



NOTICE FOR THE OPENING OF AN INTERNATIONAL SELECTION TENDER PROCEDURE FOR THE HIRING OF DOCTORATE UNDER THE LEGAL REGIME OF SCIENTIFIC EMPLOYMENT

CTTI-76/21-ICVS(1)

Doctor Rui Manuel Costa Vieira de Castro, Professor and Rector of Universidade do Minho, in the use of his own competence, in accordance with the terms of subsection d) of section 1 of article 92 of Law no. 62/2007, from September 10th and subsection d) of section 1 of article 37 of the Statutes of Universidade do Minho, approved by Normative Order no. 13/2017, published in *Diário da República*, 2nd series, no. 183, of September 21st, makes it known that, for a period of 10 working days counting from the business day immediately after the date on which this notice is published, an international selection tender is open for recruitment, in the form of an uncertain term contract celebrated under the Labour Code, of 1(one) doctoral researcher position initial level under private law, for the exercise of scientific research activities in the scientific area of Health Sciences, within the scope of the project Automating analysis and training in Focused Cardiac Ultrasound, ref. PTDC/EMD-EMD/1140/2020, financed by the State Budget, exclusively by national funds through the *Fundação para a Ciência e a Tecnologia* – FCT I.P, with a view to:

- participate in the execution of the project and in related scientific and technical activities, including: (i) development of platform/software for computer-assisted medical training in acquisition and interpretation of ultrasound images; and (ii) development of medical image processing algorithms for interpretation, segmentation and tracking of cardiac and pulmonary structures in ultrasound images;
 - monitor the work carried out within the scope of the project, including that of higher education students, scholarship holders, research interns and research assistants, and participate in their training.
1. **Applicable Legislation:** This tender, open by Decree of 06/28/2021, by the Rector of Universidade do Minho, is governed by the provisions of Decree Law No. 57/2016, of August 29th, amended by Law No. 57/2017 of July 19th, which approved a hiring regime of doctorates aimed at stimulating scientific and technological employment in all areas of knowledge, by the Regulation of Scientific Employment (RSE), by the *Regulamento da Carreira, Recrutamento, Contratação e Avaliação do Desempenho do Pessoal Investigador em Regime de Direito Privado da UMinho* (RPI-UM), published in *Diário da República*, 2nd series, no. 209, October 27th, amended by law no. 881/2020, published in the *Diário da República*, 2nd series, of December 15th, by the provisions of the Labour Code, approved Law no. 7/2009, of February 12th, in its current version, and other applicable laws and regulations.
 2. **Place of Work:** The work placement is located in Life and Health Sciences Research Institute, of School of Medicine of the University of Minho, Campus of Gualtar, in Braga.
 3. **Monthly salary:** The salary to be attributed is 2.134,73 €, corresponding to the remuneration level 10 included in the annex 1 of the RPI-UM.
 4. **Eligibility Criteria:** Any national, foreign and stateless candidates who hold a doctoral degree in in the field of knowledge / specialty that shows an appropriate profile for the activities to be developed.

Opponents of this tender with qualifications obtained abroad must prove the recognition, equivalence or registration of the doctoral degree, under the terms of the applicable legislation. This formality must be completed by the signing date of the contract.

- 4.1. General admission requirements are those defined in point 4. For the purpose of determining the appropriate profile for the activity to be developed, the following are special requirements:
 - a) Knowledge in development of computer vision/medical image processing algorithms (interpretation, segmentation, tracking, etc.), with expertise in programming with Python, C++ and/or MATLAB;
 - b) Knowledge in development (specification, implementation and evaluation) of algorithms/models of deep learning and/or machine learning, preferentially in the medical field;
 - c) Domain in the english language (writing and oral communication).
5. **Formalization of the applications:** Applications are formalized through a request addressed to the Rector of Universidade do Minho, under the terms defined in the attached template.
 - 5.1. The application must include the following documents:
 - a) copy of certificate or diploma degree;
 - b) detailed *curriculum vitae* structured in accordance with point 9;

