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UNIVERSIDAD POLITÉCNICA DE MADRID

MSCA-IF-2016: Seeking Experienced Researcher for the Sustainable Environmental Management Group at UPM

➤ **Department / Institute / Centre**

- *Name:* UNIVERSIDAD POLITECNICA DE MADRID. *College of Forestry and Natural Environment. Research Group for Sustainable Management SILVANET*
- *Address:* E.T.S.I. Montes, Ciudad Universitaria, 28040 Madrid, Spain.
- *Website:*
<http://www.montes.upm.es/ETSI Montes/IncomingStudents/Investigacion/GruposdeInvestigacion/TecnologiasMetodosGestionSostenible/2541290fec0b9310VgnVCM1000009c7648aRCRD>

➤ **Brief description of the Centre/Research Group (including URL if applicable)**

Silvanet is the Research Group for Sustainable Environmental Management. Its main research lines are:

Ecology and sustainable forest management: stand structure, competition and growth of forest species. Modelling and simulation of natural processes. Remote sensing: multispectral, object oriented classification, LiDAR, etc. Design planning and management of natural areas. Quantitative methods in environmental management: Optimisation of spatial allocation of forest activities, non-parametric analysis for dasometric measurements. Landscape and territorial planning: forest externalities, forest policy, rural development, demography.

➤ **Project description**

The site index, or the potential for forest trees to grow at a particular location, is related to biophysical variables. The physiographic variables can prevail in small and steep areas. The site index is defined as “The average age of dominant and/or codominant trees of an even-aged, undisturbed site of intolerant trees at a base age”. It is used to measure the productivity of the site, since the wood productivity is related to the ecosystem productivity. The knowledge of the site index is highly important in forest decision making, from the moment than the annual productivity is measured, and is possible to adopt management decisions, such as the planning of short and long term cuts and harvesting. We have obtained prominent



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results in estimating dasometric variables from LIDAR data. Furthermore, it is possible to estimate total height growth or biomass increment from two LIDAR flights.

The project aims to model and map the site index from LIDAR data, Ortophotogrammetry, variables of stand structure and physiographic factors. Once this cartography is obtained, we could apply it to forest management models.

These results would open the doors to the planned application of outstanding management models, once that the current models in the yield tables have been adapted to non-stand-age-dependent models.

➤ **Research Area**

- Information Science and Engineering (ENG)
- Environmental Sciences and Geology (ENV) o Life Sciences (LIF)

➤ **Applications: documents to be submitted and deadlines**

Applicants should send a detailed *curriculum vitae* and at least to reference letters

Contact person: claudio.feijoo@upm.es



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MSCA-IF-2016: Seeking Experienced Researcher for the Solar Energy Institute at UPM

➤ **Department / Institute / Centre**

- Name: UNIVERSIDAD POLITECNICA DE MADRID. *Instituto de Energía Solar* – ETSI Telecomunicación
- Address: Avenida Complutense, 30, 28040 Madrid , Spain
- Website: <http://www.ies.upm.es/index.php?id=69>

➤ **Brief description of the Centre/Research Group**

The project will be carried out at the Instituto de Energía Solar (IES-UPM), a worldwide recognized center devoted to photovoltaics that was founded in 1979 by Prof. Antonio Luque, and it is probably *the oldest research centre worldwide devoted primarily to PV*. Follower of a collaborative research philosophy, during its more than 35 years of history the Institute has coordinated multitude of projects of great impact and range regarding either goals, size and funding. Some of these projects have been considered by the European Commission as examples of success, and by USA and Japan as a source of inspiration in the implementation of their own R&D strategies. The Institute comprises several R&D groups covering topics such as Photovoltaic systems, Silicon Technology, Concentration Photovoltaics and New Concepts for Solar Cells. Nowadays, around 20 professors, 35 PhD students and 10 administrative and technical staff are employed at IES-UPM. The position will be devoted to the Silicon Technology research line, contributing to the development of high efficiency silicon solar cells on low cost substrates.

➤ **Project description**

Being the workhorse of today's PV reality, crystalline Silicon technology has the potential to improve further and achieve the strategic targets established by the European SETPlan. To do so, an integral approach of the whole value chain will be pursued in the project, to develop high efficiency silicon solar cells with ultrathin wafers and low cost Si feedstock. The key points in the project will be:

- The development of a surface passivation technology based on tunnel oxides.
- The use of ultrathin Si substrates (<50 micrometers) providing optimized light trapping schemes.



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- The implementation of defect engineering techniques in unconventional Si feedstocks and wafers
- The integration of the Si solar cell in tandem structures, preferably in monolithically-integrated parallel-connected ones.

