OFERTAS EMPLEO

Desde la iniciativa UPM Big Science, queremos informaros nuevamente que el CERN nos ofrece participar en su convocatoria de proyectos/estancias para poder trabajar colaborando con distintos grupos de investigación del CERN.

Los ámbitos de colaboración están relacionados con Informática, Ingeniería Mecánica, Electrónica y para ingenieros industriales.

Se adjuntan varios ficheros donde podéis encontrar la información ampliada de cada uno de los perfiles. Las primeras 4 ofertas están relacionadas con Informática y hay una de 6 meses financiada por Google que por ser de más corta duración a lo mejor despierta más interés.

MUY IMPORTANTE:

Las fechas para recibir solicitudes son:

- De la 30 a la 35; y la 39 candidaturas hasta el 17 de enero 2020.
- La 37 y 38 hasta el 28 de febrero 2020 (son para empezar en Junio).
- En el caso de la 39, el trabajo se puede hacer mitad en el CERN, mitad en la universidad.

En los casos que se considere un trabajo entre la universidad y el CERN se necesita una carta de una página con la motivación y como se quiere desarrollar el trabajo. En el caso de candidatura individual el CV y una carta de motivación.

Por último, la documentación debe presentarse en Inglés.

En caso de interés, poneos en contacto con José María Cogollor Delgado: jm.cogollor@upm.es

Dr. José M. Cogollor |
PROMOTION AND MANAGEMENT OF UPM R+D+I INTERNATIONAL PROJECTS FOR BIG SCIENCE BUSINESS |
UNIVERSIDAD POLITÉCNICA DE MADRID |
Campus Sur UPM, Carretera de Valencia, Km 7, 28031 Madrid. Instalaciones del Grupo I2A2.
Call for contribution of expertise

CERN invites collaborating institutes and universities to contribute the expertise of their qualified employees to the activity described below.

| Start date: Asap | Duration: Two years, possible extension to a maximum of up to three years. |

**Project/Activity:** LARGE-SCALE ERASURE-CODING DISK FARMS

**Detailed description of Activity:**

EOS is the disk solution for LHC. It has been developed at CERN to handle the analysis of LHC data and crossed the 200-PB mark of used disk space. This corresponds to over 2 Billion files being made available to CERN researchers and engineers.

EOS software continues to be enhanced at CERN where it delivers a scalable storage system built on heterogeneous storage units. Data are served off large sets of disks (currently 50,000 disks in 1600 servers) and are efficiently accessed thanks to the cooperation of a fast name space (capable of sustaining requests well above 100 kHz) and a wide selection of transfer protocols. Data durability is achieved by maintaining multiple replicas or erasure-code fragments across the EOS disk farm.

The project is to investigate new deployment scheme actively using the erasure-code capabilities to achieve:
- Reduced space overhead compared to equivalent multiple-replica schemes
- Improve single stream performance in reading from multiple disks
- Validate operational modes not requiring disk replacements by tuning the redundancy level against the disk lifetime.

**Profile:** Bachelor degree in computing, IT engineering or related field.

This project requires proven experience in dealing with Linux systems (Foundation of system administration and Python scripting). Knowledge of storage technologies, distributed systems, Agile devops practices is a strong plus.

**Specific details:** Opportunity to work with world-class engineering and devops team on the most challenging storage systems to support the biggest scientific endeavours. Good working knowledge of English.

**Status at CERN:** Associated Member of the Personnel (Project Associate).

Conditions in accordance with CERN’s Staff Rules and Regulations and Administrative Circular No. 11. Subsistence allowance is payable by CERN to cover the additional cost arising from the individual’s (and, as applicable, their family’s) stay in the local area while performing activities at CERN.
Option: Collaborating institutes and universities can propose to support the activity of the qualified employees participating in this “Call for contribution of expertise” with students or other employees. Their status and Subsistence allowance when applicable will be adapted to their relation with their institutions.

Contact person: it-dep-fas-inform@cern.ch

Reference: 2019_Q4_30_ST-FDO

SOLICITUDES HASTA 17/01/2020
Call for contribution of expertise

CERN invites collaborating institutes and universities to contribute the expertise of their qualified employees to the activity described below.

| Start date: Asap | Duration: Six months, possible extension (up to three years) to be discussed as project progresses. |

| Project/Activity: Optimisation and Benchmarking of Machine Learning/Deep learning algorithms on accelerated platforms |

| Detailed description of Activity: |

CERN openlab is running pilot projects to investigate the potential of Google TPUs on a set of LHC workloads. In this context, we are looking for a suitable candidate for a six-month project to test and optimize Machine Learning/Deep Learning algorithms (specifically Generative Adversarial Networks) on Google TPUs and run benchmarks of typical LHC Experiment workloads on this new architecture.

| Profile: Bachelor degree in computing, IT engineering or related field. |

The expert will have knowledge of and working experience with standard ML/DL frameworks and tools (TensorFlow, Keras, PyTorch, etc.), general knowledge of Deep Learning algorithms, and possibly specific knowledge of using GAN algorithms (for example for image generation or simulation). Familiarity with High-Energy Physics workflows and distributed computing systems architectures (clouds, container technologies, monitoring tools, etc.) is a plus.

| Specific details: Opportunity to work with the CERN openlab team in a project sponsored by Google. Good working knowledge of English. |

| Status at CERN: Associated Member of the Personnel (Project Associate). |

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| Contact person: it-dep-fas-inform@cern.ch | Reference: 2019_Q4_31_OPENLAB |

Solicitudes hasta 17/01/2020
Call for contribution of expertise

CERN invites collaborating institutes and universities to contribute the expertise of their qualified employees to the activity described below.