- c) proof of professional experience;
 - d) motivation letter;
 - e) letters of recommendation;
 - f) copy of the 3 most relevant publications;
 - g) other relevant documents for the evaluation of qualification in the related scientific area;
 - h) any other documents that the applicant considers relevant, namely for the assessment of the information referred to in section 2 of article 5 of the RSE.
- 5.2. Candidates must submit the request and supporting documents, using digital tools, in PDF format, mandatorily, by electronic means, to the address icvs.rh@med.uminho.pt, until the deadline for submission of applications established in this notice, indicating in subject "Ref. CTTI-76/21-ICVS(1)".
- 5.3. Failure to comply with the deadline for submitting the application, such as failure to submit or late submission of the application referred to in point 5 and the documents referred to in points a) to c) of point 5.1, determines the exclusion of the application. The exclusion decision is notified to the candidates, by email, for the purpose of holding the hearing of interested parties.
- 5.4. The jury may, whenever it finds necessary, request candidates to provide documents complementary to the facts referred to in the submitted curriculum, determining a deadline for this purpose.
- 5.5. False statements provided by the candidates will be punished by law.
6. **Members of the Jury:** The selection jury has the following composition, according to article no. 13 of the RSE and article no. 35 of the do RPI-UM:

President of the jury: Doctor Jorge Manuel Nunes Correia Pinto, Full Professor of the School Medicine of the University of Minho;

Effective Member: Doctor João Carlos Cruz Sousa, Associate Professor of the School Medicine of the University of Minho;

Effective Member: Doctor Sandro Filipe Monteiro Queirós, Junior Researcher of the Life and Health Sciences Research Institute, of School of Medicine of the University of Minho;

Substitute member: Doctor Maria Fátima Monginho Baltazar, Associate Professor of the School Medicine of the University of Minho;

Substitute member: Doctor Vitor Hugo Eira Pereira, Assistant Professor of the School Medicine of the University of Minho.

7. **Rules of operation of the Jury:** The jury shall deliberate by means of a nominal vote in accordance with the adopted and published selection criteria, and abstentions will not be allowed.
- 7.1. The jury meetings will be documented in written minutes, containing a summary of what has taken place, as well as the votes cast by each of the members and the respective grounds, being provided to the candidates whenever requested.
8. **Approval on absolute merit:**
- 8.1. The jury must decide on the absolute merit of the candidates, based on the merit of the global curriculum of the candidates in the scientific area for which the tender is open, and also considering the fulfilment, cumulatively, of at least one of the following requirements:
- a) PhD in Biomedical Engineering or Health Sciences or Electronic Engineering or Biotechnology;
 - b) Participation in research projects in the fields of medical image processing and/or artificial intelligence.
- 8.2. The decision of exclusion on absolute merit is notified to the candidates, by email, for the purpose of holding the hearing of interested parties.
- 8.3. Once the deadline for the exercise of the right of hearing the interested parties has expired, the jury analyses the allegations presented and, if it keeps the exclusion decision, notifies the excluded candidates by email with delivery receipt, subsequently beginning the application of the selection methods to the admitted candidates.
9. **Method(s) and evaluation criteria:** The selection method consists of a Scientific and Curricular Path Assessment (SCPA), weighted 90%, and the Interview (INT), with a weight of 10%.

All candidates, approved on absolute merit, are subjected to the evaluation of the scientific and curricular path to be carried out according to the criteria and weights defined in points 9.3 and 9.4. However, only the 4 candidates

approved and best positioned in the ranking resulting from the evaluation of the scientific and curricular path will be admitted to the Interview.

