator.
- 8 **Project.** 769255-2, SAFEWAY. GIS-Based infrastructure management system for optimized response to extreme events on terrestrial transport networks. Comisión Europea. Pedro Arias Sánchez. (Universidade de Vigo). 01/09/2018-28/02/2022. 4.521.100 €. Principal investigator. H2020 Program. Transport
- 9 **Project.** 720661, ENGINECY. A Holistic System for Building Inspection and Energy Efficiency Management. Comisión Europea. Pedro Arias Sánchez. (Universidade de Vigo). 01/06/2016-30/11/2018. 2.376.877,51 €. Principal investigator. Programa: FTIPilot-1-2015-Fast Track to Innovation Pilot
- 10 **Contract.** Consultoría experta en apoyo al desarrollo de algoritmos para la inspección de la biodiversidad, línea de costa y masas forestales TELESPAZIO IBÉRICA S.L.U.. Arias Sánchez. 13/01/2023-13/07/2025. 105.000 €.
- 11 **Contract.** Programa de ciencias mariñas de Galicia. Plans complementarios de I+D+i Consellería de Pesca e Asuntos Marítimos. Pedro Arias Sánchez. (Universidade de Vigo). 01/06/2022-01/06/2025. 79.500 €.
- 12 **Contract.** Desarrollo de un prototipo de sincronización de datos, tomados por sensores de imagen con trayectorias proporcionadas por un sistema de posicionamiento ADIF. Gestor infraestructuras ferroviarias. Pedro Arias Sánchez. 01/12/2017-01/01/2019. 10.000 €.
- 13 **Contract.** Desarrollo de un prototipo de sistema inteligente de gestión de la infraestructura ferroviaria mediante uso de datos masivos estructurados ALSTOM Transporte S.A.. P. Arias. 01/06/2017-30/11/2018. 22.133 €.
- 14 **Contract.** Desarrollo de vehículo no tripulado de inspección múltiple en túneles ferroviarios FERROVIAL Agroman S.A.. Pedro Arias. 01/09/2016-01/10/2017. 30.000 €.

#### C.4. Activities of technology / knowledge transfer and results exploitation

- 1 **Registro de Software.** Mario Soilán Rodríguez; Belén Riveiro Rodríguez; Pedro Arias Sánchez; Joaquín Martínez Sánchez. VG-245-217. Software para la detección de paneles de señalización vertical en nubes de puntos 3D adquiridas con sistemas de mapeado móvil 03 / 2018 / 177 Spain. 14/02/2018. Universidade de Vigo. INGENIERIA INSITU SL.
- 2 **Registro de Software.** Mario Soilán Rodríguez; Belén Riveiro Rodríguez; Pedro Arias Sánchez; Joaquín Martínez Sánchez. VG-244-217. Software para la detección y clasificación de señalización horizontal en nubes de puntos 3D adquiridas con sistemas de mapeado móvil 03/2018/176 Spain. 14/02/2018. Universidade de Vigo. INGENIERIA INSITU SL.
- 3 **Patent of invention.** Pablo Neira López; David Roca Bernárdez; Lucía Díaz Vilariño; Susana Lagüela López; Joaquín Martínez Sánchez; Borja Conde Carnero; Belén Riveiro Rodríguez; Higinio González Jorge; Pedro Arias Sánchez; Henrique Lorenzo Cimadevila. ES2572181A1. Sistema de acoplamiento entre vehículos aéreos no tripulados y estructuras tipo viga para medición por contacto Spain. 30/05/2016. Universidade de Vigo. PROYESTEGAL, S.L.
- 4 **Patent of invention.** Higinio González; Belén Riveiro; Pedro Arias. ES2369802. Patrón dimensional para sistemas láser escáner y fotogramétricos Spain. 26/06/2012. Universidade de Vigo. PROYESTEGAL, S.L.
- 5 **Patent of invention.** Pedro Arias; Henrique Lorenzo; C Ordóñez. P200600770. CaM-DisT. Sistema fotogramétrico para medición 3D semi-automática de objetos Spain. 21/09/2009. Universidade de Vigo. INGENIERIA INSITU SL.