<table>
<thead>
<tr>
<th>Start date: ASAP</th>
<th>Duration: Two years</th>
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</table>

Project/Activity: The new CERN Document Server platform based on InvenioRDM

Detailed description of Activity:

CERN Document Server (CDS) is the CERN Institutional Repository, acting as the main CERN documents hub. CDS is being used by the entire CERN, experiments and departments (more than 40,000 users), to store, preserve and disseminate their research publications, as well as videos, images, books, and reports. It currently contains more than 1 million records and 50 TB of data.

In order to provide a modern and user-friendly tool to our users’ community, we are working on the next generation of the web platform that will be also available as open source product and will be used by many other organisations.

We are very excited about this project here at CERN: not only you will have the opportunity to contribute to an open source project that will have a large impact and adoption in the digital repositories’ world, but you will also work with cutting-edge technologies in a very friendly environment to build and deliver an amazing product.

This new repository will be used by the entire CERN community, thus having a big impact on the day-to-day activities of the CERN users.

As part of the CDS team:
- you will be part of a highly dynamic and experienced team and you will be fully integrated in all development activities
- you will be facing challenges such as how to develop with scalability, performance and high customizability in mind and how to work efficiently in the team to improve our velocity.
- your main tasks will include development of backend and frontend modules but also devops. Main technologies are for backend Python 3, using Flask/Jinja web development framework and Celery for tasks, and for frontend HTML5/SemanticUI/React. Plus, SQLAlchemy/PostgreSQL for persistence, Elasticsearch for search, Redis for caching, RabbitMQ for messaging and Docker/OpenShift for deployment.
- you will be involved in the data migration from the old legacy system to the new platform.

Profile: Full Stack software engineer

Specific details: proven experience of web development with Python/Flask and open source software is a plus.

Status at CERN: Associated Member of the Personnel (Project Associate).
Conditions in accordance with CERN’s Staff Rules and Regulations and Administrative Circular No. 11. Subsistence allowance is payable by CERN to cover the additional cost arising from the individual’s (and, as applicable, their family’s) stay in the local area while performing activities at CERN.

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Contact person: it-dep-fas-inform@cern.ch

Reference: 2019_Q4_32_Invenio

SOLICITUDES HASTA 17/01/2020
Call for contribution of expertise

CERN invites collaborating institutes and universities to contribute with the expertise of their qualified employees to the activity described below.

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<th>Start date: asap</th>
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**Project/Activity:** Software Engineer Service Management System (ServiceNow)

**Detailed description of Activity:**

The expert will:

- work in the ServiceNow developer team, contributing to the administration, maintenance and documentation of the ServiceNow platform.
- contribute to the design and development of new functionalities in order to support and improve business service delivery within SMB department and clients assigned to the SMS group. Functionalities are developed with the ServiceNow platform.

**Profile:** Bachelor's degree in software engineering or computer science. Strong analytical and problem-solving skills. Strong programming skills. Experience with modern web development technologies, web application debugging and web services. Experience with complex data models, database design and data integration (ETL) would be an asset.

**Specific details:** Experience with ServiceNow would be a strong asset but is not required. Teamwork and good communication skills. Good working knowledge of English.

**Status at CERN:** Associated Member of the Personnel (Project Associate).

Conditions in accordance with CERN’s Staff Rules and Regulations and Administrative Circular No. 11. Subsistence allowance is payable by CERN to cover the additional cost arising from the individual’s (and, as applicable, their family’s) stay in the local area while performing activities at CERN.

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Contact person: Isabel.Fernandez.Gonzalez@cern.ch

Reference: 2019_Q4_033 Service now

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**Solicitudes Hasta**

17/01/2020

[Logo: Universidad Politécnica de Madrid ETSIT UPM Oficina de Prácticas]
Call for contribution of expertise

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**Project/Activity:** Mechanical engineer (Simulations) for the Crab cavities project (HL-LHC project)

The Mechanical and Materials Engineering Group (MME) of the Engineering department (EN) is in charge of engineering support combining mechanical design, production facilities and material sciences, for the maintenance of CERN facilities and the manufacturing of prototypes as required for CERN projects.

The Crab cavities are superconducting radio frequency cavities that will be used, as part of the future High-Luminosity LHC upgrade, to provide a transverse deflection to particle bunches.

