RESOLUTION OF THE RECTOR OF THE UNIVERSITY OF CÁDIZ UCA/REC25VPCT/2021, DE 14 DE JUNE, BY WHICH PUBLIC CONTEST FOR PREDOCTORAL CONTRACTS ASSOCIATED WITH THE EU HORIZON PROJECT 2020 MSCA-ITN-ETN "PremAtuRe nEwborn motor and cogNitive grants Agreement No. 956394).

According to Grant Agreement N ° 956394 signed with the European Commission, the UCA participates as a partner in the Project HORIZON 2020 MSCA-ITN-ETN "PremAtuRe nEwborn motor and cognitive impairments: Early diagnosis - PARENT".

Through this resolution, a public tender for three pre-doctoral contracts is called (PARENT-ESR5, PARENT-ESR6 and PARENT-ESR7) whose characteristics are described in annexes I, II and III respectively, associated with the aforementioned project and contemplated in the aforementioned Agreement Grant, funded by the Horizon 2020 European Research and Innovation Program.

The financing of the actions foreseen in this call will be fully charged to the EU HORIZON 2020 MSCA-ITN-ETN project "PremAtuRe newborn motor and cognitive impairments: Early diagnosis - PARENT", which has received funding from research and innovation Horizon 2020 of the European Union, program within the framework of the grant agreement Marie Sklodowska-Curie Nº 956394 ".

In order to comply with the deadlines, considering that there are reasons of public interest and taking into account that the places called are necessary for the proper execution of the research project to which it is linked, it is necessary to speed up the processing of this call, Therefore, the application to the emergency processing procedure is agreed, in accordance with the provisions of article 33 of Law 39/2015, of October 1, on the Common Administrative Procedure.

Consequently, this Rectorate, by virtue of the powers attributed by article 20.1 of Organic Law 6/2001, of December 21, modified by Organic Law 4/2007, of April 12, of Universities, Legislative Decree 1 / 2013, of January 8, approving the revised text of the Andalusian Law of Universities, and the Statutes of the University of Cádiz, approved by Decree of the Autonomous Community of Andalusia 281/03, of October 7, and published in the BOJA of October 28, 2003.

RESOLVES to call a selection process and approve the following:

BASES OF THE CALL

First.

This selection process will be adjusted to the provisions of the regulatory bases established in this Resolution, as well as the specific ones that appear in Annexes I, II and III referring to the places offered.

Those acts that must be notified to the applicants will be published on the website of the Vice President for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent

This publication will replace the notification, having the same effects, in accordance with the provisions of article 45.1.b) of Law 39/2015, of October 1, on the Common Administrative Procedure of Public Administrations.

Second. Applicant requirements

To be admitted to the selection process, applicants must meet the following requirements:

- Applicants can be of any nationality. At the time of hiring, the researcher must not have resided or carried out his main activity (work, studies, etc.) in Spain for more than 12 months in the 3 years immediately prior to his hiring. Short stays, such as holidays, will not be taken into account.

The hiring of non-EU predoctoral students, which would be formalized at the sole effects of carrying out research tasks specific to the project, would be suspended until they obtain the permit / visa that authorizes them to work in accordance with the provisions of Organic Law 4 / 2000, of January 11, on rights and freedoms of foreigners in Spain and their social integration.

- Possess the qualification required for each of the places offered that appear in Annexes I, II and III.

- Applicants must prove, within the application submission deadline, being pre-admitted or enrolled in the Computer Engineering doctoral program of the University of Cádiz. Notwithstanding the foregoing, the hiring of the selected candidate will be subject to the admission and effective enrollment of the same in the indicated doctoral program of the University of Cádiz.

- Possess the functional capacity to perform tasks.

- Not having been separated by means of a disciplinary file from the service of any of the Public Administrations or the constitutional or statutory bodies of the Autonomous

Communities, nor being in absolute or special disqualification for public employment by judicial resolution. In the case of being a national of another State, not being disabled or in an equivalent situation or having been subjected to disciplinary or equivalent sanction that prevents, in their State, in the same terms the access to public employment.

- In view of the international context of the project, you must have knowledge of English, with level B1 or higher.

- Candidates must be, at the time of selection by the host organization, in the first four years (full-time equivalent) of their research careers and have not yet obtained a doctoral degree. The calculation of the deadline for compliance with this requirement will be measured from the date on which they obtained the master's degree that would formally give them the right to undertake the doctorate.

- Applicants are not eligible if they have already obtained a PhD.

- It will not be necessary to certify the qualifications obtained in the Member States of the European Union, or in the signatory states of the Agreement on the European Economic Area (currently Norway, Iceland and Liechtenstein), in addition to Switzerland.

- All the requisites demanded and merits alleged to compete must be in possession on the day of the end of the application submission period and maintained during the term of the contract.

Third. Nature of the contract.

The beneficiaries will get a pre-doctoral contract of a maximum of three years, in accordance with the provisions of article 21 of Law 14/2011 on Science, Technology and Innovation.

The enjoyment of a contract is subject in terms of its incompatibility regime, to the provisions of Law 53/1984, of December 26, on Incompatibilities of Personnel at the Service of Public Administrations. The granting of the contract does not imply any commitment on the part of the University of Cádiz regarding the subsequent incorporation of the interested party to its staff.

Predoctoral research staff in training may collaborate in teaching tasks, with the prior authorization of the responsible researcher, the Department and the Vice-Rector's Office competent in Academic Planning, without implying a reduction in the teaching load of the Department that assigns the collaboration up to a maximum of 180 hours during the total extension of the pre-doctoral contract, and in no case can it exceed 60 hours per year. In no case the teaching tasks may detract from the dedication to the research and training purpose of the contract.

Quarter. Remuneration of the contract.

The remuneration of the contract will be those specified in Annexes I, II and III. The amounts contemplated may suffer the variations established by the rules that apply to them or due to unforeseen causes not initially foreseen.

Fifth. Effects of the contract.

The contract will take effect from the date indicated therein, after the signature of the interested party and the competent body of the University of Cádiz.

Sixth. Contract period.

The duration of the contract will be up to three years as long as the aforementioned project remains in force and there is a budget allocation.

The contract will be renewed for annuities, and the following criteria must be met for the transition from one annuity to the next:

- For the renewal that involves the passage from the first to the second annuity, it is established as a renewal criterion having passed the Research Plan within the Doctorate Program in which they are enrolled before the end of the first year of the pre-doctoral contract. Its documentary justification will be made through the contribution of the Certificate of the Academic Commission in which the overcoming of the Research Plan is reported.

- For the renewal that involves the passage from the second to the third annuity, the issuance of a report on the evolution of the doctoral thesis is established as a renewal criterion that guarantees the evolution of the work in the hiring period, with the approval of the directors of the same. Its documentary justification will be made through said report that guarantees the evolution of the work and that must be evaluated by the Investigation Commission.

- For the correct renewal of the contract annuities and by request of the Research Management Service of the Research and Transfer Area, the beneficiary of the contract must send within 10 business days from the receipt of said notification to the same Service the supporting documentation that proves that it complies with the renewal requirements indicated in the previous section.

Said requirement shall be made prior to the meeting of the Investigation Commission closest to the end of the corresponding annuity. Once this period has passed, no documentation will be accepted, it being understood that it desists from the renewal of the contract.

- Situations of temporary disability, risk during pregnancy, maternity, adoption or foster care, risk during lactation and paternity, will suspend the calculation of the duration of the contract.

Seventh. Application procedure

Those who wish to participate in this call, must submit their request, addressed to the Vice-Rector for Scientific and Technological Policy, obligatorily electronically, through the specific procedure enabled by the Electronic Headquarters of the University of Cádiz, by means of a digital certificate and accessible from the Office Virtual at the following address: **https://sedelectronica.uca.es/procedimientos/?proc=241**

As requirements and technical assistance for access to the Electronic Office of the University of Cádiz, you can access the following link: https://sedelectronica.uca.es/ayuda-tecnica/

Said request will include a field where the applicant will enter an email address for use as a means of communication with the interested party in the event of possible incidents.