➤ **Research Area**

- Information Science and Engineering (ENG)
- Physics (PHY)

➤ **Applications: documents to be submitted and deadlines**

CV with cover letter

Reference letters will be appreciated

Contact person: claudio.feijoo@upm.es



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MSCA-IF-2016: Seeking Experienced Researcher for the Bioengineering and Materials Research Group at UPM

➤ **Department / Institute / Centre**

- Name: UNIVERSIDAD POLITECNICA DE MADRID. *BIO-MAT, Bioengineering and Materials Research Group. ETSI de Ingenieros Industriales*
- Address: *c/ José Gutiérrez Abascal, 2. 28006 Madrid, Spain*
- Website: <http://www.upm.es/observatorio/vi/index.jsp?pageac=grupo.jsp&idGrupo=222>

➤ **Brief description of the Centre/Research Group (including URL if applicable)**

The candidate will join to the BIO-MAT (Bioengineering and Materials) Research Group at Technical University of Madrid. This Group is integrated by eight researchers from different scientific disciplines, such as Engineering, Physics, Chemical, Biology, Materials, Pharmacy. The multidisciplinary team is necessary to study the relationship between materials and microorganisms, the main research line of the BIO-MAT Group.

➤ **Project description**

The candidate will participate in the AIRBIOTA-CM Program. The main objective of this Program is to determine the amount and diversity of aerobiota in the urban atmosphere from a pluridisciplinary, innovative, and integrating perspective. In order to do this, it will be necessary to find and quantify bacterial, viral, and fungal biodiversity, as well as pollen and spores in diverse urban areas and at different times of the year. This biodiversity will be analyzed using technologies from molecular biology such as massive sequencing techniques. Moreover, the latest scientific data suggests that a possible biodiversity depends on altitude, thus the microbiota will be analyzed at different altitudes with the help of unmanned vehicles aerial (UAV) carrying air-biological samplers.

➤ **Research Area**

- Environmental Sciences and Geology (ENV)
- Life Sciences (LIF)

➤ **Applications: documents to be submitted and deadlines**

Curriculum Vitae. Contact person: claudio.feijoo@upm.es



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UNIVERSIDAD POLITÉCNICA DE MADRID

MSCA-IF-2016: Seeking Experienced Researcher for the Biomedical Engineering and Telemedicine Centre at UPM

➤ **Department / Institute / Centre**

- *Name: UNIVERSIDAD POLITÉCNICA DE MADRID. Biomedical Engineering and Telemedicine Centre, Department of Photonics and Bioengineering, ETSI Telecomunicación,*
- *Address: Av. Complutense, 30, 28040, Madrid, Spain*
- *Website: <http://www.gbt.tfo.upm.es>*

➤ **Brief description of the Centre/Research Group (including URL if applicable)**

The Biomedical Engineering and Telemedicine Centre (GBT) (<http://www.gbt.tfo.upm.es>) is a leading centre for education, research and technological development focused on bioengineering; mostly concerned with the application of information and communication technologies to biomedicine. GBT is the largest biomedical engineering and telemedicine research centre in Spain and maintains beneficial partnership with public and private sectors in its research and technological development areas.

GBT was established at UPM in 1983. Its staff includes over 50 members and includes 4 professors, 4 doctors, 10 pre-doctoral candidates and more than 25 graduate students. GBT collaborates with national and international outstanding groups in the area of ICTs applied to medicine, as well as hospitals and clinical institutions.

GBT is a founding member of the Networking Research Center on Bioengineering, Biomaterials and Nanomedicine, funded by the Instituto de Salud Carlos III, as well as of the Biomedical Technology Centre of Universidad Politécnica de Madrid.

During the last fifteen years, GBT has published more than 500 scientific publications and participated in 55 European projects funded by several EU Research Programmes and by the Spanish Research Council.

➤ **Project description**

The goal of the Surgical Simulation, Planning and Image Guided Surgery Lab is the development of new techniques, methods and algorithms for the acquisition, processing and analysis of medical images and laparoscopic videos for MIS training, assessment and image guided surgical applications. Call for candidates are available for the following areas:



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Integrative technologies for technical and nontechnical surgical skills: The long-standing mentor-apprentice model is being gradually transformed into structured, objective learning programmes. A common trend in recent decades has been the introduction of Technology Enhanced Learning (TEL) to support MIS learning. The challenge here is how to integrate TEL into these novel structured learning processes, aligning them to the learning objectives required for new surgeons.

GBT is researching innovative solutions for teaching and learning technical and nontechnical skills. The goal is to integrate TEL assets, providing residents and mentors with the means to programme training activities, have access to ubiquitous and personalised learning and monitor progress.

Image and Video Guided Surgery (IVGS): The main goal is to develop new surgical navigation systems in order to guide surgeons during the intervention, enhancing orientation, accuracy and patient safety.

