SISSA
Scuola Internazionale Superiore di Studi Avanzati

Il Fondo Sociale Europeo in Friuli Venezia Giulia
Programma Operativo Regionale 2014-2020

REGIONE AUTONOMA FRIULI VENEZIA GIULIA

UN INVESTIMENTO PER IL TUO FUTURO

ANNOUNCEMENT FOR 1 RESEARCH POSITION

Article 1

A public selection based on titles and a research project is hereby announced for the award of 1 research fellowship, in accordance with art. 22 of Law No 240 of 30 December 2010, co-financed by the European Social Fund, Project Operation Code FP2012369501/2020 “Assegni di ricerca FSE SISSA 2020”

Article 2 - Purpose

This announcement is aimed to promote, through research paths focused on the exploring of scientific areas related to the new needs caused by the epidemiological emergency from COVID-19 and at the same time to consolidate the development of relations between the public research system and the regional economic and system. In particular:

- at strengthening the scientific system of Friuli Venezia Giulia and its attractiveness, even at an international level,
- at promoting the relationships between the university and research system and the economic, productive and social network,
- at supporting the aforementioned production system in Friuli Venezia Giulia in the process of social, cultural, health and economic change resulting from the impact of the pandemic in progress in line with the programmatic plans established by Regione FVG;
- at contributing to the employment integration of the recipients, included from the early stages of their training courses in projects of high scientific value.

In details, this position has a specific applicative character and has been defined through an internal call in SISSA, because of the impact and potential technology transfer of the applications identified as object of research.

As regards the proposed research activity, it will focus on the development of digital twins within the Live Demo FVG of SMACT competence center (Triveneto), based on HPC, data science, scientific computing and integrated with augmented intelligence. The final purpose is the creation of portable libraries at the service of the productive world for the creation of digital twins of products or industrial processes and their integration with physical / mathematical models, sensors for data assimilation and machine learning techniques.

By taking part in SISSA's participation in SMACT CC and in collaboration with the latter, it intends to give an innovative boost to the diffusion of digital technologies of Industry 4.0 for the study and optimization of industrial processes and products thanks to calculation, which is considers it particularly central in this post-COVID-19 phase.

Article 3 - Research fellowship

A public selection is hereby announced for the award of 1 research fellowship, whose profile, requisites, duration and gross annual amount are set out in Annex 1 which is an integral part of this announcement.

Candidates are required to submit a research project according to article 5.2.

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Article 4 - Eligible candidates and requisites

The selection can be accessed by candidates who on the date of application have a documented scientific professional curriculum suitable for carrying out research and any further requirements stated specifically in Annex 1.

According to the current legislation, if not listed in Annex 1 as a compulsory requirement, PhD degrees or, for the relevant Areas, academic titles awarded by medical schools of specialisation together with an adequate scientific production, are considered as an asset.

For the purposes of the selection procedure the equivalence of university degrees and PhD degrees awarded by foreign institutions to the Italian degrees is decided by the examining board.

Permanent staff of universities, institutions and public research and experimentation entities, of the Italian National Agency for new technologies, energy and sustainable economic development (ENEA) and of the Italian Space Agency (ASI) as well as scientific institutions whose scientific post-graduate degree has been recognised equivalent to a PhD cannot be awarded research fellowship in accordance with art. 74, paragraph 4, of the Presidential Decree No. 382 of 11 July 1980.

In accordance with article 18 of Law 240/10, candidates with a degree of kinship or affinity up to the fourth degree included with the following subjects (see Annex 2) may not participate in the selection:

-Professor of the scientific Area of SISSA who requested the research fellowship;
-Director of SISSA;
-Secretary General of SISSA;
-Member of the Board of Directors of SISSA.

At the application's submission, candidates shall be resident or domiciled in the Friuli Venezia Giulia Region.

Candidates who have held research fellowship contracts with any institution, pursuant to Italian Law no. 240/2010, for a period which, summed to the foreseen duration of the contract as detailed in Annex 1, exceeds a total of 6 years including any renewals, are excluded from applying. To this end, the time in which the candidate was holder of a research fellowship and enrolled in PhD courses is not taken into account for a period not exceeding the legal duration of the PhD program.