For foreign applicants and those who have a problem related to their digital certificate, the Centralized Key System of the University of Cádiz will be enabled, for this the applicant must send an email to rrhh.investigacion@uca.es indicating your interest in submitting a request to participate in the selection process for the hiring of predoctoral personnel under this call and requesting their access codes as a user.

In the email sent you must specify your NIF / NIE / Passport or identification document, name, first surname, second surname (optional) and email address. Once the applicant is registered to access, his user code will be sent from the email account rrhh.investigacion@uca.es

Finally, the applicant will submit his application through the following address: **https://sedelectronica.uca.es/procedimientos/?proc=241** using your username and password, which you can also use to keep track of your file throughout the process.

In the case of submitting more than one application, only the last one submitted by the interested party within the submission period will be taken into account.

The request will be accompanied by the following documentation (in files that must be attached to the Electronic Office where the request is made):

- Photocopy of the National Identity Document, the Passport or the Foreigners Identification Number.

- Photocopy of the degrees (Bachelor / Degree / Master) that give you access to the Computer Engineering Doctorate Program at the University of Cádiz.

- Photocopy of the official academic certificate of the degrees provided in which the qualifications obtained, their dates, and express proof that the subjects constitute the complete program of the degree appear in detail.

The original documents and the corresponding official translations may be requested at any time during the selection procedure.

- Photocopy of courses, work experience, research projects in the areas indicated for each position offered in Annexes I, II and III, to accredit the skills

indicated in said annexes.

- A Curriculum Vitae (CV) in European format (see Europass).

- Certificate of B1 of English or higher.

- Documentation accrediting being enrolled or pre-admitted in the Computer Engineering Doctorate Program at the University of Cádiz.

- Letter of interest (maximum 2 pages)

- Responsible declaration of not being carrying out any position or activity in the public sector delimited in the scope of application of Law 53/1984, of December 26, on Incompatibilities of Personnel at the Service of Public Administrations, nor of carrying out incompatible private activity or subject to compatibility recognition. (Annex VI)

- Declaration responsible for meeting the eligibility criteria of the ESR of the Marie-Sklodowska Curie program. (Annex VII)

- Responsible declaration of not having been disqualified or in an equivalent situation, nor having been subjected to disciplinary sanction or criminal or equivalent sentence that prevents access to public employment (Annex VIII or IX, depending on whether national or foreign).

- Two reference contacts (Name, Surname, Role, Organization, Email) who may be contacted by the University of Cádiz to request letters of reference.

The deadline for submitting applications will be 15 business days from the day after the publication of this Resolution in the Bulletin takes place Official of the University of Cádiz (BOUCA)

Eight. Admission of applicants.

Once the deadline for submitting applications has expired, once the administrative review of them has been carried out, the provisional list of applicants admitted and excluded will be made public, for the places offered, with an indication in the latter case of the cause of exclusion, on the page website of the Vice-Rector's Office for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent with the effects provided in the last paragraph of the first Basis of this Resolution.

In order to correct the causes that have motivated their exclusion or omission from the provisional list of admitted and excluded applicants, referred to above, the participants will have a period of 5 business days, counted from the day following the publication indicated above, so that they correct the lack or accompany the mandatory documents, it being understood that the interested person desists from their request in case of not presenting allegations within the aforementioned period in which, in no case, the submitted applications may be reformulated.

The presentation of the correction documents will be done by attaching the documents through the same file for submitting your initial application electronically.

The information to carry out this procedure will be found on the website of the Vice-Rector's Office for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent

At the end of the correction period, the definitive list of applicants admitted and excluded from the selection process will be made public by the same means previously mentioned.

Ninth. Selection procedure

The selection procedure will be carried out through the public tender system, with the assessments specified in Annexes I, II and III, the objective of which is to assess the merits, competencies and capabilities contained in the curriculum vitae of the applicants and the verification of their suitability to the characteristics and functions of the places offered. El proceso selectivo constará de dos fases:

Phase one. An assessment of the Curriculum Vitae of each candidate will be carried out according to the criteria set out in Annexes I, II and III, in accordance with the scale established for each position in Annex IV. This phase, which will be eliminatory in nature, will be valued with a maximum of 70 points, being necessary to pass to the next phase having obtained a minimum of 35 points, leaving the places empty if the minimum score is not reached by any of the applicants.

Second phase. Applicants who pass the first phase will go on to the second phase consisting of an interview that will deal with the specific merits, skills appropriate to the profile of the position and skills necessary for their performance listed in annexes I, II and III.

The interview will be valued with a maximum score of 30 points. In order to add the score obtained in the interview to the score obtained in the first phase, it will be necessary to have obtained a minimum score of 15 points in this second phase.

To be eligible for selection, the applicant must have passed the minimum score established in each of the phases indicated above.

In order to establish the order of performance of the applicants in the interview, the initial letter of the first surname will be determined by lot by which the intervention of the same will begin.

The evaluation of each phase will be carried out by the Selection Committee whose composition is established in Annex V of this call.

After evaluating the First Phase, the Selection Committee will make public on the website of the Vice-Rector's Office for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent the agreement with the provisional list of the candidates who have passed this first phase and those who have not passed it, in order of score. Claims may be presented against this agreement within a period of 5 business days from the day following its publication, which will be resolved by the Selection Committee through a definitive agreement. With the publication of the final agreement on the same web page indicated above, the date, time

and place of the interview corresponding to the Second Phase and the order of intervention of the candidates will be published.

The allegation will be made through the same file for submitting your initial application electronically. The information to carry out this procedure will be found on the website of the Vice-Rector's Office for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent

In case of no claim, the provisional agreement will automatically become definitive.

Once the 1st phase has been carried out, the 2nd phase will be carried out, consisting of an interview. At the end of it, the Selection Committee will publish on the website of the Vice-Rector's Office for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent the agreement with the provisional assessment list of the 2nd phase of those applicants who have passed it and those who have not passed it, in order of score.

An allegation may be filed against this agreement within 5 business days from the day following its publication, which will be resolved by the Selection Committee through a definitive agreement.

The allegation will be made through the same file for submitting your initial application electronically. The information to carry out this procedure will be found on the website of the Vice-Rector's Office for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent

If no claim is made, the provisional agreement will automatically become definitive.

Once the evaluation of the 2 phases has been completed, the Selection Committee will make public the final agreement of the selection process that will contain:

1st. Relationship with the candidates selected for each of the positions offered together with the score obtained. In the event that a candidate has the highest score in several places, he will be awarded the one who has indicated in his application with the highest preference, being excluded from the rest of the places.

2nd. The rest of the candidate personnel not selected, together with their scores ordered from highest to lowest, will form a job bank, for each position called, to cover possible vacancies provided that the candidates have obtained a minimum of 35 points in the assessment of the first phase.

This definitive agreement will be published on the website of the Office of the Vice President for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent with the effects provided in the last paragraph of the first Basis of this Resolution.

Against the agreement indicated in the previous section, as well as against the definitive agreements of the Selection Committee that prevent continuing with the procedure, an appeal may be filed before the Rector in the terms and forms established by Law 39/2015, of October 1, of the Common Administrative Procedure of Public Administrations.

Tenth. Documentation contribution

Within five business days, from the day following the publication of the final agreement of the Call, the selected candidate staff must contribute in person in the Research and Transfer Area, Research Human Resources section, located in the Center of Business Transfer "El Olivillo", Avda. Duque de Nájera No. 12, 3ª planta, 11002, Cádiz, the following documentation:

  - Original documents of the university degrees and official academic certificates provided in the application.

  - Work contract / s carried out in previous years or, where appropriate, a working life report or equivalent document in the country of origin that proves not having carried out work / s in Spain for more than 12 months in the 3 years immediately prior to its hiring. Short stays, such as holidays, will not be taken into account.

  - Official academic certificate issued by the university or center where you have studied, in previous years proving that you have not studied in Spain for more than 12 months in the 3 years immediately prior to being hired.

  - Admission to the Computer Engineering Doctorate Program and enrollment in the same.