GBT is currently working on IVGS applied to the staging, diagnosis and intervention of pancreatic diseases. Image-based diagnosis is of great importance for the evaluation of pancreatic neoplasia, since a precise staging is fundamental for an appropriate selection of the best treatment. Current research is oriented to image analysis of LUS pancreatic images to develop a clinical decision support system for pancreatic cancer staging. Detection and tracking of surgical elements and 3D reconstruction of the scene can be achieved by processing laparoscopic videos. Videos are also a feasible source for knowledge extraction that would feed clinical decision support systems by means of content-based video retrieval methods.

➤ **Research Area**

- Information Science and Engineering (ENG)
- Life Sciences (LIF)

➤ **Applications: documents to be submitted and deadlines**

Curriculum Vitae, Letter of interest, 2 Letters of recommendation from external and verifiable sources. Brief description (max. 2 pages) of the research the candidate wishes to carry out within the proposed areas.

Contact person: claudio.feijoo@upm.es



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MSCA-IF-2016: Seeking Experienced Researcher for the Mining Data and Simulation Group at UPM

➤ **Department / Institute / Centre**

- Name: UNIVERSIDAD POLITÉCNICA DE MADRID. Centro de Tecnología Biomédica,
- Address: Campus de Montegancedo, Pozuelo de Alarcón, 28223, Madrid, Spain
- Website: <http://midas.ctb.upm.es/>

➤ **Brief description of MIDAS Research Group (including URL if applicable)**

MIDAS has large experience in data mining and analysis both with structure and non-structured datasets. It was created with the aim of combining the experience of different professionals in the fields of data analysis and image processing

Description: The group dedicates mainly its activity to the analysis of data in different domains with special emphasis on the medical field in which the group collaborates with professionals from hospitals to analyze data at different levels: organizational, clinic notes, images, brain activity.

Techniques: Data Mining supervised, semisupervised and non-supervised methods, structure and non structured preprocessing methods: image 2D and 3D segmentation, annotation, classification and fusion, text mining, natural language processing (NLP), heuristic optimization techniques, stream mining, visual analytics, statistical analysis, CRISP-DM methodology, SQL and NonSQL data management.

Infrastructure: Technical resources: the group uses its own computers together with the services provided by the CESVIMA.

➤ **Project description**

The MIDAS team has large experience in data mining and analysis both with structure and non-structured datasets. Moreover, they have also proposed new techniques for remote sensing data analytics, understanding and exploitation.

One of the main focus these days of MIDAS is the analysis of medical information to extract knowledge that can be the basis for precision medicine. This can be decomposed in the following lines:

- EHR (electronic health records) analysis and understanding, which involves natural language processing, indexing and knowledge discovery. The integration of the knowledge obtained from the analysis together with other information contained in the



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EHR can help identifying subjects for clinical trials, finding common patterns of behavior of drugs and treatment,

- MEG data analysis. Big data analytics is being applied to predict biomarkers for early stages of Alzheimer and Parkinson, as well as other pathologies (for instance those derived from TBI – traumatic brain injury). The analysis is performed based on the Magnetoencephalography records integrated with psychological tests and clinical data.
- Medical image processing, analysis and understanding: algorithms and tools to help diagnosis and prognosis, as well as monitoring illnesses progress; image annotation for integrating with other health records.
- Neuroinformatics tools and services: Technology and toolkits to provide microscopy image storage, indexing and processing, neuroinformatics databasing and atlasing and laboratory information management systems.
- Complex data visualization and interaction: Neuro- and bio-data navigation tools and representation techniques combined with interactive data analysis techniques. Interactive steering of supervised and semi-supervised data exploration and analysis.
- Biomedical data retrieval, representation and analysis: Automatic extraction of biomedical knowledge from unstructured sources such as text. Extraction and analysis of medical knowledge from social media. Medical complex networks: human disease networks.

➤ **Research Area**

- Information Science and Engineering (ENG)

➤ **Applications: documents to be submitted and deadlines**

Summary of CV (5 last years) *and* Reference letters from three last positions

Contact person: claudio.feijoo@upm.es



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UNIVERSIDAD POLITÉCNICA DE MADRID

MSCA-IF-2016: Seeking Experienced Researcher for the characterization of flow structures at the School of Aeronautics-UPM

➤ **Department / Institute / Centre**

- *Name:* UNIVERSIDAD POLITÉCNICA DE MADRID. *ETSIAE, School of Aeronautics in Madrid*
- *Address:* Plaza del Cardenal Cisneros, 3, Madrid, Spain
- *Website:* <http://www.etsiae.upm.es/index.html>

➤ **Brief description of the Centre/Research Group (including URL if applicable)**

The School of Aeronautics ETSIAE-UPM (<http://www.etsiae.upm.es/index.html>) is one the better reputed Schools of Engineering in Spain and the oldest providing an Aeronautical degree. The school has high standards in research and teaching and provides a perfect environment to conduct novel research with high impact.