- 9.1. The evaluation of the Scientific and Curricular Path Assessment (SCPA) focuses on the relevance, quality and timeliness:
- a) of the scientific, technological, cultural or artistic production of the last five years considered most relevant by the candidate for the area of recruitment and applied research activities, or based on practice, considered to have the greatest impact by the candidate for the area of recruitment, with a minimum weight of 80%;
 - b) of the activities of extension and dissemination of knowledge, namely in the context of the promotion of the cultural and scientific practices considered most relevant by the candidate, and activities for the management of science, technology and innovation programs, or experience in observation and monitoring of the scientific and technological system, with a maximum weight of 20%.
- 9.2. The five-year period mentioned in the preceding paragraph may be increased by the jury, if requested by the candidate, and when justified on grounds of suspension of scientific activity for socially protected reasons such as parental leave, prolonged serious illness, and other situations of unavailability for work that are legally protected.
- 9.3. In the Evaluation of the Scientific and Curricular Path Assessment (SCPA): The following parameters and evaluation criteria are considered with the respective weightings/weights:

Criteria	Weighting
AQ – Academic Qualifications	5%
ML – Motivation Letter	5%
STP – Scientific and Technological Production	40%
RA – Research Activities	40%
EA - Extension Activities	10%

AQ – Academic Qualifications

Corresponding to the evaluation of the academic area that will be evaluated through the following parameters: AQ = up to 100 points: Biomedical Engineering or Health Sciences or Electronic Engineering or Biotechnology; AQ = up to 60 points: PhD in related areas.

ML – Motivation Letter

Corresponding to the evaluation of the description of the relevance of the scientific trajectory to the position as well as personal career goals: ML = up to 100 points.

STP – Scientific and Technological Production

Corresponding to the evaluation of the scientific and technological production, through the following subfactors:

- STP1: quantity of the scientific production (number of scientific publications);
- STP2: quality of the scientific production (impact of scientific production);
- STP3: intellectual property (authorship and co-authorship of patents or utility models).

Each subfactor will be evaluated using the following parameters: STP = up to 100 points: production in the area of the project; STP = up to 70 points: production in related areas; STP = up to 30 points: production in other areas and; STP = 0 point: without any production.

The classification will be obtained through the following formula: $STP = 0.45STP1 + 0.45STP2 + 0.1STP3$.

RA – Research Activities

Corresponding to the evaluation of the research activities, through the following subfactors:

- RA1: experience in the development of medical image processing algorithms;
- RA2: experience in the development of deep/machine learning algorithms/models;
- RA3: experience/knowledge in ultrasonography;
- RA4: experience in motion tracking technology;
- RA5: participation in research projects in the area of medical image processing and/or artificial intelligence.

Each subfactor will be evaluated using the following parameters: RA = up to 100 points: research activities in the area of the project; RA = up to 70 points: research activities in related areas; RA3 = up to 30 points: research activities in others areas and; RA3 = 0 point: no research activities.

The classification will be obtained through the following formula: $RA = 0.3RA1 + 0.3RA2 + 0.1RA3 + 0.1RA4 + 0.2RA5$.

EA - Extension Activities

Corresponding to the evaluation of the extension and management activities carried out, through the following subfactors:

- EA1: pedagogical scientific activities (participation in committees, juries and supervision/co-supervision of postgraduate students);
- EA2: activities of knowledge dissemination among the scientific community (congresses, conferences, symposia, lectures, seminars and others);

Each subfactor will be evaluated using the following parameters: EA = up to 100 points: extension activities in the area of the project; EA = up to 70 points: extension activities in related areas; EA = up to 30 points: extension activities in others areas and; EA = 0 point: no extension activities.

The classification will be obtained through the following formula: $EA = 0.5EA1 + 0.5EA2$.

The final classification of the SCPA is obtained by the following formula:

$$\mathbf{SCPA = 0.05AQ + 0.05ML + 0.4STP + 0.4RA + 0.1EA.}$$

- 9.4. The Interview (INT), with the duration of 20 minutes, will be classified on a numerical scale from 0 to 100 points, applying the following parameters and criteria evaluation, represented in the formula: **INT = 0.1 CM + 0.6RRR + 0.1OC + 0.2FEN.**

Criteria	Weighting
CM – Candidate Motivation	10%
RRR – Relevance of Research Results	60%
OC – Oral Communication	10%
FEN – Fluency in English	20%

CM – Candidate Motivation

Corresponding to the evaluation of the candidate's level of motivation to perform the activities to be provided in the project: CM = up to 100 points.

RRR – Relevance of Research Results

Corresponding to the evaluation of the clarification of aspects related to the candidate's research results: RRR = up to 100 points.