  - Official documentation proving family relationship and / or dependency of children with the selected candidate staff, in order to determine Remuneration to be applied to the contract.

  - Contribution of the original documentation of the copies that were presented together with the participation request, for their comparison.

In the event of renouncing the contract offered, the proposed person must do so by submitting the corresponding writing through the same file as their initial request electronically. The information to carry out this procedure will be found on the website of the Vice President for Scientific and Technological Policy https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent

Eleventh. Causes for termination of the contract

The following will be causes of termination of the contract:

- The expiration of the predoctoral contract when it is not extended.

- The duration of the maximum period of the contract.

- The exit of the beneficiary of the Doctorate Program.

- Obtaining the title of Doctor by the beneficiary.

- The express resignation to the contract.

- Revocation as a cause of non-compliance.

Twelfth. Rights and obligations

1. **Rights**

In general, the beneficiaries of these contracts will have the following rights:

a) To be considered as approved contractors of the UCA, with the economic, labor and social rights inherent therein.

b) Automatically join the Department and Research Group of the doctor who directs his research.

c) Obtain from the Assignment Department the necessary support for the normal development of their research work, in accordance with their availability.

d) Participate in the Aid Program in the terms established in the Program for the Promotion and Promotion of Research and Transfer.

e) The doctoral student will carry out their research work in the facilities determined by the University of Cádiz in accordance with the work plan defined by the person responsible for the research project

f) The remaining rights established in the laws that regulate the regime of research personnel in training.

2. **Obligations**

In general, they will have the following obligations:

a) Join its affiliation center within the term established in this call.

b) To take advantage of the different stages of the training process and the completion of the Thesis.

c) Comply with the operating rules of the University of Cádiz in terms of dedication, functions to be performed, hours and vacations.

d) Carry out their work in the assigned Research Department or Institute and know and comply with the center's occupational health and safety regulations, within the framework of Law 31/1995, of November 8, on the Prevention of Occupational Risks.

e) Complete the reports, forms and other documents that, in relation to the contract, are required by the competent Vice President.

f) Communicate any incident that may affect obtaining the object thereof, within ten days after they occur.

g) Make public the circumstance of participating in the EU HORIZON 2020 MSCA-ITN-ETN PROJECT "PremAtuRe nEwborn motor and cognitive impairments: Early diagnosis - PARENT, funded by the Horizon 2020 European Research and Innovation Program in publications, lectures and others dissemination activities of the scientific results that are developed or obtained during the period of enjoyment of the contract.

h) Collaborate in science dissemination campaigns within the framework of the communication policies of the University of Cádiz.

i) The others expressly indicated in Annexes I, II and III.

j) In the contract to the researcher, the nature and scope of the confidentiality required to carry out the research tasks at the Entity's facilities will be determined. Notwithstanding the foregoing, and in general, the researcher who in fulfillment of his investigative function under his contract has access to documentation or any other material subject to industrial or intellectual property, will be obliged to the duty of secrecy and, where appropriate of confidentiality, in the same terms as the workers of the University of Cádiz, being able to request the signature by the selected person of a confidentiality commitment before signing the contract.

k) In the event of resignation from the contract, the interested party must notify it at least 15 calendar days in advance, attaching it through the same file for submitting their initial application electronically. The information to carry out this procedure will be found on the website of the Vice-Rector's Office for Technological Transfer and Innovation https://ugi.uca.es/convocatoria-contratos-predoctorales-marie-curie-parent

l) The acceptance of the contract by the beneficiary implies the respect of the rules established in this call, as well as those that the Vice-Rector's Office for Scientific and Technological Policy determines, within the scope of its competences, to supervise and evaluate the development of its work and those that derive from the predoctoral contract, in accordance with the provisions of Law 14/2011, of June 1, on Science, Technology and Innovation. Regarding the industrial property rights, as well as the patrimonial rights that make up the intellectual property, that may be generated throughout the period as the beneficiary of the contract, the provisions of article 53 and following of Law 2 / 2011, of March 4, on Sustainable Economy, and in article 35 of Law 14/2011, of June 1, on Science, Technology and Innovation.

m) The ESR will be required to work exclusively on the MSCA ITN program (PARENT-ETN).

Thirteenth. RESOURCES

Against this Resolution, which puts an end to administrative proceedings, a contentious-administrative appeal may be filed, within a period of two months, counted from the day

following its publication, before the Contentious-Administrative Court, in accordance with the Article 8.3 of Law 29/1998, of July 13, regulating the Contentious-Administrative Jurisdiction, without prejudice to the fact that an optional appeal for reinstatement may alternatively be presented, within a period of one month, before the Rector of the University of Cádiz, same body that issued it, in which case the aforementioned contentious-administrative appeal may not be filed, as long as there is no express or presumed resolution of the optional appeal for reinstatement, in accordance with the provisions of articles 123 et seq. of Law 39 / 2015, of October 1, of the Common Administrative Procedure of Public Administrations.

The Rector, by delegation of powers (Resolution UCA / R53REC / 2021, of February 19)

Signed: María Jesús Mosquera Díaz

Vice-Rector for Science and Technology Policy

ANNEX I

Early-Stage Researcher Position Available within the EU Horizon 2020 MSCA-ITN-ETN "PremAtuRe nEwborn motor and cogNitive impairmenTs: Early diagnosis (PARENT)".

The PARENT project has received funding from the European Union's Horizon 2020 research and innovation programme under the Maria Sklodowska-Curie – Innovative Training Network 2020, Grant Agreement N° 956394

Full-time vacancy related to PARENT-ESR5

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EU Research Framework Programme	Marie Skłodowska-Curie Actions ITN 2020
Project Name	PremAtuRe nEwborn motor and cogNitive

	impairmenTs: Early diagnosis (PARENT)
Project Grant Agreement	N° 956394
Organization/Company recruiting the ESR	Paseo de Carlos III, 28, 11003 Cádiz
Project N° in PARENT PhD projects' list	ESR-5
ESR Research Topic	Monitoring and Integrating Neonates Behavioral and Physiological Parameters
ESR Research Field	Internet of Things, Telemedicine
Researcher Profile	First Stage Researcher (R1)
ESR Host Location	University of Cádiz
Type of Contract	Temporary (36 months)
Job-Status	FULL TIME
Hours per week	40
Vacancy Starting Date	To be agreed with the applicant
Enrolment in a PhD Program	YES
Institution Awarding PhD	Paseo de Carlos III, 28, 11003 Cádiz

About PARENT project

PARENT is an EU-funded project (parenth2020.com) aiming for early diagnosis of newborn motor/cognitive impairments. PARENT combines the efforts of a multidisciplinary network of leading European research groups, industry partners, paediatric hospitals and parents' associations to develop a technological infrastructure that will train Early Stage Researchers (ESR) to conduct top-notch research in leading academic institutions, hospitals and industry R&D divisions. During the research there will be strong emphasis on career development and on achieving impact.

PARENT multidisciplinary approach and technologies will make a critical contribution towards an open neurodevelopmental disease diagnostic software infrastructure by interlinking disciplines from clinical data, neuroimaging collection and processing, biomarkers, data fusion, machine learning applied to clinical data, novel prediction algorithms. PARENT approach can be included in the more general paradigm of evidence-based medicine, precision medicine and patient center-care, as well as decision support systems in clinical field.

PARENT Beneficiaries

1) POLITECNICO DI TORINO (POLITO), Italy.

2) UNIVERSIDAD DE CADIZ (UCA), Spain.

3) UNIVERZA V LJUBLJANI (UL), Slovenia.

4) FUNDACIÓN PARA LA GESTIÓN DE LA INVESTIGACIÓN BIOMÉDICA DE CÁDIZ (FGIBICA), Spain.

5) KATHOLIEKE UNIVERSITEIT LEUVEN (KU Leuven), Belgium.

6) OSPEDALE PEDIATRICO BAMBINO GESU (OPBG), Italy

7) NEUS DIAGNOSTICS, RAZISKAVE IN RAZVOJ MEDICINSKE OPREME, D.O.O. (NEUS), Slovenia.