Furthermore candidates who have held research fellowship or fixed-term researcher contracts at SISSA or any other state-funded, private-funded or on-line 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 the contract as detailed in Annex 1, exceeds a total of 12 years, even if not consecutive, are excluded from applying. To this end, the time in which the candidate was on maternity or sick leave is not taken into account according to the current legislation.

The fellowship cannot be held contemporarily with other fellowships of whatever kind, except those awarded by Italian or foreign institutes with the aim of integrating the research activity of the candidate through a period spent abroad.

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Candidates enrolled in University Degree, Bachelor or Master courses, PhD courses with fellowships or medical school of specialization in Italy or abroad are excluded from applying. Public employees must be given unpaid leave for the period of the fellowship.

Article 5 - Application to the selection procedure

Under penalty of exclusion, application for participation in the competition, along with the relevant qualifications held and the relevant scientific publications, shall be submitted online through the online application procedures at the following link: https://pica.cineca.it/sissa/ar-fse-mate-59-2020

It is of utmost importance to provide a valid email address in order to enable the registration process on the electronic procedure.

Applicants shall upload all personal and professional data as requested by the application procedure; all documents must be uploaded in PDF format (.pdf). Each applicant can produce a maximum of no. 30 publications and a maximum of no. 30 other titles and qualifications.

All fields in the online application form must be filled out. Under penalty of exclusion, the application must contain:

- research project (English language), concerning the Scientific Subject listed in the Annex 1;
- the curriculum vitae with the complete list of the scientific and professional activities;
- valid ID of the candidate to be uploaded in electronic format.

Failure to comply with the online application procedure will result in exclusion of the applicant.

Prior to final submission, and within the given deadline for applications submission, the online application procedure allows to modify and save the inserted information in a draft copy.

Confirmation of final submission date will be certified by an automatic notification email.

Submissions after the given deadlines will not be accepted by the system as the online application procedure won't be accessible.

Each application will be given a registration number. For all further communications, the registration number shall be quoted along with the code of the research grant competition.

The online application and submission procedure shall be completed by January 18th 2021 not later than 13.00 (Rome time).

The submission of the online application must be completed and finalized:

- with the digital signature of the candidate, by means of smart card, USB token or remote digital signature, for digitally signing electronic documents with a software using a PC or a web portal for Remote Signature provided by a Certification Service Provider (CSP). Candidates with a smart card or an USB token for digital signature should check the compatibility with the Digital Signature system embedded in our server. In case of compatibility, candidates shall sign the application on the server (i.e. ConFirma);
- holders of server-incompatible Digital Signature and holders of Remote Digital Signature who can access a web portal for digitally signing electronic documents, shall save the PDF file generated by the system on their PC; the PDF

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file shall not be modified in any way, and it shall be digitally signed in CAdES format: the system will generate a file with .p7m extension. The candidate shall upload the .p7m file on the system. No changes are to be made to the file by the candidates before the Digital Signature, on pain of exclusion from the competition;

- in case the two above-mentioned options do not apply, candidates shall save the PDF file generated by the system on their PC. The PDF file shall not be modified in any way, on pain of exclusion from the competition. The PDF shall then be printed out, signed on the last page, scanned in PDF format and uploaded on the system.

For any technical problem regarding the application candidate should apply to sissa@cineca.it .

The University will verify that all the statements made in the application and accompanying documentation comply with the provisions of Presidential Decree n. 445/2000.

5.1 Submission of titles and published works

Candidates must enclose to the application all documents, titles and published works that might be useful for the selection procedure.

EU citizens may submit the original documents, a copy, provided that it is declared true to the original by the relevant authorities, or a copy together with an affidavit according to article 19 and 47 of the D.P.R. n. 445 dated 28.12.2000. EU citizens may also prove that they are in possession of the documents submitting an affidavit according to articles 46 and 47 of the D.P.R. n.445 dated 28.12.2000.

Non-EU citizens regularly sojourning in Italy according to the current legislation may submit an affidavit (D.P.R. n. 445/2000) for personal qualities and events which can be certified and attested by public Italian authorities, subject to the special regulations included in laws, legislation governing the immigration and the foreigners status, and international agreements between Italy and the country of origin of the candidate.

In any different case the above stated information must be documented by certificates or documents issued by the relevant authorities of the foreign country with a translation in Italian authenticated by the Italian Consulate abroad, stating that they are conform to the original documents.