Within the Engineering Design and Measurements section of EN-MME group and in the frame of the Crab cavities mechanical engineering related activities, the expert will carry out three types of actions:

- Use advanced analytical and numerical methods (Finite Element Method, Multifysics analyses) to perform calculations in several domains such as: structural mechanics, thermo-mechanical calculations, modal analyses;
- Be in charge of the documentation management of all the data produced by the group;
- Support the coordination of the activities in the group including: mechanical design validation, prototyping, set-up of production facilities, manufacturing process, quality assurance implementation and follow-up.

**Profile:** Mechanical engineering diploma or equivalent.

**Specific details:** Experience in the design and advanced mechanical analyses using analytical and numerical methods. Ideally, some knowledge of manufacturing technologies, material properties and use of non-conventional materials, analysis and testing methods, pressure vessels standards, cryogenics, ultra-high vacuum technology. Excellent organization and communication skills.

**Status at CERN:** Associated Member of the Personnel (Project Associate).

Conditions in accordance with CERN’s Staff Rules and Regulations and Administrative Circular No. 11. Subsistence allowance is payable by CERN to cover the additional cost arising from the individual’s (and, as applicable, their family’s) stay in the local area while performing activities at CERN.

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**Contact person:** Isabel.Bejaralonso@cern.ch

**Reference:** 2019_Q4_34_Simulations_Crabs

**Solicitudes hasta 17/01/2020**
Call for contribution of expertise

CERN invites collaborating institutes and universities to contribute the expertise of their qualified employees to the activity described below.

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**Project/Activity:** Mechanical engineer (Simulations) for the Crab cavities project (HL-LHC project)

The Mechanical and Materials Engineering Group (MME) of the Engineering department (EN) is in charge of engineering support combining mechanical design, production facilities and material sciences, for the maintenance of CERN facilities and the manufacturing of prototypes as required for CERN projects.

Within the Engineering Design and Simulation section of EN-MME group and in the frame of the Collimation mechanical engineering related activities, the expert will be involved in the engineering, design and fabrication of 3 prototype collimators to be produced by the EN-MME workshop for the LHC Injection Region Cleaning, one upgraded prototype of the Long Shutdown 3 halo collimators, masks and ancillaries.

The work requires the development of sophisticated mechanical systems based on structural, thermal, fluid-dynamics numerical simulations as well as the study and characterization of relevant materials. Additionally, the expert shall closely interact with the EN-MME workshop as well as the Materials, Metrology & NDT section, taking a leading role in the procurement, fabrication, assembly and follow up phases for the prototypes to be built.

**Profile:** Mechanical engineering diploma or equivalent.

**Specific details:** Experience in the design and advanced mechanical analyses using analytical and numerical methods. Ideally, knowledge of manufacturing technologies, material properties and use of non-conventional materials, analysis and testing methods, pressure vessels standards, cryogenics, ultra-high vacuum technology. Basic knowledge of CAD tools would be an advantage. Excellent organization and communication skills.

**Status at CERN:** Associated Member of the Personnel (Project Associate).

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**Contact person:** Isabel.Bejaralonso@cern.ch

**Reference:** 2019_Q4_35_Simulations_Collimators

**SOLICITUDES HASTA 17/01/2020**
Call for contribution of expertise

CERN invites collaborating institutes and universities to contribute the expertise of their qualified employees to the activity described below.

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<tr>
<td>Project/Activity:</td>
<td>Electronics/Electrical engineer</td>
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**Detailed description of Activity:**

The CERN current calibrator is a high precision current source based used for the calibration of measurement devices for CERN power converters. This project proposes to upgrade the existing design in order to enhance its performance. The expert will:

- Complete the existing simulation model for both the electronic and magnetic components;
- Propose and implement improvement to the existing circuits including replacement of obsolete components but also schematic and layout modifications if deemed necessary to improve performance;
- Propose and implement improvements to the cabling and inter circuit connection for better EMC;
- Propose and implement new layouts for the PCBs;
- Propose and implement new thermal and mechanical configuration for the CDC aiming at $\Delta T$ reduction on the most critical circuits;
- Build and validate a prototype.

**Profile:** Bachelor/Master in Electronics/Electrical engineering.

**Specific details:** Very good knowledge in analogue electronics. Good knowledge in measurement electronics and instrumentation. Experience with electronics simulation using Spice (in particular LTSpice). Knowledge of magnetic materials and transformer theory.

Good level of English, French is an asset.

**Status at CERN:** Associated Member of the Personnel (Project Associate).

Conditions in accordance with CERN's Staff Rules and Regulations and Administrative Circular No. 11. Subsistence allowance is payable by CERN to cover the additional cost arising from the individual's (and, as applicable, their family's) stay in the local area while performing activities at CERN.

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**Contact person:** Isabel Bejar Alonso

**Reference:** 2019_Q4_039

**Solicitudes Hasta 17/01/2020**