8) 7HC SOCIETA A RESPONSABILITA LIMITATA (7HC), Italy.

9) ICOMETRIX NV (ICO), Belgium.

10) TOELT GMBH (TOELT), Switzerland.

11) GPI SPA (GPI), Italy.

PARENT offers in total 15 ESR/PhD research positions for 3 years (36 months), during which it is intended that a PhD project awardwd, provided positive evaluation. The following ESR positions are available throughout the beneficiaries of the PARENT project:

ESR	Insitution	Topics
ESR1	POLITO	*Modelling ncRNA biochemical pathways and to predict target interactions*
ESR2	POLITO	*Design and optimization of an integrative framework to predict neurodevelopmental trajectories*
ESR3	FGIBICA	*Preterm Children neurodevelopmental trajectory: clinical study focused on neuroimaging and electric signals*
ESR4	FGIBICA	*Preterm Children Neurodevelopmental Trajectory: clinical study focused on biomarkers selection*
ESR5	**UCA**	***Monitoring and Integrating Neonates Behavioral and Physiological Parameters***
ESR6	UCA	*Hybrid Neuroimaging and Electric Signals Integration by Artificial Intelligence*
ESR7	UCA	*Machine Learning to identify significant biomarkers for early diagnose of NDD in premature infants*
ESR8	UL	*LM to automatically detect motor/cognitive impairments in premature infants from various sources*
ESR9	GPI	*In silico predictor of neurodevelopmental trajectory starting from early diagnosis clinical data*
ESR10	NEUS	*Computerized neuropsychological test battery based on eye-tracking specific for preterm children*

ESR11	ICO	*Mathematical models for predicting the evolution of cognitive status making use of MRI biomarkers*
ESR12	KUL	*Neurological factors determining visual deficits and visuomotor control in children with unilateral Cerebral Palsy*
ESR13	OPBG	*Neurological biomarkers in predicting neurodevelopment disability driven by Congenital Heart Diseases*
ESR14	7HC	*Software implementation to predict Neuro developmental trajectories from clinical data*
ESR15	TOELT	*Artificial Intelligence framework to model the ncRNAs biochemical pathway and predict the target interactions*

About ORGANISATION Recruiting ESR5

The University of Cádiz (UCA) is a young university with an European Seal of Excellence. UCA is a public institution committed with its environment, dedicated to generate, spread and transfer knowledge and culture, such as integral training of people and professionals. It distributes its academic and scientific work along its 4 campuses (Cádiz, Puerto Real, Jerez and Algeciras) with 15 centres (11 faculties and 4 colleges), 47 departments, more than 190 research groups and 6 research institutes develop here their activity. We will welcome 3 ESRs, in a lively team of driven researchers (informatics, data scientists, IoT and electronics engineers) and dedicated clinicians (child neurology, neuropsychological).

Position ESR5: Monitoring and Integrating Neonates Behavioral and Physiological Parameters

The Internet of Things (IoT) is currently one of the most hyped topics, being considered the next step in Internet evolution, and which will transform the way people interact with their surrounding environments. The opportunity to have an interconnected environment opens a world of possibilities, where cutting-edge technologies (e.g., Low-Power Wide-Area Networks, high-speed communication protocols, sensors and actuators) and paradigms (cloud, fog and edge computing) are emerging to support IoT settings in different domains, such as smart homes, agriculture and, surely, healthcare.

Although traditional eHealth/mHealth solutions are still in use, the integration of novel devices into healthcare lead to promising and useful applications, such as non-invasive (tele) monitoring solutions of physiological parameters, specially for certain types of patients that require a special treatment, such as newborns. In this way, IoT technology enables the enhancement of traditional Neonatal Intensive Care Unit (NICU), leading to Integrated Neonatal Intensive Care Units (iNICU), where through suitable devices it is possible gathering the information related to

the baby in a non-invasive way.

Beside devices, IoT is much more sophisticated, and require a set of technologies related to software engineering/development in order to enable this non-invasive telemonitoring approach, such as the knowledge of a software programming language for the backend services, database management, API REST design and development to support interoperability, etc.

In this research work, we intend to achieve three goals:

1. Along with the project partners collaborate in the design and development in the IoT-related tasks to prototype an Integrated Neonatal Intensive Care Units (iNICU).
2. Design and implement a eHealth platform (back-end, front-end, services, API REST) to support the telemonitoring of the neonatal into the iNICU, providing to the rest of partners the raw as well as processed information.
3. Integrate the software provided by the rest of partners/researchers (algorithms, data science related implementation) into the eHealth platform (Goal 2).

ESR5 Profile

✓ **Academic Degree**[1]:
  - Bachelor's or Engineering Degrees in Computer Engineering, Telecommunications Engineering, Electronic or related fields.
  - Master's Degree in Computer Engineering, Information and Telecommunications Technology (ICT), Information Technologies, Software Engineering, Internet of Things, Telecommunications or related field.
✓ **Proven skills** (courses, work experience, research projects) with data science related tools:
  - Backend development (Python, NodeJS, Java)
  - Frontend development (Javascript, HTML)
  - Databases (Relational and non-relational - MySQL, MongoDB, Neo4J)
  - API REST Deployment (Express, Jersey, Flask)
  - Data science (Python, Pandas)
  - Markup languages for data representation (JSON, XML)
✓ **Additional qualifications**:

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[1] *To be included in the doctorate program (University of Cadiz), candidates must fulfil the criteria established in the doctorate program in their current institution. Usually, a completed course requires at least 300 higher education credits, of which at least 60 higher education credits are second-cycle (Master Degree).*

- o Software engineering background (Software Architectures, layered-oriented design and Component-Based Software Development)
- o Previous work with IoT technologies:
- o LoRa, NB-IoT, MQTT, COAP
- o IoT platforms (Google Core, Microsoft Azure IoT)
✓ In view of the international context, proficiency in the English language is mandatory (B1 or higher)

Organization Offer

✓ Exciting multidisciplinary research in a collaborative network of top academic and industrial partners.
✓ Research and training stays in other countries.
✓ Advanced computing and imaging infrastructure to support your research.
✓ You will be enrolled in our PhD training programme.
✓ Special focus on career development by offering training in transferable skills such as project management, communication skills, grant writing, exploitation of results, etc.
✓ The fellowship is awarded for a period of 3 years.
✓ You will benefit of a regular employment contract.

ESR Salary and Allowances

The minimum salary that researchers will receive during this period will be 34.098,52 euros gross per year or 36.390,34 euros gross per year if the researcher hired has a family at the time of hiring. "Family" is understood to be people linked to the researcher by marriage (or by a relationship with a state equivalent to marriage recognized by the legislation of the country where this relationship was formalized) or dependent children who are supported by the researcher.

General rules for ESRs/

ESR Eligibility criteria of the Marie-Sklodowska Curie programme

The applicants can be of any nationality. There are specific criteria the applicant must fulfill to be eligible, as follows:

1. At the time of recruitment, the researcher must not have resided or carried out his/her main activity (work, studies, etc.) in **Spain** for more than 12 months in the 3 years immediately prior to his/her recruitment. Short stays, such as holidays, are not taken into account.
2. ESR Candidates must be, at the time of recruitment by the host organization, in the first four years (full-time equivalent) of their research careers and have not yet been awarded a doctoral degree. This is measured from the date when they obtained the Master's degree that would formally entitle them to embark on a doctorate.
3. Applicants are not eligible if they have already been awarded a PhD.

Basic duties and responsibilities of the ESR

The ESR will be required to work exclusively on the MSCA ITN programme (PARENT-ETN). In all cases, all duties and responsibilities will be clearly outlined in the researchers Personal Career Development Plan, as determined in the early stages of the project between the ESR and supervisors.

Application process instructions

The selection procedure is the one collected in the Ninth Base of the Call.