OC – Oral Communication

Corresponding to the evaluation of the candidate's oral communication skills: OC = up to 100 points.

FEN – Fluency in English

Corresponding to the evaluation of the candidate's proficiency in the English language: FEN = up to 100 points.

- 9.5. Candidates with an absolute merit score lower than 60 points in one of the methods, the following method, if any, not being applied to them, as well as candidates who have not attended, have given up on them or, although approved, have not been included in the tranches used.
- 9.6. The valuation of the evaluation parameters is expressed on the numerical scale from 0 to 100 points.
- 9.7. The classification of each candidate is obtained by the average of the classifications of each one of the members of the jury. In case of a draw, the Chairman of the jury will make a final decision to untie the applicants.
10. **Order of candidates:** The order of the candidates must be based on the evaluation made according to the evaluation criteria described in this notice.
- 10.1. After completion of the application of the evaluation criteria, the jury will draw up an orderly list of successful candidates with their respective classification.
- 10.2. The final classification of the candidates is expressed in the numerical scale of 0 to 100 points; the classification being obtained through a weighted average.

11. **Participation of interested parties and decision:** The final ordering is notified to the candidates, by email with receipt of delivery of the notification, allowing them to pronounce for the purpose of preliminary hearing of the interested parties, pursuant to article 121 and following of the Code of Administrative Procedure, applying, with the necessary adaptations, the provisions of article 31 of the Regulation.
 - 11.1. After the hearing of the interested parties, the jury analyses the allegations presented and approves the final ordering list of the successful candidates. Within 90 days, from the deadline for submission of the applications, the final decisions of the jury are given.
 - 11.2. The period referred to in the previous number may be extended when the high number of candidates and or the special complexity of the competition justifies it.
 - 11.3. The final decision of the jury is approved by the Rector of Universidade do Minho, who also decides on the hiring.
12. **Publication of results:** The list of admitted and excluded candidates, as well as the final ranking list of the successful candidates, are published on Universidade do Minho's website, and the candidates are notified by email with receipt of delivery of the notification.
13. The present tender is exclusively designated to fill the indicated vacancies and may be terminated up to the homologation of the final ranking list of candidates, expiring with the respective occupation of the jobs on offer.
14. The present announcement was approved by the jury of the tender at its meeting on 07/16/2021, according to the approved minutes of the said meeting.
15. **Non-discrimination and equal access policy:** Universidade do Minho actively promotes a policy of non-discrimination and equal access, so that no candidate may be privileged, benefited, harmed or deprived of any right or exempt from any duty due, namely, to ancestry, age, sex, sexual orientation, marital status, family status, economic situation, education, social origin or condition, genetic heritage, reduced working capacity, disability, chronic illness, nationality, ethnic origin or race, territory of origin, language, religion, political or ideological convictions and trade union membership.
 - 15.1. Pursuant to section h) of article 9 of the Constitution of the Portuguese Republic, the Public Administration, as an employer, actively promotes a policy of equal opportunities for men and women in accessing employment and professional advancement, scrupulously any form of discrimination.

The Rector, Professor Rui Vieira de Castro

ANNEX

REQUEST

To the Rector of Universidade do Minho

Name (...), birthdate (...), VAT no. (...), identification card no. (...), address (...), Postal code (...), Mobile Phone no. (...), email address (...), holder of a degree in (...), hereby requests that you kindly accept my application for the international competition for recruitment in the form of an uncertain term contract under the Labour Code and Decree-Law No. 57/2016 of August 29th, as amended by Law no. 57/2017, of July 19th and the “*Regulamento da Carreira, Recrutamento, Contratação e Avaliação do Desempenho do Pessoal Investigador em Regime de Direito Privado da UMinho*” published in Diário da República, 2nd Series, no. 209, of 27 October, of ___ doctoral positions in the scientific area of _____, according to a notice published in the Diário da República no. ___, 2nd series, of ___/___/___, with Ref. _____.

I also declare that I agree to receive by email the communications and notifications resulting from the present selection tender procedure.

Find attached the following documents: xxx

(Place and date)

(Signature)