REP. 6030 PROT. 165421 del 25/07/2019

THE DIRECTOR

WITH REFERENCE TO   the rules referred to in Article 14 of the present call for application

ORDERS

Art. 1 – Purpose

A procedure of comparative evaluation by qualifications and public discussion is called for the recruitment of 3 researchers with a fixed-term employment contract full-time for the three-year - pursuant to art. 24 paragraph 3 letter a) (junior) of Law no. 240/2010 -. Sector competition reference 09/H1 - Information Processing Systems, Scientific sector ING-INF/05 - Information Processing Systems.

The jobs are activated for the needs of research and study of the Department of Computer Science and Engineering -DISI of the Alma Mater Studiorum - Università di Bologna. Serving primarily service at the Department Computer Science and Engineering -DISI in Bologna.

Each contract shall last three years. An annual gross total amount equal to € 34.898,00. The annual increase in this amount will be calculated according to the existing procedure for non-contracted personnel.

Art. 2 – Activities to be performed

Each contract includes 350 hours of supplementary teaching and assistance to students, for each academic year covered by the contract. The contract shall schedule 60 hours of teaching on annual basis.

Concerning the provisions of art. 10 regarding fixed term researchers, issued by Rectoral Decree no. 344 of 29/03/2011 and amendments, the researcher's activities must be linked to the development of the 3 projects financed by the European Project Horizon 2020 "IoTwins":

-Project 1: "Edge Cloud Computing for Latency-Sensitive Quality Management of Industry4.0 Manufacturing Processes".

In the context of the H2020 IoTwins project (ICT-11 Big Data),whose aim is to design a reference architecture for edge-enabled digital twins and to experiment its implementation, deployment, and in-the-field evaluation in several test-beds, the activity proposed for the researcher relates to the design, implementation, and evaluation of platform components for Industry4.0-specific edge computing. In particular, the work will concentrate on i) migration of virtualized stateful/stateless components over heterogeneous edge nodes, ii) coordination of distributed edge components, iii) federated learning at edge+cloud nodes, and iv) performance improvement/evaluation via locality optimizations. Integration of distributed/federated machine learning, industrial edge platform extension, efficient integration with industrial cloud providers, and compliance with emerging standard testbeds in the field (e.g., by the Industrial Internet Consortium) will be the core activity of the researcher.

The primary aims of this grant activity are to generate new knowledge in the area of edge-based federated machine learning, time-constrained execution of edge components over industrial edge platforms, and performance optimization of edge platforms for Industry 4.0. Novel methodologies

and models will be developed, as well as research activities on real data experimentation will be executed.The achievements will be assessed through measurable parameters such as i) number of papers in scientific journals relevant to the target field (minimum **two papers**); ii) number of peer-reviewed papers presented in international scientific conferences (minimum four papers); iii) invitations to present the researcher activity in Conferences, Research Institutes, International bodies, and private Companies.

-Project 2: "Artificial Intelligence techniques for manufacturing".

In the context of the IoTwins EU project funded under the H2020 workprogram, whose aim is to design a reference architecture for edge-enabled digital twins and experiment its implementation, deployment, integration, and experimental in-the-field evaluation in several test-beds, the acrtvity proposed for the researcher concerns the definition of models enabling the description of the system itself and its dynamics (descriptive models), the prediction of its evolution (predictive models), and the optimization of its operation, management and maintenance (prescriptive models). They are used to detect anomalies, to determine an optimal set of actions that maximize key performance metrics, to enforce on-line quality management of production processes and predictive maintenance of plants. Integration of machine learning, simulation and optimization will be the core activity of the researcher.

The aim of the research project is that of producing new knowledge in the area of the integration of machine learning, simulation and optimization, to define methodologies and to experiment on real data. The achievements will be assessed through measurable parameters such as i) number of papers in scientific journals relevant to the target field (minimum two papers); ii) number of peer-reviewed papers presented in international scientific conferences (minimum four papers); iii) invitations to present the researcher activity in Conferences, Research Institutes, International bodies, and private Companies.

-Project 3: "Code Generation Techniques for energy-efficient Machine Learning on Edge".