Published works must be submitted in the language they have been originally published together with a translation in one of the curriculum languages authenticated by a consulate, an embassy or a chartered translator.

Works published in Italy shall comply with the obligations arising from D.P.R. 3 May 2006, n. 252. Together with their application form candidates shall submit proof that these obligations have been fulfilled or affidavit stating that these obligations have been fulfilled. Works published abroad shall include the date and place of publication. Candidates shall not refer to published works submitted to SISSA for other selection procedures.

SISSA reserves the right to verify all affidavit and declarations. In case of false or misleading information the candidate shall forfeit any benefits resulting from the provisions made on the basis of the false declarations, subject to the provisions of art. 76 of Presidential Decree 445/2000. The withdrawal of the fellowship can be decided at any time, even after the research fellowship contract has entered into

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force. In such event the candidate shall reimburse to SISSA the fellowships unduly obtained.

5.2 Research project
The research project:
- must have the duration specified in Annex 1,
- must be completed by October 31, 2022 and
- must be carried out at SISSA.

The scientific Area of SISSA, in hosting the research fellow, will be responsible for the activities foreseen in the project, providing access to and use of structures, materials and services necessary for the implementation of the project and providing a scientific tutoring service through its teaching or research staff, not necessarily permanent.

5.3 Exclusion from the selection and withdrawal
Each candidate is admitted with reserve to the selection procedure for which they have applied.
The administration can exclude candidates from the selection procedure due to lack of requisites with justified Directorial Decree.

Article 6 - Examining Board
The Examining Board is composed of a minimum of three members, including one President and one Secretary, chosen between professors and researcher of SISSA, Universities, research organizations or experts in the competition sector referred to in Annex 1.
Members of the examining board must not have a family relationship or other degree of kinship up to the 4th degree with the candidates.
The Examining Board is nominated by the Director of SISSA before the evaluation, according to the proposal of the relevant Area Council, Giunta or Coordinator.
The members of the Examining Board cannot be engaged in technical and organisational secretariat activities, financial monitoring and reporting concerning the implementation of the project and may act as scientific tutors in projects for which they have not been members of the relevant Examining Board.

Article 7 - Evaluation criteria
The Examining Board has a total of 100 points that can be awarded to titles and published works, to the interview, if foreseen, and to the research project.
The assessment shall be made by the Examining Board according to the following criteria that are detailed in Annex 1:

a) Evaluation of titles and published works;
b) Evaluation of the Research Project.

For the evaluation of titles, the Examining Board shall take into account:
- the documented research activity;
- the academic qualifications (university degree, PhD, specialization diplomas and certificates of attendance of postgraduate courses obtained in Italy or abroad);

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- other titles.

For the evaluation of published works the Examining board will also consider their relevance to the field of activity of the Research Project;
The Examining Board shall also assess the relevance, pertinence and quality of titles and published works with regard to the topic of the research activity.
The evaluation of the Research Project shall be based on the quality of the Research Project with special attention to the objectives, the methodology adopted and the schedule of activities.
The Research fellowship is awarded following the classification list to candidates who have obtained the total minimum score of 70/100.
SISSA seeks to ensure equal opportunities for men and women for accessing financial facilities covered by this announcement, in line with EU directives. Participation of female candidates shall be promoted during selection in terms of priorities and subject to the applications received. Should candidates receive the same score, where legislative provisions do not provide for otherwise, female candidates shall be privileged.

Article 8- Evaluation results and classification list

At the end of the selection procedures the Examining Board draws up the minutes bearing the overall score of each candidate and the classification list, based on the total score obtained by each candidate.
The selection procedure documentation and the classification list shall be approved with Directorial Decree and shall be published on the official bulletin of SISSA, and on the website of SISSA.
Eligible candidates shall undertake a research fellowship contract with SISSA in accordance with art. 22 of law 240/2010.
Being in the classification list shall not give any rights in other selection procedures.

