

ANNOUNCEMENT FOR PROVISION OF THE WORKPLACE

VAC-2022-77 – Research Engineer (DIDRO project)

Number of places: 1

Category: Research Engineer 3 – RENG3

Workplace: Barcelona

Salary (gross): 32.202,88€

Weekly working hours: 40h/week

Functions to be developed:

The goal of DIDRO project is to make a step towards developing a Digital Twin of an inkjet-printer for manufacturing purposes. It will focus on developing and implementing a numerical model that simulates the process of ink ejection from the nozzle and its final configuration associated to its eventual spreading on the solid surface. The model will be based on an enriched Finite Element/Level Set method. In order to facilitate quick predictions, a machine learning algorithm will be implemented that shall be able to recognize different droplet/jet ejection modes based on the knowledge of the printing parameters.

The work of the candidate will involve implementation of inkjet printing model inside DropletDynamics module of KRATOS Multiphysics Open Source HPC software (C++/python). The existing two-phase flow model will have to be enhanced so as to tackle the specific problem of inkjet printing (which involves special boundary conditions at the contact line and liquid/gas interface). Inkjet printing simulations and code validation will have to be carried out. The second major task will be the development and implementation of a robust Machine Learning algorithm for predicting inkjet modes as a function printing parameters. The ML tool (possibly based on Gaussian process) will be trained using the outcome of the above-described model.

Required skills:

- Education: Master or PhD degree in mechanical/civil/aerospace engineering or physics
- Knowledge of Finite Element method and programming in C++/python

Other valued skills (not mandatory):

- Knowledge of Machine Learning libraries and ability to program and train ML algorithms
- Ability of writing scientific papers/reports

Qualification system:

The requisites and merits will be evaluated with a maximum note of 100 points. Such maximal note will be obtained summing up the following points:

- Education, publications and relevant experience: 20%
- Knowledge of numerical methods: 15%
- Programming experience and skills: 30%
- Language skills: 5%
- Test and/or interview: 30%

Candidates must complete the "Application Form" form on our website, indicating the reference of the vacancy and attaching the required documents.

The deadline for registration to the offer ends on November 10, 2022 at 12 noon.

The preselected candidates may be requested to send the documentation required in the "Requirements" and "Merits" sections, duly scanned, and may be called to go through selection tests (which might be of eliminatory nature) and / or personal interviews.



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