In the context of the IoTwins EU project, whose aim is to design a reference architecture for edge-enabled digital twins, the activity proposed for the researcher concerns the development of techniques for boosting the speed and reducing the power consumption involved in running machine learning tasks on edge IoT nodes used to collect sensor information. The research challenge is that computing capabilities are limited near the edge, for cost and power consumption reason, hence Machine Learning models tuned for cloud usage need to be tuned and reduced in complexity while minimizing loss of accuracy. The core activity of the researcher will be on the development of general and retargetable code generation tools and their deployment on the platforms targeted in the project. The aim of the research project is to produce knowledge, tools and to demonstrate the them on real use cases, producing experimental evidence in concrete industrial demonstrations.The achievements will be assessed through measurable parameters such as i) number of papers in scientific journals relevant to the target field (minimum two papers); ii) number of peerreviewed papers presented in international scientific conferences (minimum four papers); iii) invitations to present the researcher activity in Conferences, Research Institutes, International bodies, and private Companies

Art. 3 - Admission requirements

The selection is open to:

applicants, including those who come from non-EU countries, in possession of:

- PhD or equivalent qualification obtained in Italy or abroad.

Applicants must be in possession of said qualification at the date of the deadline for the submission of applications to the present selection.

In case of PhD obtained abroad, please include a statement of equipollence with the Italian PhD title pursuant to art. 74 of D.P.R. 382/1980 or the statement of equivalence with the Italian PhD title pursuant to art. 38 of Legislative Decree. N. 165/2001. Pending the release of the only result of equivalence by the designated offices, it is possible to produce the delivery receipt of the request

instance of the same (for the release procedure, see page: http://www.cimea.it/it/servizi/procedure-di-riconoscimento-dei-titoli/riconoscimento-non-accademico.aspx).

In any case the proof of the equivalence of the foreign qualification must be produced to the administration within 90 days from the publication of the approval decree of the procedure on the official university bulletin, otherwise the exclusion from the ranking occurs.

Applications from professors, associate professors, or researchers with tenure will not be accepted, even if the applicant is not in service.

The selection is not open to any persons who are related by blood up to the fourth degree, to a professor or full-time researcher working in the Department of Computer Science and Engineering - DISI, or to the Rector, Director General or a member of the Board of Governors of the University.

Furthermore the selection is not open to anyone who has had research fellowship or fixed-term researcher contracts at the University of Bologna or any other state-funded, private-funded or distance-learning Italian university pursuant to articles 22 and 24 of Italian Law 240/2010, or with any other body listed in paragraph 1 of Art. 22 of Italian Law 240/2010 for a period which, summed to the foreseen duration of this contract, exceeds a total of 12 years, even if not consecutive. For the purposes of the duration of the above-described periods, in compliance with the laws in force any periods of maternity or sick leave shall not be calculated.

State employees may on unpaid leave for the entire duration of the contract, thus occupying a non-tenure position without pay or social security contributions, in cases where such a position is allowed by the structure of origin, likewise without pay or social security contributions.

Art. 4 – Application procedure

The submission of the application for participation in the selection must be made exclusively via electronic procedure by accessing the following link:

https://concorsi.unibo.it

Call deadline: 30.th August 2019 at 12:00 (noon) (Central European Time CET)

The application must be submitted at the same time with the insertion of all the attached documentation required.

The following documents shall be enclosed to the electronic application form (preferably files: PDF, other supported files: JPG, BMP, PNG):

1. identification document scanned (10MB max);
2. curriculum vitae with indication of the scientific-professional activity(10MB max);
3. reference letters, if any. Letters can be submitted directly by the candidate uploading it during the application, in case of possession (10MB max), or can be submitted by the referee. In this case candidates should provide the referee email address. The system will send an automatic request to the referee, referring to the candidate and the procedure. The referee must submit his letter through the link into the email. At this address he/she will upload his/her letter by the application deadline in order to be considered as part of the candidate's application.
4. scientific publications (max 12: other supported files are TIFF and PS, 20MB max each document) which are already printed at the date of the call of application deadline, or scientific publications accepted for printed, together with the editor acceptance letter. While uploading each document will be asked to indicate the title, the authors' names, the editor, the year of publication. Optional information are the month, the ISBN code, the DOI code, the booklet number.