➤ **Project description**

Title: Characterisation of wind and tidal cross-flow turbine flows using high order numerical methods.

The present project is concerned with the characterisation of flow structures arising in rotating wind and tidal cross-flow turbines for energy generation.

An existing high order (≥ 3) unstructured Discontinuous Galerkin - Fourier solver with sliding meshes [1-5] will be used to generate turbulent aerodynamic data that will be subsequently analysed using state of the art techniques (e.g. Proper Orthogonal Decomposition, Dynamic Mode Decomposition). In addition to individual turbines, the project will assess the interactions between turbines when located in energy farms.

[1] E. Ferrer. *A high order Discontinuous Galerkin - Fourier incompressible 3D Navier-Stokes solver with rotating sliding meshes for simulating cross-flow turbines*. PhD thesis, University of Oxford, 2012.

[2] E. Ferrer and R. H. J. Willden. A high order Discontinuous Galerkin Finite Element solver for the incompressible Navier-Stokes equations. *Computers & Fluids*, 46(1):224–230, 2011.

[3] E. Ferrer and R. H.J. Willden. A high order discontinuous Galerkin - Fourier incompressible 3D Navier-Stokes solver with rotating sliding meshes. *Journal of Computational Physics*, 231(21):7037–7056, 2012.

[4] E. Ferrer, D. Moxey, R.H.J. Willden, and S. Sherwin. Stability of projection methods for incompressible flows using high order pressure-velocity pairs of same degree: Continuous and discontinuous galerkin formulations. *Communications in Computational Physics*, 16(3):817–840, 2014.



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[5] E Ferrer, RHJ Willden, "Blade-wake interactions in cross-flow turbines", *International Journal of Marine Energy*, Vol 11, p71–83, 2015

➤ **Research Area**

- Information Science and Engineering (ENG)
- Mathematics (MAT)
- Physics (PHY)

➤ **Applications: documents to be submitted and deadlines**

- CV. Complete list of publications. Two reference letters
- Contact person: claudio.feijoo@upm.es



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UNIVERSIDAD POLITÉCNICA DE MADRID

MSCA-IF-2016: Seeking Experienced Researcher for the University Institute of Automobile Research at UPM

➤ **Department / Institute / Centre**

- Name: UNIVERSIDAD POLITÉCNICA DE MADRID. INSIA University Institute of Automobile Research
- Address: Campus Sur UPM. Carretera de Valencia (A3) km.7 28031, Madrid, Spain
- Website: <http://insia-upm.es/>

➤ **Brief description of the Centre/Research Group (including URL if applicable)**

INSIA, the University Institute of Automobile Research, is part of the Higher School of Industrial Engineers, and is integrated into the UPM's scientific and technological park.

The Institute's main activities are:

- Research and Development in the context of automotive vehicles and their impact on safety and the environment. We are currently working on five lines of research.
- To provide technological support for companies and public administrations, by providing technological services that materialise in R&D&I tasks, consultancy, tests and certifications.
- Postgraduate and specialised training.

➤ **Project description**

Intelligent, efficient, clean, safe and accessible transport systems. The main project objectives:

- Vehicles's and alternative propulsion systems's development for sustainable and efficient mobility. Evaluation of environmental impacts of vehicles, fleets and national fleet, including life cycle analysis.
- Technologies development for the improvement of public passenger transport at urban and interurban environments: sustainability, accessibility and safety.
- New intelligent systems for sustainable urban mobility. Intelligent systems in vehicles. Cooperative systems and communications V2V, V2I and V2P.

➤ **Research Area**

- Information Science and Engineering (ENG)

➤ **Applications: documents to be submitted and deadlines**

- Detailed CV. Cover letter. A letter of support
- Contact person: claudio.feijoo@upm.es



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UNIVERSIDAD POLITÉCNICA DE MADRID

MSCA-IF-2016: Seeking Experienced Researcher for the Centre for Plant Biotechnology and Genomics at UPM

➤ **Department / Institute / Centre**

- Name: UNIVERSIDAD POLITÉCNICA DE MADRID. Centro de Biotecnología y Genómica de Plantas INIA-UPM
- Address: Campus de Montegancedo, Carretera M40, km 38, 28223 Pozuelo de Alarcón, Madrid
- Website: http://www.cbgp.upm.es/en/about_cbgp.html

➤ **Brief description of the Centre/Research Group (including URL if applicable)**

Our group, ASSOCIATIONS OF SYMBIOTIC BACTERIA WITH PLANTS, is focused on the study of genetics, physiology and biochemistry of traits involved in the establishment and functioning of the diazotrophic *Rhizobium*-legume symbiotic association. In this symbiosis *Rhizobium* bacteroids are able to convert atmospheric nitrogen into ammonia in specialized organs called root nodules, thus providing a non-polluting source of nitrogen for legume crops.