Statement regarding data protection

You share your information with us for the sole purpose of assessing the requirements for the selection process regarding the present ESR position. We respect that information, and we are careful to comply with our obligations under data protection laws while processing your application, in particular the EU General Data Protection Regulation (GDPR) 2016/679. Your data will not be disclosed to any third party, other than the ESR selection committee defined by the organization/company you are applying to. You have the right to obtain without undue delay: the rectification of inaccurate personal data concerning you (art. 16 of the GDPR); the erasure of personal data concerning you (art. 16 of the GDPR); right to obtain restriction of processing (art. 18 of the GDPR). By submitting your application, you agree to these terms.

Additional information

Webpage of the project: parenth2020.com

For additional information about this specific ESR call contact:

Dr. Angel Ruiz Zafra

Email: angel.ruiz@uca.es

For additional information on other ESR available positions in the PARENT MSCA-ITN framework, please contact the PARENT Coordinator:

Prof. Marco A. Deriu

Department of Mechanical and Aerospace Engineering

Politecnico di Torino

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ANNEX II

Early-Stage Researcher Position Available within the EU Horizon 2020 MSCA-ITN-ETN "PremAtuRe nEwborn motor and cogNitive impairmenTs: Early diagnosis (PARENT)".

Full-time vacancy related to PARENT-ESR6

Table of Contents

EU Research Framework Programme	Marie Skłodowska-Curie Actions ITN 2020
Project Name	PremAtuRe nEwborn motor and cogNitive impairmenTs: Early diagnosis (PARENT)

Project Grant Agreement	N° 956394
Organization/Company recruiting the ESR	Paseo de Carlos III, 28, 11003 Cádiz
Project N° in PARENT PhD projects' list	ESR-6
ESR Research Topic	Hybrid Neuroimaging and Electric Signals Integration by Artificial Intelligence
ESR Research Field	Computer Vision, Neuroimaging
Researcher Profile	First Stage Researcher (R1)
ESR Host Location	University of Cádiz
Type of Contract	Temporary (36 months)
Job-Status	FULL TIME
Hours per week	40
Vacancy Starting Date	To be agreed with the applicant
Enrolment in a PhD Program	YES
Institution Awarding PhD	Paseo de Carlos III, 28, 11003 Cádiz

About PARENT project

PARENT is an EU-funded project (parenth2020.com) aiming for early diagnosis of newborn motor/cognitive impairments. PARENT combines the efforts of a multidisciplinary network of leading European research groups, industry partners, paediatric hospitals and parents' associations to develop a technological infrastructure that will train Early Stage Researchers (ESR) to conduct top-notch research in leading academic institutions, hospitals and industry R&D divisions. During the research there will be strong emphasis on career development and on achieving impact.

PARENT multidisciplinary approach and technologies will make a critical contribution towards an open neurodevelopmental disease diagnostic software infrastructure by interlinking disciplines from clinical data, neuroimaging collection and processing, biomarkers, data fusion, machine learning applied to clinical data, novel prediction algorithms. PARENT approach can be included in the more general paradigm of evidence-based medicine, precision medicine and patient center-care, as well as decision support systems in clinical field.

PARENT Beneficiaries

1) POLITECNICO DI TORINO (POLITO), Italy.

2) UNIVERSIDAD DE CADIZ (UCA), Spain.

3) UNIVERZA V LJUBLJANI (UL), Slovenia.

4) FUNDACIÓN PARA LA GESTIÓN DE LA INVESTIGACIÓN BIOMÉDICA DE CÁDIZ (FGIBICA), Spain.

5) KATHOLIEKE UNIVERSITEIT LEUVEN (KU Leuven), Belgium.

6) OSPEDALE PEDIATRICO BAMBINO GESU (OPBG), Italy

7) NEUS DIAGNOSTICS, RAZISKAVE IN RAZVOJ MEDICINSKE OPREME, D.O.O. (NEUS), Slovenia.

8) 7HC SOCIETA A RESPONSABILITA LIMITATA (7HC), Italy.

9) ICOMETRIX NV (ICO), Belgium.

10) TOELT GMBH (TOELT), Switzerland.

11) GPI SPA (GPI), Italy.

PARENT offers in total 15 ESR/PhD research positions for 3 years (36 months), during which it is intended that a PhD project awardwd, provided positive evaluation. The following ESR positions are available throughout the beneficiaries of the PARENT project:

ESR	Insitution	Topics
ESR1	POLITO	*Modelling ncRNA biochemical pathways and to predict target interactions*
ESR2	POLITO	*Design and optimization of an integrative framework to predict neurodevelopmental trajectories*
ESR3	FGIBICA	*Preterm Children neurodevelopmental trajectory: clinical study focused on neuroimaging and electric signals*
ESR4	FGIBICA	*Preterm Children Neurodevelopmental Trajectory: clinical study focused on biomarkers selection*
ESR5	UCA	*Monitoring and Integrating Neonates Behavioral and Physiological Parameters*
ESR6	**UCA**	***Hybrid Neuroimaging and Electric Signals Integration by Artificial Intelligence***
ESR7	UCA	*Machine Learning to identify significant biomarkers for early diagnose of NDD in premature infants*
ESR8	UL	*LM to automatically detect motor/cognitive impairments in premature infants from various sources*
ESR9	GPI	*In silico predictor of neurodevelopmental trajectory starting from early diagnosis clinical data*
ESR10	NEUS	*Computerized neuropsychological test battery based on eye-tracking specific for preterm children*
ESR11	ICO	*Mathematical models for predicting the evolution of cognitive status making use of*

		MRI biomarkers
ESR12	KUL	Neurological factors determining visual deficits and visuomotor control in children with unilateral Cerebral Palsy
ESR13	OPBG	Neurological biomarkers in predicting neurodevelopment disability driven by Congenital Heart Diseases
ESR14	7HC	Software implementation to predict Neuro developmental trajectories from clinical data
ESR15	TOELT	Artificial Intelligence framework to model the ncRNAs biochemical pathway and predict the target interactions

About ORGANISATION Recruiting the ESR6

The University of Cádiz (UCA) is a young university with an European Seal of Excellence. UCA is a public institution committed with its environment, dedicated to generate, spread and transfer knowledge and culture, such as integral training of people and professionals. It distributes its academic and scientific work along its 4 campuses (Cádiz, Puerto Real, Jerez and Algeciras) with 15 centres (11 faculties and 4 colleges), 47 departments, more than 190 research groups and 6 research institutes develop here their activity. We will welcome 3 ESRs, in a lively team of driven researchers (informatics, data scientists, IoT and electronics engineers) and dedicated clinicians (child neurology, neuropsychological).

Position ESR6: Hybrid Neuroimaging And Electric Signals Integration By Artificial Intelligence

ESR6 position aims at developing computer vision and signal processing algorithms to identify significant biomarkers for early diagnosis of neurodevelopmental disabilities (NDD) in premature infants. Specifically, the project will focus on the following objectives:

1. Familiarization with the most common and cutting-edge computer vision and signal processing techniques for health data analysis in this specific context.

2. Development of a fully-automated machine learning pipeline to identify biomarkers from longitudinal datasets of neuroimages (2D/3D US and MRI Images).

3. Extending the developed approaches considering further information from electrical signals (ETD/EGG signals).

4. International mobility of researchers is a key concept within the MSCA ETN framework. As such you participate in international meetings, workshops and a secondment programme.

5. You want to tell the world about your novel findings with attractive posters, sparkling presentations and high quality papers.

ESR6 Profile

- ✓ **Academic Degree**[2]:
    - o Bachelor's or Engineering Degrees in Computer Engineering, Bioinformatics, Computational Biology or related fields.
    - o Master's Degree in Computer Engineering, Computer Vision, Data Science, Biomedical Engineering or related fields.

- ✓ **Proven skills** (courses, work experience, research projects) with data science related tools:
    - o Machine Learning.
    - o Python and Matlab.
    - o Computer vision/Image processing and analysis (registration, segmentation, metrology…)
    - o Deep Learning with Convolutional Neural Networks (CNNs)

- ✓ **Additional qualifications**:
    - o 2D/3D image segmentation using CNNs.
    - o Matlab and toolboxes (DL, CV, IP)
    - o Experience with OpenCV, Tensorflow, Keras, PyTorch
    - o SPM, brain US/MRI, NIfTI/DICOM
    - o Statistical modelling
    - o Cloud computing (AWS o similar)
    - o Development of Graphical user interfaces
    - o Web programming
    - o Development of applications using embedded hardware (Raspberry o similar)

- ✓ In view of the international context, proficiency in the English language is mandatory (B1 or higher)

Organization/Company Offer

- ✓ Exciting multidisciplinary research in a collaborative network of top academic and industrial partners.

