FORM FOR EMPLOYERS

INSTITUTION: AGH University of Krakow

DEPARTMENT: Faculty of Computer Science

CITY: KRAKOW

POSITION: assistant in a group of research staff

DISCIPLINE: computer science

EXPIRES: 20.04.2024

WEBSITE: https://www.agh.edu.pl/o-agh/praca-w-agh, https://www.in-deep.science, https://euraxess.ec.europa.eu/jobs/search

KEY WORDS: Data Science, environmental science, mathematics, physics

DESCRIPTION (field, expectations, comments, requirements):

Announcement for the position of early stage research assistant in the Faculty of Computer Science at the AGH University of Krakow (AGH, Poland) for the:

European Doctoral Network IN-DEEP
"Real-time inversion using self-explainable Deep Learning driven by expert knowledge"
under the Program HORIZON-MSCA-2022-DN-01.
Reference number: DC8 (doctoral candidate 8 https://www.in-deep.science/job-offers)

PhD research topic: Fast certified graph neural networks for parametric PDEs modelling flow-simulation in porous-fractured geological formations.
Host institution: AGH University of Krakow (AGH), Krakow, Poland
PhD Enrolment: AGH University of Krakow (AGH), Krakow, Poland
Main Supervisor: Maciej Paszynski, AGH University of Krakow, maciej.paszynski@agh.edu.pl
Co-supervisor: Sergio Gil López, Tecnalia, Bilbao, Spain, sergio.gil@tecnalia.com

Employment period: 36 months, full-time, including 2 secondments at other consortium members' premises.

Terms and conditions of employment and pay according to the current Law with doctoral network measures under the Program HORIZON-MSCA-2022-DN-01.

REQUIREMENTS:

Formal Criteria:
1) master degree in Science, Engineering, or any other related field,
2) studies that grant access to a Ph.D. Program at the AGH by September 1st, 2024,
3) mobility: at the time of recruitment, the researcher must not have resided or carried out his/her main activity (work, studies, etc.) in Poland for more than 12 months in the 36 months immediately before the co-funded programme's call deadline. Time spent as part of a procedure for obtaining refugee status under the Geneva Convention or compulsory national service are not taken into account,
4) the candidate must be at the date of recruitment a doctoral candidate (*i.e.* not already in possession of doctoral degree). Researchers who have successfully defended their doctoral thesis but who have not yet formally been awarded the doctoral degree will not be considered eligible,
5) the candidate must agree to work exclusively for the action.

Substantive requirements:
1) programming skills: previous experience programming in scientific computing,
2) the candidate should have predispositions to conduct research/scientific activities and teaching work,
3) the candidate should have scientific achievements and experience (e.g. in the form of scientific publications),
4) language: excellent skills of English (at least B-2 level), together with good academic writing and presentation skills. In the absence of documented knowledge of English, it will be necessary to take an exam confirming the required level at the AGH Foreign Language Center.

Comments:
The candidate must fulfil the following requirements defined in the Polish Law on Higher Education:
1) possesses qualifications defined in the Law,
2) has full legal capacity,
3) has not been punished by final court judgement for intentional offence,
4) enjoys full civil rights.

EXPECTATIONS/OBLIGATIONS OF AN ASSISTANT:
Scientific tasks:
1) design fast numerical methods to generate reliable synthetic datasets for training Deep parametric PDE solvers,
2) develop explainable Graph Neural Networks architectures for parametric problems arising in flow simulation in porous fractured structures for geothermal applications,
3) apply the proposed method to identify the geological structures in a potential basin for underground H_2 or CO_2 storage.

For more information on the IN-DEEP Doctoral Network, please visit https://www.in-deep.science

Expected outcomes:
1) a novel explainable Graph Neural Network method for parametric PDEs,
2) model flow simulation in porous fractured structures,
3) solve a benchmark problem to identify a subsurface region adequate for underground gas storage,
4) 2+ peer-reviewed publications,
5) 2+ participation in relevant international conferences.