Article 9 - Award of the research fellowship

The candidate resulting as the fellowship winner shall be informed of the results of the evaluation
The research fellowship is awarded through a contract. The contract does not give any right to be employed by universities.
In the event of rejection of the winning candidate, the fellowship may be awarded to the next eligible candidate in the classification list, through the Director's authorization at the express request of the scientific responsible of the position.
The starting date of the activity must be agreed with the responsible scientist.
The annual gross amount, as specified in Annex1, is paid in monthly instalments and includes contributions to be paid by the fellowship holders. The fiscal and social security treatment of the research fellowship is in accordance with ex art. 4, Italian law n. 476/84, and par. 26 and followings, art. 2, Italian law n. 335/95 and subsequent integrations and modifications.
Payments are made by bank transfer to the current account that the fellow shall own or open in Italy or abroad.

SISSA arranges for insurance coverage for the fellow against accidents in the workplace and for third party liability while carrying out their research work. The amount of relevant premiums shall be deducted from the fellowship.

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Should the funding not been guaranteed by the funding authority, SISSA reserves the right to not implement the fellowship. The validity of the contract is therefore subject to the verification of the existence of the necessary funding.

Article 10 - Duties of host institution

Host institution shall make available to the research fellow the structures and tools necessary to the realization of the research project and provide a scientific responsible through the teaching or research staff.

For each application received SISSA ensures to keep all documentation in a separate (paper and/or electronic) folder which will be constantly updated and stored at the headquarters of SISSA – Research Funding and International Relations Office.

Article 11 - Duties of the research fellow

At the application's submission, candidates shall be resident or domiciled in the territory of Friuli Venezia Giulia.

For this purpose, the research fellow shall submit to SISSA one of the affidavit mentioned below:

- affidavit under the Presidential Decree of 28 December 2000, No. 445, stating the election of domicile in the Friuli Venezia Giulia region on the starting date of the project;
- affidavit under the Presidential Decree of 28 December 2000, No. 445, stating the residence in the Friuli Venezia Giulia region on the starting date of the project.

During the project the research fellow shall:

a) follow the plan of the activities and time schedule of the objectives foreseen in the project;

b) observe the rules of behaviour and conduct in force at SISSA and in particular the rules established in the "Unpaid visiting scientist agreement" that the research fellow must sign together with the contract;

c) submit to SISSA the reports on the activities as foreseen by the regional framework relevant to the research fellowships financed by the European Social Fund, validated by the scientific responsible. These reports can be partial if they relate on the not completed activities on 31.10.2022.

Article 12 - Early termination

The early termination of the project, with the recognition of the expenses incurred up to the time of early termination thereof, is admissible only for the following causes:

a) pregnancy;

b) permanent health reasons of the fellow, certified by the public health service, which do not allow the continuation of the project;

c) serious reasons making it impossible to continue the research started, adequately documented;

For the early termination of the project, the fellow shall prove the regular implementation of the research activities until the early termination.

The certificates and documents referred to in letters a), b) and c) shall be submitted by the fellow together with the declaration of early termination of the project.

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At least 30 days' notice must be given by the fellow in case of resignation for the reasons detailed in a), b) and c) above, in which case no penalty shall be applied by SISSA. Failure to do so shall result in a penalty involving the recovery of or the failure to pay the salary for the period of notice not given. The 30 days' notice shall not be applied during the first 30 days of the research activity.
In the event of termination by the fellow for reasons other than those referred to in points a), b) and c) of this article, properly certified, the fellow shall reimburse to SISSA the amounts unduly received. The contract between SISSA and the fellow shall contain the relevant information in this regard.
The loss of external funding that allowed the implementation of the research fellowship constitutes cause for termination by SISSA. In that case SISSA is required to respect the notice period of at least 60 days.
Should SISSA fail to respect the aforesaid notice period, SISSA shall pay to the fellow an amount corresponding to the remuneration for the period of notice not given.

Article 13 - Suspension of the project

The project and the payment of the research fellowship may be suspended only in the following cases, upon notification by the beneficiary:

a) maternity leave
b) parental leave
c) documented serious family reasons
d) serious health reasons.

In such cases, the fellowship holder should submit a duly certified request. The project may be restarted at the end of the suspension period and must be completed in any case by 31.10.2022.