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[2] To be included in the doctorate program (University of Cadiz), candidates must fulfil the criteria established in the doctorate program in their current institution. Usually, a completed course requires at least 300 higher education credits, of which at least 60 higher education credits are second-cycle (Master Degree).

- ✔ Research and training stays in other countries.
- ✔ Advanced computing and imaging infrastructure to support your research.
- ✔ You will be enrolled in our PhD training programme.
- ✔ Special focus on career development by offering training in transferable skills such as project management, communication skills, grant writing, exploitation of results, etc.
- ✔ The fellowship is awarded for a period of 3 years.
- ✔ You will benefit of a regular employment contract.

ESR Salary and Allowances

The minimum salary that researchers will receive during this period will be 34.098,52 euros gross per year or 36.390,34 euros gross per year if the researcher hired has a family at the time of hiring. "Family" is understood to be people linked to the researcher by marriage (or by a relationship with a state equivalent to marriage recognized by the legislation of the country where this relationship was formalized) or dependent children who are supported by the researcher.

General rules for ESRs

ESR Eligibility criteria of the Marie-Sklodowska Curie programme

The applicants can be of any nationality. There are specific criteria the applicant must fulfill to be eligible, as follows:

1. At the time of recruitment, the researcher must not have resided or carried out his/her main activity (work, studies, etc.) in **Spain** for more than 12 months in the 3 years immediately prior to his/her recruitment. Short stays, such as holidays, are not taken into account.
2. ESR Candidates must be, at the time of recruitment by the host organization, in the first four years (full-time equivalent) of their research careers and have not yet been awarded a doctoral degree. This is measured from the date when they obtained the Master's degree that would formally entitle them to embark on a doctorate.
3. Applicants are not eligible if they have already been awarded a PhD.

Basic duties and responsibilities of the ESR

The ESR will be required to work exclusively on the MSCA ITN programme (PARENT-ETN). In all cases, all duties and responsibilities will be clearly outlined in the researchers Personal Career Development Plan, as determined in the early stages of the project between the ESR and supervisors.

Application process instructions

The selection procedure is the one collected in the Ninth Base of the Call.

Statement regarding data protection

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Additional information

Webpage of the project: parenth2020.com

For additional information about this specific ESR call contact:

Dr. Lionel Cervera Gontard

Email: lionel.cervera@uca.es

For additional information on other ESR available positions in the PARENT MSCA-ITN framework, please contact the PARENT Coordinator:

Prof. Marco A. Deriu, Department of Mechanical and Aerospace Engineering

Politecnico di Torino

Tel: +39 011 090 6944 marco.deriu@polito.it

ANNEX III

Early-Stage Researcher Position Available within the EU Horizon 2020 MSCA-ITN-ETN "PremAtuRe nEwborn motor and cogNitive impairmenTs: Early diagnosis (PARENT)".

Full-time vacancy related to PARENT-ESR7

Table of Contents

EU Research Framework Programme	Marie Skłodowska-Curie Actions ITN 2020
Project Name	PremAtuRe nEwborn motor and cogNitive

	impairmenTs: Early diagnosis (PARENT)
Project Grant Agreement	N° 956394
Organization/Company recruiting the ESR	Paseo de Carlos III, 28, 11003 Cádiz
Project N° in PARENT PhD projects' list	ESR-7
ESR Research Topic	Machine Learning to identify significant biomarkers for early diagnose of NDD in premature infants
ESR Research Field	Computer Science, Bioinformatics
Researcher Profile	First Stage Researcher (R1)
ESR Host Location	University of Cádiz
Type of Contract	Temporary (36 months)
Job-Status	FULL TIME
Hours per week	40
Vacancy Starting Date	To be agreed with the applicant
Enrolment in a PhD Program	YES
Institution Awarding PhD	Paseo de Carlos III, 28, 11003 Cádiz

About PARENT project

PARENT is an EU-funded project (parenth2020.com) aiming for early diagnosis of newborn motor/cognitive impairments. PARENT combines the efforts of a multidisciplinary network of leading European research groups, industry partners, paediatric hospitals and parents' associations to develop a technological infrastructure that will train Early Stage Researchers (ESR) to conduct top-notch research in leading academic institutions, hospitals and industry R&D divisions. During the research there will be strong emphasis on career development and on achieving impact.

PARENT multidisciplinary approach and technologies will make a critical contribution towards an open neurodevelopmental disease diagnostic software infrastructure by interlinking disciplines from clinical data, neuroimaging collection and processing, biomarkers, data fusion, machine learning applied to clinical data, novel prediction algorithms. PARENT approach can be included in the more general paradigm of evidence-based medicine, precision medicine and patient center-care, as well as decision support systems in clinical field.

PARENT Beneficiaries

1) POLITECNICO DI TORINO (POLITO), Italy.

2) UNIVERSIDAD DE CADIZ (UCA), Spain.

3) UNIVERZA V LJUBLJANI (UL), Slovenia.

4) FUNDACIÓN PARA LA GESTIÓN DE LA INVESTIGACIÓN BIOMÉDICA DE CÁDIZ (FGIBICA), Spain.

5) KATHOLIEKE UNIVERSITEIT LEUVEN (KU Leuven), Belgium.

6) OSPEDALE PEDIATRICO BAMBINO GESU (OPBG), Italy

7) NEUS DIAGNOSTICS, RAZISKAVE IN RAZVOJ MEDICINSKE OPREME, D.O.O. (NEUS), Slovenia.

8) 7HC SOCIETA A RESPONSABILITA LIMITATA (7HC), Italy.

9) ICOMETRIX NV (ICO), Belgium.

10) TOELT GMBH (TOELT), Switzerland.

11) GPI SPA (GPI), Italy.

PARENT offers in total 15 ESR/PhD research positions for 3 years (36 months), during which it is intended that a PhD project awardwd, provided positive evaluation. The following ESR positions are available throughout the beneficiaries of the PARENT project:

ESR	*Insitution*	*Topics*
ESR1	POLITO	*Modelling ncRNA biochemical pathways and to predict target interactions*
ESR2	POLITO	*Design and optimization of an integrative framework to predict neurodevelopmental trajectories*
ESR3	FGIBICA	*Preterm Children neurodevelopmental trajectory: clinical study focused on neuroimaging and electric signals*
ESR4	FGIBICA	*Preterm Children Neurodevelopmental Trajectory: clinical study focused on biomarkers selection*
ESR5	UCA	*Monitoring and Integrating Neonates Behavioral and Physiological Parameters*
ESR6	UCA	*Hybrid Neuroimaging and Electric Signals Integration by Artificial Intelligence*
ESR7	**UCA**	***Machine Learning to identify significant biomarkers for early diagnose of NDD in premature infants***
ESR8	UL	*LM to automatically detect motor/cognitive impairments in premature infants from various sources*
ESR9	GPI	*In silico predictor of neurodevelopmental trajectory starting from early diagnosis clinical data*

ESR10	NEUS	*Computerized neuropsychological test battery based on eye-tracking specific for preterm children*
ESR11	ICO	*Mathematical models for predicting the evolution of cognitive status making use of MRI biomarkers*
ESR12	KUL	*Neurological factors determining visual deficits and visuomotor control in children with unilateral Cerebral Palsy*
ESR13	OPBG	*Neurological biomarkers in predicting neurodevelopment disability driven by Congenital Heart Diseases*
ESR14	7HC	*Software implementation to predict Neuro developmental trajectories from clinical data*
ESR15	TOELT	*Artificial Intelligence framework to model the ncRNAs biochemical pathway and predict the target interactions*

About ORGANISATION Recruiting the ESR7

The University of Cádiz (UCA) is a young university with an European Seal of Excellence. UCA is a public institution committed with its environment, dedicated to generate, spread and transfer knowledge and culture, such as integral training of people and professionals. It distributes its academic and scientific work along its 4 campuses (Cádiz, Puerto Real, Jerez and Algeciras) with 15 centres (11 faculties and 4 colleges), 47 departments, more than 190 research groups and 6 research institutes develop here their activity. We will welcome 3 ESRs, in a lively team of driven researchers (informatics, data scientists, IoT and electronics engineers) and dedicated clinicians (child neurology, neuropsychological).