PREFERRED SKILLS:
1) familiar with neural networks and deep learning algorithms,
2) experience with numerical methods for partial differential equations,
3) able to work independently and flexibly, taking initiative where required,
4) able to communicate and collaborate effectively in a team setting.

Evaluation criteria:
The committee evaluates candidates on a point scale from 0-100 points. Taking into account competences and previous achievements in accordance with the following:

Step 1: verification of fulfillment of formal – mandatory criteria specified in the MSCA program.

Step 2:
1) academic performance during the undergraduate studies – 20 points,
2) research experience in the area of the call, including publications, projects, and internships –10 points,
3) awards, honors, other significant roles and achievements as a student – 5 points,
4) additional coursework, certifications, training programs, continuous learning – 5 points,
5) at least two letters of recommendation with the addresses of the people who issued this document – 10 points.

Step 3: only for those scoring 35 or above in step 2:
1) interview to assess scientific requirements, the communication skills, initiative, critical thinking, and motivation to pursue a PhD on the topic of the call – 50 points.

In case of candidates achieving equal scores, priority will be given to female applicants. The preference for women is the result of the diagnosed gender inequality in the fields of study covered by the competition and is in line with AGH's GENDER EQUALITY PLAN, which envisages taking action to address this imbalance.

DOCUMENTS REQUIRED:
1) application, CV, personal questionnaire,
2) copy of diplomas or other certificates confirming qualifications,
3) a document confirming language knowledge at least at the B-2 level; in the absence of documented knowledge of English, it will be necessary to take an exam confirming the required level at the Foreign Language Center of the AGH University of Science and Technology,
4) cover letter containing a short summary of the scientific results achieved so far and the motivation to work in the IN-DEEP project.

DOCUMENTS MUST BE SUBMITTED AT:
Complete documentation must be sent to the following email address: joannab@agh.edu.pl

The AGH University of Krakow will be the candidate’s main place of employment.

The AGH University of Krakow does not require you to provide any information or data other than those resulting from the applicable law (name/names, surname, date of birth, contact details, education, professional qualifications, and employment history). However, if you choose to include your photograph or any other information, please fill in and attach this statement of consent to the processing of personal data, which constitutes an attachment to this information.

The controller of your personal data processed in order to carry out the recruitment process for the above-mentioned position is the AGH University of Krakow, al. A. Mickiewicza 30, 30-059 Krakow. You can read all information concerning the processing of your personal data on the website of the AGH University of Krakow after going to the “Personal data protection” tab (https://www.agh.edu.pl/en/personal-data-protection).

The University reserves the right not to settle the competition without providing any reason or justification. Winning the competition is not tantamount to ensuring the candidate's employment. The result of the competition serves solely as a recommendation to the Rector in this regard. The final decision concerning the employment will be made by the Rector.

Cracow, on .....

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name and surname

CONSENT TO PERSONAL DATA PROCESSING
(recruitment - employee)

Pursuant to Article 6(1)(a) of the Regulation (EU) 2016/679 of the European Parliament and of the Council of April 27, 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation), [OJ EU . L. 2016.119.1, May 4, 2016] hereinafter referred to as "GDPR", **I consent to the processing of my personal data other** than the data mentioned in Article 22^1 § 1 of the Labour Code and contained in my CV and other application documents, and to the reproduction of my physical likeness **for the purposes of recruitment and selection for the position of .....** (contest notice no. ……).

In addition, I declare that the request for consent has been presented in a clear and understandable manner and that I have been informed about a possibility of withdrawing my consent at any time as well as about consent accountability. The withdrawal of consent to have personal data processed shall not affect the legality of the processing, which is carried out on the basis of such consent prior to its withdrawal; The consent may be withdrawn by submitting a written representation on consent withdrawal at a place that was indicated in the contest notice as the place for submitting documents.

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Date and signature