http://www.cbgp.upm.es/en/interactions_symb.php

http://www.cbgp.upm.es/en/rhizobium-legume_symbiotic_systems.php

➤ **Project description, “Role of rhizobial protein secretion systems type VI in symbiosis and in rhizosphere”**

The type VI secretion system (T6SS) is a tubular nanostructure that allows some gram-negative bacteria to inject effector proteins from bacterial cytoplasm into a target cell. The T6SS has been recently studied in several animal and plant bacterial pathogens. This system has been proved relevant to the bacterial virulence against plants or animals and recent studies suggest that it plays also an important role in inter-bacterial interactions. At present, we have identified the genes responsible for the synthesis of T6SS in several rhizobia genomes but function of the T6S is completely unknown. We are interested in knowing the role of such systems in symbiosis and in the interactions with other bacteria of the rhizosphere. Also the identification of specific effectors is an important challenge as the first genomic analyses indicate that most pathogen effectors already known are not in rhizobia.

➤ **Research Area**

- Life Sciences (LIF)



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- **Applications: documents to be submitted and deadlines**
 - *CV, reference letters, motivation letter, grant applications deadlines*
 - Contact person: claudio.feijoo@upm.es



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UNIVERSIDAD POLITÉCNICA DE MADRID

MSCA-IF-2016: Seeking Experienced Researcher for the Effort Physiology Laboratory at Faculty of Physical Activity and Sport Sciences -UPM

➤ **Department / Institute / Centre**

- UNIVERSIDAD POLITÉCNICA DE MADRID. Department of health and human performance, Faculty of Physical Activity and Sport Sciences (INEF).
- Address: C/ Martín Fierro, 7, 28040, Madrid, Spain.

➤ **Brief description of the Centre/Research Group** (including URL if applicable)

The Effort Physiology Laboratory (LFE) research group, is a research group in exercise physiology, focused on two lines of work, high performance and health, especially oriented to chronic diseases such as obesity, diabetes or hypertension. Recently it included a line of work in iron metabolism in female athletes.

- <http://www.inef.upm.es/INEF/Investigadores/ID/IDInef/Estructura/Laboratorios/LaboratorioFisiologiaEsfuerzo>
- <http://www.inef.upm.es/INEF/Personal/Docentes/Departamentos/FichasDocentes/8f9f83d7828bb310VgnVCM10000009c7648aRCRD>
- Investigation lines:
 - Energy cost in resistance training.
 - Injuries in sports training in obesity.
 - Gene influences over the exercise response and training adaptations.
 - Nutrition and physical activity programs for the treatment of obesity.
 - Cardiovascular control through exercise programs.
 - Weight training in special populations.
 - Body response during long-term efforts
 - Iron metabolism in women.
 - Muscle damage and menstrual cycle.

➤ **Project description**

Energy cost of Physical activities and Sport activities. Validation of energy balance system, including nutrition and physical energy cost. Efficiency in physical activity and sport for applied in chronic diseases.

➤ **Research Area**



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- Information Science and Engineering (ENG)
- Environmental Sciences and Geology (ENV) o Life Sciences (LIF)
- Physics (PHY)

➤ **Applications: documents to be submitted and deadlines**

- Application form for a stay in the Department:
http://www.inef.upm.es/sfs/INEF/DEPARTAMENTOS/SALUD%20Y%20RENDIMIENTO%20HUMANO/application_form.pdf
- Memory of the project to be performed during the visit (only for visiting researchers).
- Curriculum vitae.
- Two letters of recommendation from the center of origin.
- Evidence of funding for the stay/visit.
- Contact: claudio.feijoo@upm.es



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UNIVERSIDAD POLITÉCNICA DE MADRID

MSCA-IF-2016: Seeking Experienced Researcher for the Land Morphology and Engineering Department at UPM

➤ **Department / Institute / Centre**

- Name: UNIVERSIDAD POLITÉCNICA DE MADRID. Land Morphology and Engineering Department, School of Civil Engineering
- Address: C/Profesor Aranguren s/n 28040 Madrid, Spain
- Website: <http://www2.caminos.upm.es/Departamentos/jmt/Topografia/topo.html>

➤ **Brief description of the Centre/Research Group** (including URL if applicable)

The Land Morphology and Engineering Department of the Technical University of Madrid is operating in the School of Civil Engineering, founded in 1802. The Research Group is hosted by the laboratory of topography and geomatics where Dr. Sergio Alvarez works as an Assistant Professor. The research work done by the research group is published in the following website. Please also visit my public profiles that are regularly extended and updated.

➤ **Project description**

There is a need for information on total environmental impacts of consumption and production. This can be done through the inclusion of multiple perspectives. A hybrid model based on combination of input-output analysis with life cycle assessment is proposed as the most relevant alternative. It would be important to have knowledge of Multi-Regional Input-Output Analysis and ability to work with OpenLCA without significant supervision. We are currently running our models in MATLAB and it would be useful you to have some level of familiarity with the software. You do not need to be an expert but a basic knowledge in MATLAB would be essential.