Position ESR7: Machine Learning to identify significant biomarkers for early diagnose of NDD in premature infants.

Preterm births, which are those newborns before 37 completed weeks of gestation, are known to have a close relationship with neurodevelopmental disabilities (NDD). Under these circumstances, it is crucial to anticipate the soonest possible brain injury/dysmaturation and impairments in order to improve the wellbeing of children and their families as much as possible. Traditional detection approaches mostly rely on the observation and expertise of well-trained neonatologists. However, more recent techniques based on heterogeneous data sources, such as MRI or ultrasound images, different measures collected from IoT non-invasive devices, low-level sequencing data (SNPs, gene expression, proteins, etc.), have arose as powerful tools which could help to accurately and early detect NDD and/or other related traits. Health-wise, this approach is commonly referred to as precision or personalized medicine, where artificial intelligence (AI) and, particularly, machine learning (ML) models are often used to analyze and find patterns in data.

In PARENT, different kinds of data will be recorded and collected for a set of premature infants. Image-based information such as 2D/3D Ultrasound, 2D/3D MRI, and ETM or EEG will be available to either anticipate NDD or be able to characterize them in order to present the neonatologists representative variables which may help to make a diagnostic. Furthermore, measures from different non-invasive IoT devices that are set in the incubator will also be available, which will be tracking and monitoring the infant health status since birth. This will be additionally complemented by a computational neuropsychological test battery based on eye-tracking which can help to detect cognitive and motor impairments. Finally, low-level sequencing data will also be available in order to try to find associations between non-coding RNA (ncRNA) data and NDD.

In this sense, this project aims at developing AI/ML models to identify significant biomarkers for early diagnosis of NDD in premature infants. Specifically, the project will focus on the following objectives:

1. Familiarization with the most common and cutting-edge statistical and ML techniques for health data analysis in this specific context.

2. Developing and applying AI/ML methods based on heterogeneous data sources (features derived from images, clinical data, well-known genetics and molecular fingerprints related to NDD) in order to make more accurate predictions.

3. Extending the developed approaches considering further information of related traits like congenital heart disease (CHD) to improve early diagnosis of NDD.

4. International mobility of researchers is a key concept within the MSCA ETN framework. As such you participate in international meetings, workshops and a secondment programme.

5. You want to tell the world about your novel findings with attractive posters, sparkling presentations and high quality papers.

ESR7 Profile

- ✓ **Academic Degree**[3]:
  - o Bachelor's or Engineering Degrees in Computer Engineering, Telecommunication Engineering, Electronics, Bioinformatics, Computational Biology or related fields.

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[3] To be included in the doctorate program (University of Cadiz), candidates must fulfil the criteria established in the doctorate program in their current institution. Usually, a completed course requires at least 300 higher education credits, of which at least 60 higher education credits are second-cycle (Master Degree).

- o Master's Degree in Computer Engineering, Information and Telecommunications Technology (ICT), Information Technologies, Data Science, Telecommunications or related fields.
- ✓ **Proven skills** (courses, work experience, research projects) with data science related tools:
  - o Machine learning: supervised, unsupervised and reinforcement learning.
  - o Computer vision: image processing, segmentation, etc.
  - o Data science: full pipeline (data collection, pre-processing, model training and evaluation).
  - o Precision or personalized medicine: clinical information and any -omic data.
  - o Computational biology: gene interaction networks, protein-protein interaction networks, etc.

- ✓ **Additional qualifications**:
  - o Data science tools: MATLAB, R, Python.
  - o Statistical modelling.

- ✓ In view of the international context, proficiency in the English language is mandatory (B1 or higher).

Organization Offer

- ✔ Exciting multidisciplinary research in a collaborative network of top academic and industrial partners.
- ✔ Research and training stays in other countries.
- ✔ Advanced computing and imaging infrastructure to support your research.
- ✔ You will be enrolled in our PhD training programme.
- ✔ Special focus on career development by offering training in transferable skills such as project management, communication skills, grant writing, exploitation of results, etc.
- ✔ The fellowship is awarded for a period of 3 years.
- ✔ You will benefit of a regular employment contract.

ESR Salary and Allowances

The minimum salary that researchers will receive during this period will be 34.098,52 euros gross per year or 36.390,34 euros gross per year if the researcher hired has a family at the time of hiring. "Family" is understood to be people linked to the researcher by marriage (or by a relationship with a state equivalent to marriage recognized by the legislation of the country where this relationship was formalized) or dependent children who are supported by the researcher.

General rules for ESRs/
ESR Eligibility criteria of the Marie-Sklodowska Curie programme

The applicants can be of any nationality. There are specific criteria the applicant must fulfill to

be eligible, as follows:

1. At the time of recruitment, the researcher must not have resided or carried out his/her main activity (work, studies, etc.) in **Spain** for more than 12 months in the 3 years immediately prior to his/her recruitment. Short stays, such as holidays, are not taken into account.
2. ESR Candidates must be, at the time of recruitment by the host organization, in the first four years (full-time equivalent) of their research careers and have not yet been awarded a doctoral degree. This is measured from the date when they obtained the Master's degree that would formally entitle them to embark on a doctorate.
3. Applicants are not eligible if they have already been awarded a PhD.

Basic duties and responsibilities of the ESR

The ESR will be required to work exclusively on the MSCA ITN programme (PARENT-ETN). In all cases, all duties and responsibilities will be clearly outlined in the researchers Personal Career Development Plan, as determined in the early stages of the project between the ESR and supervisors.

Application process instructions

The selection procedure is the one collected in the Ninth Base of the Call.

Statement regarding data protection

You share your information with us for the sole purpose of assessing the requirements for the selection process regarding the present ESR position. We respect that information, and we are careful to comply with our obligations under data protection laws while processing your application, in particular the EU General Data Protection Regulation (GDPR) 2016/679. Your data will not be disclosed to any third party, other than the ESR selection committee defined by the organization/company you are applying to. You have the right to obtain without undue delay: the rectification of inaccurate personal data concerning you (art. 16 of the GDPR); the erasure of personal data concerning you (art. 16 of the GDPR); right to obtain restriction of processing (art. 18 of the GDPR). By submitting your application, you agree to these terms.

Additional information

Webpage of the project: parenth2020.com

For additional about this specific ESR call, check the details at:

Dr. Ignacio J. Turias Dominguez

Email: ignacio.turias@uca.es

or

Dr. Daniel Urda Muñoz

Email: durda@ubu.es

For additional information on other ESR available positions in the PARENT MSCA-ITN framework, please contact the PARENT Coordinator:

Prof. Marco A. Deriu

Department of Mechanical and Aerospace Engineering

Politecnico di Torino

Tel: +39 011 090 6944

marco.deriu@polito.it

Scale of candidates

ESR5 CURRICULUM SCALE (up to 70 points)

Academic Degree (21 points)	Points
Affinity of the Degree / Bachelor's Degree and Average Grade (up to 11 points)	
Master's affinity / Average grade (up to 7 points)	
Academic awards and other awards (up to 3 points)	
Proven skills (21 points)	
- Backend development (Python, NodeJS, Java) - Frontend development (Javascript, HTML) - Databases (Relational and non-relational - MySQL, MongoDB, Neo4J) - API REST Deployment (Express, Jersey, Flask) - Data science (Python, Pandas) - Markup languages for data representation (JSON, XML) - English level - Software engineering background (Software Architectures, layered-oriented design and Component-Based Software Development) - Previous work with IoT technologies: - LoRa, NB-IoT, MQTT, COAP - IoT platforms (Google Core, Microsoft Azure IoT)	
Training courses (7 points)	
For each course lasting less than 20 hours, 0.5 points. Duration of more than 20h and less than 60h, 1 point. 60 hours or more, 2 points.	
Report of the IP (21 points)	
Assessment of the candidate with the work to be carried out in the project, through a motivated report prepared by the IP based on a personal interview with the candidates and recommendation letters indicating the criteria followed in the interview.	