Pursuant to Ministerial Decree 243/11, the PhD thesis is considered a publication, and thus if presented by the candidate it shall be included in the maximum number indicated (12).

While applying, applicants shall declare under their own responsibility:

1. surname and name;
2. place and date of birth;
3. citizenship;
4. residence address;
5. (if Italian citizens) registration to electoral rolls. If any, the reasons why he/she is not registered or cancelled from them;
6. that there have not been any criminal proceeding against them or current criminal proceedings; otherwise, applicants shall specify the proceedings against them (in addition, specify if, remission, pardon or expungement etc. were granted) and pending penal proceedings;
7. to have or not to have benefited of non-voluntary leave periods due to maternity/paternity compulsory abstention or for serious health reasons, indicating the periods in case
8. possession of the qualification required pursuant to Art. 3 of this call for application and the mark obtained, if any;
9. to be fit to the employment the selection refers to;
10. that they are not, nor have been, professors, associate professors or researchers with tenure, even if not in service;
11. That they are not related by blood up to the fourth degree, to any professor or full-time researcher working in the Department of Computer Science and Engineering -DISI or the structure proposing the activation of the contract, or to the Rector, Director General or a member of the Board of Governors of the University of Bologna.
12. elected e-mail address for the purpose of the participation in this contest;
13. Foreign citizens shall also declare to have a proper knowledge of Italian and to enjoy civil and political rights also in their origin countries or the reasons for loss of enjoyment.

Any modification shall be timely communicated to the Ufficio Ricercatori a tempo determinato.
In case of technical problems, contact the support: assistenza.cesia@unibo.it .
Please be aware that due to summer vacations the office will be closed from the 10th to the 18th August, therefore for problems in the application process the assistance of the Cesia will not be available.

Art. 5 – Applicants' obligations
The penalty of exclusion from the selection shall apply in the following cases:
• Non compliance with the terms established for posting the application form;
• Lack of the requirement pursuant to art. 3 of the present call for application (qualification).
All applicants shall be admitted to the contest and the Administration reserves the right to check that they actually are in possession of the requirements necessary to apply for the selection; the Administration may, at any time and even after the exams, order the exclusion from the selection hereto.

Art. 6 – Selection Board
The Selection Board will be appointed upon administration resolution and is composed of three full or associate professors belonging to the competition Scientific sector or, alternatively, to the same competition macro-sector for which the procedure is announced. Two of the members are appointed by the Department Council, among internal or external professors of the University. A third component, external to the University, is identified by drawing from a list of three external professors In order to guarantee equal gender access to work, treatment at work and opportunities between men and women as envisaged by art. 57 of Legislative Decree 165/2001, generally, at least one member is female.
The Commission appoints a chairperson and recording secretary between their members.

Notice of the appointment of the will be published on Alma Mater Studiorum - University of Bologna website.

Art. 7 – Selection procedure

The selection procedure is carried out by the Board after a preliminary evaluation of each candidate's qualifications, curriculum and scientific production, including the doctoral thesis, according to the criterion identified by the MUIR in D.M. 243/2011.

The candidates chosen in the preliminary evaluation based on their comparative merits - between 10 and 20% of the number of applicants and not less than 6 - will then be called for interview. The interview will consist of a discussion of the candidate's qualifications and scientific production and may take the form of a seminar open to the public. If the total number of candidates is 6 or less all candidates will be interviewed.

Letters of reference will be considered.

The interview will be held in Italian. During the interview, candidates must also demonstrate suitable knowledge of the English language.

Following the interview, points will be assigned to each qualification and publication presented by the candidate.

The interview with the Board will be held in public session.

Confirmation of the date, time and address of the discussion and the list of candidates admitted for interview will be published at least 20 days before the interview on the University website at: http://www.unibo.it/Portale/Personale/Concorsi/RicercatoriTempoDeterminato/default.htm.

The publication on the University website will constitute official notification to all applicants, without any obligation for any further communication.

The publication will be communicated by email to the address indicated by the candidates in the application.