➤ **Research Area**

- Economic Sciences (ECO)
- Information Science and Engineering (ENG)

➤ **Applications: documents to be submitted and deadlines**

A detailed curriculum should be submitted.

Contact: claudio.feijoo@upm.es



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UNIVERSIDAD POLITÉCNICA DE MADRID

MSCA-IF-2016: Seeking Experienced Researcher for the Spanish User Support and Operations Centre at UPM

➤ **Department / Institute / Centre**

- *Name:* UNIVERSIDAD POLITÉCNICA DE MADRID. *E-USOC* (Spanish User Support and Operations Centre)
- *Address* Universidad Politécnica de Madrid, Edificio E-USOC, Campus de Montegancedo, M40 km36-38, Pozuelo de Alarcón, 28223, Madrid, Spain
- *Website:* <http://www.eusoc.upm.es/>

➤ **Brief description of the Centre/Research Group (including URL if applicable)**

E-USOC is a centre specialized in Research and Development (R&D) activities in the fields of space science and technology. The centre is located in the Montegancedo Excellent IT and Technology Transfer Campus.

E-USOC is one of the seven european centres delegated by the European Space Agency (ESA) for the preparation and execution of experiments aboard the International Space Station (ISS). Furthermore, E-USOC is the main point of contact for Spanish scientists who want to carry out microgravity experiments.

➤ **Project description**

The researcher will be involved in one of next projects (in theoretical or experimental research):

Vibrated Fluids in Microgravity

The purpose of this project is to investigate fluid phenomena induced by vibrations, which play an important role in microgravity environments. Understanding the effects of vibrations on confined fluid systems, whether gravity comes into play or not, is critical to numerous scientific and engineering. The response of the system naturally depends on the physical properties of the fluids involved, on the properties of the domain and on the characteristics of the applied forcing (frequency, amplitude, orientation). Periodic forcing, for example, can induce free surface instabilities like Faraday waves, cross-waves, and frozen waves, while suppressing other phenomena like the Rayleigh-Taylor instability.

More information in: <http://www.eusoc.upm.es/en/projects/viflu.html>

Phase Change Materials (PCMs)

PCMs are materials with a high latent heat in their transition from solid to liquid. They are used in space passive thermal control systems to prevent electrical systems reach



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temperatures outside their range of operation. This is because their high latent heat can store a lot of heat, or release to the environment in the reverse process, with hardly vary its temperature. These properties allow reducing mass shipped on board to manage the thermal control of electrical, electronic and sample storage systems. However, a problem in the use of PCMs is the slow heat transfer due to its low thermal conductivity, which cannot be solved with natural convection in microgravity. This project analyses different mechanisms to increase the heat transfer; induction of convective flows using the Marangoni effect, introduction of metal nanoparticles, etc.

➤ **Research Area**

- Information Science and Engineering (ENG)
- Physics (PHY)

➤ **Applications: documents to be submitted and deadlines**

CV, motivation letter, recommendation letter and a brief description of his/her main research areas.

Contact: claudio.feijoo@upm.es



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MSCA-IF-2016: Seeking Experienced Researcher for the Radio Engineering Research Group at UPM

➤ **Department / Institute / Centre**

- Name: UNIVERSIDAD POLITÉCNICA DE MADRID. Grupo de Ingeniería de Radio / Centro de Electrónica Industrial / ETS de Ingeniería y Sistemas de Telecomunicación
- Address: Ctra. Valencia, km. 7 28031 Madrid, Spain
- Website:
<https://www.etsist.upm.es/investigacion/grinv/gira-grupo-de-ingenier-a-de-radio?idioma=EN>

➤ **Brief description of the Centre/Research Group (including URL if applicable)**

GIRA, Radio Engineering Research Group is part of the Centro de Electrónica Industrial (www.cei.upm.es) of the Universidad Politécnica de Madrid. The GIRA is located in the Campus Sur of the University, in the ETS de Ingeniería y Sistemas de Telecomunicación. The GIRA is composed by experimented and skilled professors and researchers whose activity focuses on:

- RF and microwave circuits
- High frequency power amplifiers
- digital signal processing
- Satellite communications
- Video over IP
- Communication Networks

➤ **3 Project descriptions**

- Deployment of industrial wireless sensor networks due to their own nature (devices with resource constraints: processing, range, energy). In an industrial environment the replacement of batteries could become cumbersome. Then, to prevent the frequent replacement of batteries energy efficient techniques must be used, i.e., wake-up and wake-down efficient capabilities to save batteries and the use of some energy harvesting technologies (research on resource and energy management).
- Analysis and development of new techniques to improve MIMO performance focusing on wideband and multi-user communications. Wideband communications are affected by the channel frequency response (impulse response) which on one hand affects different frequencies with distinct gains and, on the other hand, it produces intersymbol interferences due to the time-domain channel response.