Criteria to assess the interview (30 points)

Item to value	Points
Demonstration of knowledge in accordance with what is described in the CV (up to 5 points)	
English level / Communication skills (up to 10 points)	
Availability to make stays and trips flexibly (up to 5 points)	

Affinity of previous job experience /Recommendation letters (up to 10 points)	

ESR6 CURRICULUM SCALE (up to 70 points)

Academic Degree (21 points)	Points
Affinity of the Degree / Bachelor's Degree and Average Grade (up to 15 points)	
Master's affinity / Average grade (up to 10 points)	
Academic awards and other awards (up to 5 points)	
Proven skills (courses, work experience, research projects) (**21 points**)	
- Machine Learning. - Python and Matlab. - Computer vision/Image processing and analysis (registration, segmentation, metrology…) - Deep Learning with Convolutional Neural Networks (CNNs) - English level 2D/3D image segmentation using CNNs. - Matlab and toolboxes (DL, CV, IP) - Experience with OpenCV, Tensorflow, Keras, PyTorch - SPM, brain US/MRI, NIfTI/DICOM - Statistical modelling - Cloud computing (AWS o similar) - Development of Graphical user interfaces - Web programming - Embedded hardware (Raspberry o similar)	
Training Courses (7 points)	
For each course lasting less than 20 hours, 0.5 points. Duration of more than 20h and less than 60h, 1 point. 60 hours or more, 2 points.	
Report of the IP (21 points)	
Assessment of the candidate with the work to be carried out in the project, through a motivated report prepared by the IP based on a personal interview with the candidates and recommendation letters indicating the criteria followed in the interview.	

Criteria to assess the interview (40 points)

Item	Points
Demonstration of knowledge in accordance with what is described in the CV (up to 5 points)	
English level / Communication skills (up to 10 points)	
Availability to make stays and trips flexibly (up to 5 points)	

	Points
Affinity of previous job experience /Recommendation letters (up to 10 points)	

ESR7 CURRICULUM SCALE (up to 70 points)

Academic Degree (21 points)	Points
Affinity of the Degree / Bachelor's Degree and Average Grade (up to 15 points)	
Master's affinity / Average grade (up to 10 points)	
Academic awards and other awards (up to 5 points)	
Proven skills (courses, work experience, research projects) (**21 points**)	
- Machine learning: supervised, unsupervised and reinforcement learning. - Computer vision: image processing, segmentation, etc. - Data science: full pipeline (data collection, pre-processing, model training and evaluation). - Precision or personalized medicine: clinical information and any -omic data. - Computational biology: gene interaction networks, protein-protein interaction networks, etc. - English level - Data science tools: MATLAB, R, Python. - Statistical modelling.	
Additional qualifications (7 points)	
For each course lasting less than 20 hours, 0.5 points. Duration of more than 20h and less than 60h, 1 point. 60 hours or more, 2 points.	
Report of the IP (40 points)	
Assessment of the candidate with the work to be carried out in the project, through a motivated report prepared by the IP based on a personal interview with the candidates and recommendation letters indicating the criteria followed in the interview.	

Criteria to assess the interview (30 points)

Item to value	Points
Demonstration of knowledge in accordance with what is described in the CV (up to 5 points)	
English level / Communication skills (up to 10 points)	

Availability to make stays and trips flexibly (up to 5 points)	
Affinity of previous job experience /Recommendation letters (up to 10 points)	

ANNEX V

SELECTION COMMITTEE

MEMBERS:

President: Ms. María Jesús Mosquera Díaz. Vice-rector for Scientific and Technological Policy.

Secretary: Paulino Escribano Cabrera. Official of the Research and Transfer Area, with voice and without vote.

Vowels:

- Mr. José María Rodríguez-Izquierdo Gil. General Director of Human Capital Researcher of the Vice-Rector's Office for Scientific and Technological Policy.

- Mr. Félix Ruiz Rodríguez. General Director of Scientific Resources of the Vice-Rector's Office for Scientific and Technological Policy.

SUBSTITUTES:

President: Vice-rector to whom it is delegated

Secretary: Manuela Noble García. Official of the Research and Transfer Area, with voice and without vote.

Vowels:

- Mr. Manuel Francisco Macías García. Director of the Secretariat for the Evaluation and Monitoring of the investigation. of the Vice-Rector's Office for Scientific and Technological Policy.

- Mr. David Jiménez Pavón, Director of the Secretariat to support researchers at the Vice-Rector's Office for Scientific and Technological Policy.

ANNEX VI

PREDOCTORAL CONTRACT ASSOCIATED WITH THE EU HORIZON PROJECT 2020 MSCA-ITN-ETN PARENT

RESPONSIBLE STATEMENT (**Incompatibility**)

Mr / Ms _____, with IDENTIFICATION NUMBER / PASSPORT _____ and nationality _____, I DECLARE RESPONSIBLY,

that I have NOT been performing any position or activity in the public sector delimited within the scope of Law 53/1984, of December 26, on Incompatibilities of Personnel at the Service of Public Administrations, nor do I carry out incompatible private activity or subject to compatibility recognition. Nor do I receive any pension for passive rights or for any public and mandatory Social Security scheme. Likewise, I declare that I do NOT receive a scholarship or aid financed with public or private funds, as well as salaries or salaries with contractual or statutory implication.

What I declare for the purpose of being hired as a trainee staff by the University of Cádiz.

Signature

In _____, at _____ of _____ of 2021

ANNEX VII

PREDOCTORAL CONTRACT ASSOCIATED WITH THE EU HORIZON PROJECT 2020 MSCA-ITN-ETN PARENT

RESPONSIBLE STATEMENT (**of compliance with the eligibility criteria of the ESR of the Marie-Sklodowska-Curie Program**)

Mr / Ms _____, with IDENTIFICATION NUMBER / PASSPORT _____ and nationality _____, I DECLARE RESPONSIBLY,

that at the time of signing this document I maintain compliance with each and every one of the eligibility criteria of the ESR of the Marie-Sklodowska Curie program.

What I declare for the purpose of being hired as a trainee staff by the University of Cádiz.

Signature

 In _____, at _____ of _____ of 2021

ANNEX VIII

PREDOCTORAL CONTRACT ASSOCIATED WITH THE EU HORIZON PROJECT 2020 MSCA-ITN-ETN PARENT

RESPONSIBLE STATEMENT (**Separation. - Spanish Nationality**)

Mr / Ms _____, with IDENTIFICATION NUMBER / PASSPORT _____ and nationality _____, I DECLARE RESPONSIBLY,

that I have NOT been separated by means of a disciplinary file from the service of any of the Public Administrations, and that I am NOT in absolute or special disqualification for the performance in public jobs or for the exercise of functions as labor personnel, by final judicial judgment.

What I declare for the purpose of being hired as a trainee staff by the University of Cádiz.

Signature

In _____, at _____ of _____ of 2021

ANNEX IX

PREDOCTORAL CONTRACT ASSOCIATED WITH THE EU HORIZON PROJECT 2020 MSCA-ITN-ETN PARENT

RESPONSIBLE STATEMENT (**Separation.- National from another State different of Spain**)

Mr / Ms _____, with IDENTIFICATION NUMBER / PASSPORT _____ and nationality _____, I DECLARE RESPONSIBLY,

NOT find myself disqualified or in an equivalent situation, nor have I been subjected to a disciplinary sanction or criminal or equivalent sentence that prevents, in my National State, access to public employment.

What I declare for the purpose of being hired as a trainee staff by the University of Cádiz.

Signature

In _____, at _____ of _____ of 2021