The Alma Mater Studiorum - University of Bologna does not assume any responsibility for the non-receipt or the not-read of the e-mail.

It is up to candidates to keep themselves informed by consulting the University website page to find necessary information about selection.

Candidates attending the interview must bring a valid identification document with them.

EU citizens shall bring their passport or an identity document issued by their country of origin. Non-EU citizens shall bring their passport.

Art. 8 – Ranking List and recruitment

After the exams, the Board shall prepare the general final list based on the merits. The candidate ranked first on the list will have the right to opt for the research project to be carried out. The second candidate will have the right to opt between the remaining two projects. At the third candidate will be assigned the remaining research project

On equal merits, priority will be allocated according to date of birth and the youngest one shall prevail.

The list based on merits is approved pursuant to the administration resolution and will be published in Alma Mater Studiorum – University of Bologna Official Bulletin.

The terms to raise any appeal shall start from the date of publication of said notice, in case the resolution has not been otherwise disclosed.

The ranking is used exclusively for the coverage of the places of this call. In the sole case of renunciation of employment, the assignment can be conferred to another suitable person, according to the ranking order.

The use of the final candidate list is strictly bound to study and research related to the scientific sector SSD ING-INF/05 - Information Processing Systems.

The Department of Computer Science and Engineering -DISI, will propose recruitment by a majority vote of the professors and associate professors of the Department and approved by the Board of Governors. The Department will also propose the date of commencement of employment contract.

Art. 9 – Employment procedures

Following the conclusion of the recruitment procedure referred to in art. 8, the candidates will be asked to sign a fixed-term contract of full-time employment.

The employment relationship is governed by a personal contract, statutory laws and EC regulations. The personal contract shall specify any reasons for which it might be terminated, as well as the relevant periods of notice. In any case the contract will be terminated immediately and without notice in the event of the cancellation of the recruitment procedure to which it is inalienably linked.

The trial period shall last three months. At the end of the period, unless the employment relationship has been terminated by either of the parties, the employee is confirmed for service and the whole period worked from the beginning of the contract shall be calculated for seniority purposes.

Art. 10 – Required documents

All the documents written in any foreign language shall be accompanied by a true and correct translation into Italian, written by an Italian consular, a qualified diplomatic representative, or an official translator.

Art. 11 Rights and duties of a researcher with a fixed-term contract of employment

In accordance with the rights and duties of public employees prescribed by the Italian civil code, on signing the contract the researcher will be expected to perform all those activities mentioned in Art. 2. These activities will be carried out in respect of the existing hierarchy and in coordination with existing programmes and research projects.

The researcher will perform the requested activities in person, substitution is not permitted.

Existing Italian laws concerning maternity, injury and illness will be applied.

The researcher undertakes to fulfill the obligations of conduct prescribed by the code of conduct, issued by DPR 62/2013.

Art. 12 Processing of personal data and person in charge for the contest

Information about the processing of personal data (provided during the application process) are available at the link: www.unibo.it/privacy (Notice for participants in contests and selections published by the University).

The person in charge of the contest is Mr. Gianfranco Raffaeli, Responsabile dell'Ufficio Ricercatori a tempo determinato - Piazza Verdi n. 3 - 40126 Bologna.

For further information, please contact: Ufficio Ricercatori a tempo determinato dell'Alma Mater Studiorum - Università di Bologna – Piazza Verdi n. 3 - Tel. +39 051 2099617 – 2098958 - 2098972, Fax 051 2086163; e-mail: apos.ricercatoritempodeterminato@unibo.it .

Art.13 - Reference Regulations

The present notice is issued based on the following regulations:

- Art. 24 of Law no. 240 dated December 30th, 2010;
- D.P.R. (Decree of the President of the Republic) no. 445 dated December 28th, 2000;
- Leg. Decree no. 165 dated March 30th, 2001;
- Law 241/1990;
- Regulation for fixed-term researchers of Alma Mater Studiorum – University of Bologna, (link: http://www.normateneo.unibo.it/NormAteneo/Regolamento_ricercatori_a_tempo_determinato.htm).

Bologna, 25/07/2019

Per   Il Dirigente dell'Area del Personale
f.to Giovanni Longo