Article 14 - Access to documents, data processing and administrative procedure officer

Providing data is necessary for procedural purposes, on penalty of exclusion from the selection procedure. The candidate may exercise the right of access to data in accordance with art. 7 of Legislative Decree 196/2003.
Published works submitted shall be used solely for the evaluation and the drawing up of the classification list.
In accordance with article 13 of the Legislative Decree 196/2003 and with the European Regulation 2016/679 (General Data Protection Regulation), SISSA undertakes to respect the confidentiality of the information provided by the candidates: the personal data collected will also be processed by computers, only for purposes related to the selection and the drawing up and management of the relevant contract, according to the current legislation, and may also be transferred to and used by public administrations directly involved in the legal and economic position of the research fellow.
Participation to the selection procedure entails, while respecting the principles set out in the abovementioned law, the expression of tacit consent to the publication of the candidate personal data and data relating to the evaluation procedure on the SISSA website.

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Candidates are guaranteed access to documentation of the selection procedure in accordance with the current legislation (Law 241/90 and subsequent amendments and integrations and Presidential Decree 184/2006).
SISSA, in the person of the Director, is the owner and responsible of data processing. Under Law 241/90 and subsequent amendments and integrations, the administrative officer is Dr Gabriele Rizzetto.

Article 15 - Intellectual property rights

In accordance with regional announcement "Specific programme 78/19", results of research projects, such as any patents and industrial property rights obtained and their financial usage rights belong to SISSA, possibly in co-ownership with the partner or partners involved in the project, if any. In any case, the current legislation on the matter, in particular Legislative Decree No 30 of 10 February 2005 "Industrial property code" and subsequent amendments and integrations and internal regulations of SISSA governing the matter shall be applied.
The fellows will retain the moral rights to be recognised as authors/inventors.
The owner of results shall give widespread dissemination of the results, citing specifically that they were achieved with the co-funding of the European Social Fund operational Programme 2014/2020 of the autonomous region Friuli Venezia Giulia.

Article 16 - Final provisions

All matters not covered in this announcement shall be governed by SISSA regulations.

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Annex 1
Position 1

Scientific Area of SISSA: Mathematics

Research field: **Digital Twins Development for Industry 4.0**

Fields of the research activity: Development of algorithms and software libraries Digital Twins for Industry 4.0 by IoT, big data and analytics, and machine learning. Regional (FVG) Live Demo by SMACT CC.

Competition sector: 01/A5 Numerical Analysis

Principal Investigator: Prof. Gianluigi Rozza

Gross fellowship amount: Euro 24.336,00
Fellowship duration: 16 months or any other duration consistent to the deadline of the project (31.10.2022)

Requisites:
- University Master degree in: Mathematical Engineering, Biomedical Engineering, Industrial Engineering (Aerospace, Mechanical, Energy, Nuclear, etc), Physical Engineering, Civil Eng or equiv., Mathematics, Physics, Computer Science, Computer Eng., Data Science and Scientific Computing.
- Proven experience in mathematical modelling, numerical analysis and simulation for complex systems in biomedicine and industry modelled by PDEs, optimisation and control, data science, automatic learning, data assimilation and uncertainty quantification, scientific computing programming, high performance computing and/or large scale computing competences, as well as computer graphics;

  A doctoral degree in Mathematics/Mathematical Engineering/Applied Mathematics/Numerical Analysis/Industrial Engineering, Computational Science and Engineering/Computer Science and/or a professional master in HPC and/or Data Science are preferred titles.

Additional requirements, competencies and abilities:
- Good knowledge of high level programming languages, e.g., C/C++/Python; Scientific Computing software libraries. Special interest in technological aspect of offline-online scientific computing, as well as machine learning, digital twin, artificial neural networks. Capability in working on development, maintenance and promotion of existing software libraries.

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Additional information (research activity, ssd):
In cooperation with Wartsila Italia, Danieli Automation, Brovedani, Electrolux, SMACT and MISE.

Two letters of references are requested before the deadline of the present announcement. Please send them directly to: gianluigi.rozza@sissa.it

Candidates are required to submit a research project.

Evaluation criteria (max 100 total points):
PhD: up to 10 points
Master degree: up to 7 points
Publications and other research products: up to 24 points
Further post-lauream diplomas: up to 5 points
Further qualifications, including reference letters: up to 14 points
Research project submitted; up to 40 points

Total Institutional gross costs of the research fellowship shall be funded by the **European Social Fund**, **Progetto Codice operazione FP2012369501/2020 "Assegni di ricerca FSE SISSA 2020" CUP: G92F20000090009**, for the exclusive aim of the project funding the research fellowship.

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