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- To improve the user experience of interactive video applications on fixed and mobile networks, with particular applicability to leisure industry (virtualized games, multiplayer online games) but also in applications where a smooth user experience is expected.

➤ **Research Area**

- Information Science and Engineering (ENG)

➤ **Applications: documents to be submitted and deadlines**

CV, Letters of reference, Academic profile, Letter of motivation

Contact: claudio.feijoo@upm.es



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Opportunity: PhD Candidate in hydroinformatics

Institution – Research Group - Contact data	
Date:	14 September 2016
Name of Institution:	Technical University of Madrid
Name of College / School / Faculty / Research Centre	ETSI Caminos
Name of Department	PhD Programme in Civil Engineering Systems (DOSIC)
Name of Research Group	Hydroinformatics (applied)
Address	Luis Garrote, Professor, Research Group Coordinator
email	claudio.feijoo@upm.es
webpage	http://www.upm.es/observatorio/vi/index.jsp?pageac=grupo.jsp&idGrupo=327
Contact person / position	Luis Garrote
Contact data	claudio.feijoo@upm.es

Research Group description	
Domain	Hydroinformatics
Technology fields	Informatics, numerical simulation of water flows, GIS, Climate change, economic evaluation
Long description	<p>Hydroinformatics is a branch of informatics which concentrates on the application of information and communications technologies in addressing the increasingly serious problems of the equitable and efficient use of water for many different purposes.</p> <p>In this group we applied the numerical simulation of water flows, to water availability, scarcity and climate change problems at the global level. We focus on the application of science in a social context.</p>
Relevant achievements	The Hydroinformatics Research Group is an interdisciplinary team that integrates the Departments of Civil Engineering, Informatics and Economics of the UPM, Spain. The scientists have recognised international projections in their fields and the group lead several EU research projects.



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Research profile description

Name	PhD candidate to work in Hydroinformatics http://www1.caminos.upm.es/dosic/noticias.html
Technology domain	Informatics, numerical simulation of water flows, GIS, Climate change, economic evaluation
Research project duration	2 years
Summary of research project / opportunity	<p>The selected Research Assistant will be integrated in the Team of the iSQAPER project (http://www.isqaper-project.eu/).</p> <p>The most important aims the iSqaper project will work on are to:</p> <ul style="list-style-type: none">Integrate existing land and water related data in Europe and China.Derive and identify innovative agricultural and water indicators that can be integrated into an easy-to-use interactive assessment tool.Use a trans-disciplinary, multi-actor approach to validate and support the interactive tool.
Profile of researcher	Hard working and motivated recent graduate interested in developing a career in environmental science and motivated to work in a pluri-disciplinary team. Must have excellent Matlab and GIS skills and excellent English spoken and written.
Additional requisites	Knowledge of R programming and econometrics.



Institution – Research Group - Contact data

Date	2016-09-24
Name of Institution	Technical University of Madrid
Name of College / School / Faculty / Research Centre	Industrial Engineering School
Name of Department	Industrial Organization, Business Administration and Statistics
Name of Research Group	
Address	José Gutiérrez Abascal 2; 28006 MADRID; SPAIN
email	claudio.feijoo@upm.es
webpage	http://biba.etsii.upm.es/web/
Contact person / position	Joaquín Ordieres
Contact data	IP

Research Group description

Domain	Business application of Technology
Technology fields	ICT, nanocoatings, AI, ML, Advanced Lean
Long description	<p>Main driver for the research being carried out is the smart use of data enriched models to help in doing better at company level but at societal level as well.</p> <p>Different fields of application are under active development, like:</p> <ul style="list-style-type: none"> a) Air pollution impact and forecasting, b) Sentimental analysis of products c) Educational improvements in connection with competence assessment d) Long term monitoring for specific diseases (ET, etc.) e) Smart models in steel industry f) Modelling nano-coating behaviour,

Relevant achievements

The achievements can be seen through the publication list of 2015 and 2016:

Javier Villalba-Diez and Joaquín B. Ordieres-Meré. **Strategic lean organizational design:** Towards lean world-small world configurations through discrete dynamic organizational motifs. *Mathematical Problems in Engineering*, 2016, 2016.

L. Sánchez, Javier Alfonso-Cendón, Tiago Oliveira, Joaquín B. Ordieres-Meré, Manuel Castejón Limas, and Paulo Novais. **Information system for image classification** based on frequency curve proximity. *Information Systems*, pages –, 2016.

Ana González-Marcos, Fernando Alba-Elías, Fermín Navaridas-Nalda, and Joaquín Ordieres-Meré. **Student evaluation of a virtual experience** for project management learning: An empirical study for learning improvement. *Computers & Education*, 102:172 – 187, 2016.

A. González-Marcos, F. Alba-Elías, J. Ordieres-Meré, J. Alfonso-Cendón, and M. Castejón-Límas. An active project management **framework for professional skills development**. *International Journal of Engineering Education*, 32(2):894–904, 2016.

Bing Gong and Joaquín Ordieres-Meré. **Prediction of daily maximum ozone threshold exceedances by preprocessing and ensemble artificial intelligence techniques:** Case study of Hong Kong. *Environmental Modelling & Software*, 84:290–303, 2016.

X. Zheng and J. Ordieres-Meré. **Detection and analysis of tremor using a system based on smart device and nosql database**. In *Industrial Engineering and Systems Management (IESM)*, 2015 International Conference on, pages 242–248, Oct 2015.



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Javier Villalba-Díez, Joaquín Ordieres-Meré, Heiko Chudzick, and Paloma López-Rojo. Nemawashi: **Attaining value stream alignment within complex organizational networks**. Procedia {CIRP}, 37:134 – 139, 2015. {CIRPe} 2015 - Understanding the life cycle implications of manufacturing.

J. Villalba-Díez and J. Ordieres-Meré. **Improving manufacturing performance by standardization of interprocess communication**. Engineering Management, IEEE Transactions on, PP(99):1–10, 2015.

Ana González-Marcos, Fernando Alba-Elías, and Joaquín Ordieres-Meré. **An analytical method for measuring competence** in project management. British Journal of Educational Technology, 2015.

B. Gong, J. Ordieres-Meré, and C.B. Cabrera. **Prediction models for ozone in metropolitan area of Mexico City** based on artificial intelligence techniques. International Journal of Information and Decision Sciences, 7(2):115–139, 2015.

Edelmira Delfina Galvez, Joaquín Bienvenido Ordieres, and Salvador Fernando Capuz-Rizo. **Evaluation of project duration uncertainty using the dependency structure matrix** and monte carlo simulations. Revista de la Construcción. Journal of Construction, 14(2):72–79, 2015.

Edelmira Ahumada Galvez, Joaquín Ordieres-Meré, and Salvador F Capuz-Rizo. **Analysis of project duration uncertainty using global sensitivity analysis**. The Journal of Modern Project Management, 2(3), 2015.

Javier Villalba Díez, Joaquín Ordieres-Meré, and Gottfried Nuber. **The HOSHIN KANRI tree. cross-plant lean shopfloor management**. Procedia {CIRP}, 32:150 – 155, 2015. 5th Conference on Learning Factories.

Also, some recent patents can be mentioned as well:

Fernando Alba Elías, Laura Martínez Martínez, Ana González Marcos, and Joaquín Ordieres Meré. CARRO ALIMENTADOR PARA MÁQUINA COMPRESORA Y USO DEL MISMO., PCT/ES2014/000086 2014.

Fernando Alba Elías, Ana González Marcos, and Joaquín Ordieres Meré. COMPETENCE ASSESSMENT METHOD AND SYSTEM, US2013/0238404-A1 2013.

Joaquín Ordieres Meré, Eliseo Vergara González, Francisco Javier Martínez de Pisón Ascacibar, Fernando Alba Elías, and Manuel Castejón Límás. APARATO PARA ACONDICIONAR MATERIAL PARTICULADO MEDIANTE MEZCLA, HUMECTACIÓN Y SECADO, 2011.



Research profile description

Name	Integrated index for short-term assessment of the quality of life.
Technology domain	Technology applied to social sciences
Research project duration	3.5 years
Summary of research project / opportunity	As far as Shanghai administration starts to get publicly available datasets related to the city (http://soda.datashanghai.gov.cn/) and in order to provide a comprehensive overview of the city behaviour at district level, our view is to integrate different information automatically collected (quality of air, water quality, quality of services –schools, restaurants, etc). The utility of such ‘virtual sensor’ will be to provide comparative behaviour between districts along the time (on regular basis), helping to better understand how managerial decisions impact into society. Extra features like people opinion through out Weixin or Weibo can be also gathered.
Profile of researcher	<p>A PhD student interested in ICT stuff but with high motivation to contribute to the social development and to help people by means of the technology.</p> <p>Motivation in doing research is also welcome.</p> <p>Examples of the meaning for interested in ICT will be (in a non exclusive way):</p> <ul style="list-style-type: none"> • Knowledge about REST technology • Knowledge about json data structures • Knowledge about python language • Knowledge about Hadoop, hive and similar technologies.
Additional requisites	It will be worthy to get involved a Tongji’s professor as co-advisor as well. Not only because the direct help `provided with authorities in Shanghai but because of the extension of the cooperation, avoiding to keep just individual actions.